Ordinary Council Meeting

14 November 2018

Minutes

Members of the public who attend Council meetings should not act immediately on anything they hear at the meetings, without first seeking clarification of Council's position. Persons are advised to wait for written advice from the Council prior to taking action on any matter that they may have before Council.

Agendas and Minutes are available on the City's website www.kwinana.wa.gov.au

Vision Statement

Kwinana 2030
Rich in spirit, alive with opportunities, surrounded by nature - it's all here!

Mission

Strengthen community spirit, lead exciting growth, respect the environment - create great places to live.

We will do this by -

- providing strong leadership in the community;
- promoting an innovative and integrated approach;
- being accountable and transparent in our actions;
- being efficient and effective with our resources;
- using industry leading methods and technology wherever possible;
- making informed decisions, after considering all available information; and
- providing the best possible customer service.

Values

We will demonstrate and be defined by our core values, which are:

- Lead from where you stand - Leadership is within us all.
- Act with compassion - Show that you care.
- Make it fun - Seize the opportunity to have fun.
- Stand Strong, stand true - Have the courage to do what is right.
- Trust and be trusted - Value the message, value the messenger.
- Why not yes? - Ideas can grow with a yes.

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Present:

MAYOR CAROL ADAMS
DEPUTY MAYOR P FEASEY
CR W COOPER
CR M KEARNEY
CR S LEE
CR S MILLS
CR M ROWSE
CR D WOOD

MS J ABBISS	-	Chief Executive Officer
MRS M COOKE	-	Director City Regulation
MS C MIHOVILOVICH	-	Director City Strategy
MRS B POWELL	-	Director City Living
MR R NAJAFZADEH	-	Acting Director City Infrastructure
MS M BELL	-	Director City Legal
MR P NEILSON	-	Manager Planning and Development
MR T HOSSEN	-	Lawyer
MS A MCKENZIE	-	Council Administration Officer

Members of the Press	0
Members of the Public	4

1 Declaration of Opening:

Presiding Member declared the meeting open at 7:00pm and welcomed Councillors, City Officers and gallery in attendance and read the Welcome.

"IT GIVES ME GREAT PLEASURE TO WELCOME YOU ALL HERE AND BEFORE COMMENCING THE PROCEEDINGS, I WOULD LIKE TO ACKNOWLEDGE THAT WE COME TOGETHER TONIGHT ON THE TRADITIONAL LAND OF THE NOONGAR PEOPLE"

2 Prayer:

Councillor Wendy Cooper read the Prayer

"OH LORD WE PRAY FOR GUIDANCE IN OUR MEETING. PLEASE GRANT US WISDOM AND TOLERANCE IN DEBATE THAT WE MAY WORK TO THE BEST INTERESTS OF OUR PEOPLE AND TO THY WILL. AMEN"

3 Apologies/Leave(s) of Absence (previously approved)

Apologies

Nil

Leave(s) of Absence (previously approved):

Nil

4 Public Question Time:

Nil

5 Applications for Leave of Absence:

COUNCIL DECISION

310

MOVED CR S LEE **SECONDED CR P FEASEY**

That Councillor Sheila Mills be granted a leave of absence on 12 December 2018.

That Councillor Wendy Cooper be granted a leave of absence from 3 December 2018 to 19 December 2018 inclusive.

That Councillor Merv Kearney be granted a leave of absence from 15 November 2018 to 25 November 2018 inclusive.

CARRIED
8/0

6 Declarations of Interest by Members and City Officers:

Nil

7 Community Submissions:

Nil

8 Minutes to be Confirmed:

8.1 Ordinary Meeting of Council held on 24 October 2018:

COUNCIL DECISION

311

MOVED CR S MILLS **SECONDED CR S LEE**

That the Minutes of the Ordinary Meeting of Council held on 24 October 2018 be confirmed as a true and correct record of the meeting.

CARRIED
8/0

9 Referred Standing / Occasional / Management /Committee Meeting Reports:

Nil

10 Petitions:

Nil

11 Notices of Motion:

Nil

12 Reports - Community

Nil

13 Reports - Economic

Nil

14 Reports - Natural Environment

Nil

15 Reports - Built Infrastructure

15.1 Adoption of Local Planning Policy No. 9: Advertising Signage and Amended Kwinana Town Centre Master Plan and Design Guidelines.

DECLARATION OF INTEREST:

There were no declarations of interest declared.

SUMMARY:

This report presents Local Planning Policy No. 9 (LPP 9): Advertising Signage (refer Attachment A) for adoption under the City's Local Planning Scheme No. 2 and No. 3 (LPS2 and LPS3). LPP 9 will provide greater clarity and guidance to landowners, developers and City of Kwinana (City) Officers on the assessment of advertising signage applications on land zoned and reserved under LPS2 and LPS3.

Advertising signage on properties within the Kwinana City Centre are subject to LPS3 and the Kwinana Town Centre Master Plan and Design Guidelines (Design Guidelines). The relevant clauses (Clauses 4.4(c) and 4.5) that relate to signage in the Design Guidelines are proposed to be deleted to avoid conflict between LPP 9 and the Design Guidelines. This report also presents the amended Design Guidelines (refer Attachment B) for adoption under the City's LPS2 and LPS3.

The City's current regulatory approach with regards to signage on lots is stipulated within LPS2, LPS3, Design Guidelines, and the City's *By-law Relating to Signs and Bill Posting* ("By-law"). Regulation of signage within the road reserve is subject to the requirements of the City's *Activities on Thoroughfares and Public Places and Trading Local Law,* Policy - Advertising and Directional Signage in Thoroughfares and on Local Government Property, and Policy - Promotional Street Banners on Gilmore Avenue.

The key objective of LPP 9 is to provide a consistent approach to the development of advertising signage within the City of Kwinana by ensuring that signage relates to the approved use on the building or land on which it is located and that it is consistent with the character and amenity of the area.

Council considered draft LPP 9 and the draft amended Design Guidelines at its Ordinary Council Meeting held on 8 August 2018, and resolved to adopt the two documents for advertising purposes. In accordance with Council's resolution, City Officers advertised the draft LPP 9 and the draft amended Design Guidelines from 17 August 2018 to 7 September 2018 inclusive, with no submissions being received.

City Officers propose no changes to LPP 9 (refer Attachment A) and amended Design Guidelines (refer Attachment B) and recommend the two documents be adopted without modifications.

Both LPP 9 and the City's By-law will be considered in the assessment of development applications for advertising signage on zoned and reserved land under LPS2 and LPS3. It is also recommended that Council delegate its authority to the Chief Executive Officer to exercise discretion under Clause 34.2 of the By-law to approve signage applications that comply with LPP 9.

15.1 ADOPTION OF LOCAL PLANNING POLICY NO. 9: ADVERTISING SIGNAGE AND AMENDED KWINANA TOWN CENTRE MASTER PLAN AND DESIGN GUIDELINES

OFFICER RECOMMENDATION:

That Council:

1. Adopt Local Planning Policy 9: Advertising Signage, as detailed in Attachment A.

2. Adopt the amended Kwinana Town Centre Master Plan and Design Guidelines as detailed in Attachment B.

3. Publish notice of the adoption of Local Planning Policy 9: Advertising Signage in a newspaper circulating in the Scheme area.

4. Publish notice of the adoption of the amended Kwinana Town Centre Master Plan and Design Guidelines in a newspaper circulating in the Scheme area.

5. Amend Delegation 1.13 Administration of Local Laws conditions to include the authority to the Chief Executive Officer to exercise discretion under Clause 34.2 of the City's *By-law Relating to Signs and Bill Posting* to approve applications which comply with Local Planning Policy 9: Advertising Signage as per Attachment C.

NOTE – AN ABSOLUTE MAJORITY OF COUNCIL IS REQUIRED

DISCUSSION:

Signage is a form of development that requires planning approval, other than signage that is exempt from planning approval under Appendix VII - Exempted Advertisements pursuant to Division 11 and Clause 61 of the Deemed Provisions for Local Planning Schemes of the *Planning and Development (Local Planning Schemes) Regulations 2015* (Deemed Provisions). For those signs that are not exempt, LPS2 requires planning approval be granted in addition to any licence pursuant to the City's *By-law Relating to Signs and Bill Posting* ("By-law"). Council is required to consider each application having regard to the character and amenity of the locality in which signage is proposed to be displayed.

The City's current regulatory approach with regards to signage on lots is stipulated within LPS2, LPS3, Design Guidelines, and the City's By-law. Regulation of signage within the road reserve is subject to the requirements of the City's *Activities on Thoroughfares and Public Places and Trading Local Law,* Policy - Advertising and Directional Signage in Thoroughfares and on Local Government Property, and Policy - Promotional Street Banners on Gilmore Avenue.

Advertising signage on properties within the Kwinana City Centre is subject to LPS3 and the Design Guidelines. Although the signage requirements in the Design Guidelines consider appropriate signage within the City Centre having regard to the location, size and content of the signs to avoid visual clutter, they are not considered to allow sufficient flexibility for a growing City Centre. LPP 9 provides for clearer assessment parameters for advertising signage within the City Centre. Therefore to avoid conflict between LPP 9 and the Design Guidelines, the relevant clauses (Clauses 4.4(c) and 4.5) that relate to signage in the Design Guidelines have been deleted.

15.1 ADOPTION OF LOCAL PLANNING POLICY NO. 9: ADVERTISING SIGNAGE AND AMENDED KWINANA TOWN CENTRE MASTER PLAN AND DESIGN GUIDELINES

Local Planning Policy No. 9

LPP 9 provides a framework for regulating the design and placement of signage throughout the City of Kwinana. The City supports the need for signage to promote a business or activity, but takes the view that such signage should not adversely impact the local amenity and streetscapes within the City and must remain compatible with the design, character and use of buildings and places.

LPP 9 provides clearer assessment criteria for signage applications. The key aspects of LPP 9 include:

- Definitions, and in most cases diagrams, of each type of sign;
- Policy tables which prescribe the assessment parameters for applications within the Residential, Development, Special Residential, Special Rural, Rural, Mixed Business, Public Recreation, Commercial and Industrial Zones;
- The assessment parameters within LPP 9 are substantially similar to the existing By-law, however, LPP 9 generally allows larger signs than the By-law, in appropriate areas, in particular in Commercial and Industrial Zones;
- Applications for signage that meet the assessment parameters within the relevant table provisions of LPP 9 will be assessed and determined by City Officers under delegation. Applications for signage that do not meet the relevant assessment parameters will need to justify and demonstrate why a Policy variation should be considered and will be referred to Council for determination; and
- Signage Strategy requirements to ensure the extent and design of signs proposed is integrated with the development design.

The key objective of LPP 9 is to provide a consistent approach to advertising signage within the City of Kwinana by:

- aligning signage to the approved use of a building or land on which it is located;
- promoting signage that does not adversely impact on the local amenity and streetscapes of the City and is integrated with the surroundings;
- ensuring that the scale of a sign is appropriate to the size of buildings and lot frontages;
- limiting the number of signs at any one property and avoiding the general clutter of signage along street frontages and/or on buildings;
- ensuring that where multiple signs are erected on a single building or at a single place, the style and form of such signage remains consistent; and
- providing signage that does not create public safety concerns, cause driver distraction or confusion, or obstruct sightlines or accesses for vehicles and pedestrians.

The City's By-law was used as a starting point in the drafting of LPP 9. LPP 9 encompasses the provisions of the By-law and both documents will be considered in the assessment of development applications for advertising signage on zoned and reserved land under LPS2 and LPS3.

15.1 ADOPTION OF LOCAL PLANNING POLICY NO. 9: ADVERTISING SIGNAGE AND AMENDED KWINANA TOWN CENTRE MASTER PLAN AND DESIGN GUIDELINES

Consideration of Advertising Signage Applications

The assessment and determination of planning applications for advertising signage will be subject to the provisions of the By-law and LPP 9. LPP 9 will provide a tool for the assessment and determination of signs which require planning approval. Where there is inconsistency between the By-law and LPP 9, Clause 34.2 of the City's By-law gives Council discretion to vary the By-law subject to Council being satisfied that advertising signage is not injurious to the amenity or natural beauty or safety of the area. This aligns with the objectives of LPP 9 which seek to promote advertising signage that does not adversely impact on the local amenity and streetscapes of the City.

Currently, a signage application can be determined under delegation provided the signs being considered comply with the By-law. Given LPP 9 will form part of the assessment process once adopted, the delegation needs to have regard to LPP 9. Therefore it is proposed to create an additional delegation to allow the Chief Executive Officer to exercise the discretion of Council under Clause 34.2 of the By-law to approve applications that comply with LPP 9.

The adoption of the amended Design Guidelines will ensure all reference to signage within the City Centre is directed to the requirements of LPP 9 and therefore avoid any confusion and inconsistencies in the interpretation and use of these documents.

Signage within the thoroughfares will continue to be administered through the By-law, *Activities on Thoroughfares and Public Places and Trading Local Law 2011*, Policy - Promotional Street Banners on Gilmore Avenue, and Policy - Advertising and Directional Signage in Thoroughfares and on Local Government Property. It is noted that the Policy - Advertising and Directional Signage in Thoroughfares and on Local Government Property and the *Activities on Thoroughfares and Public Places and Trading Local Law* are currently being amended to ensure all aspects of the By-law regarding signage within the road reserve are captured. Once these documents are adopted, the By-law can be repealed through a separate process.

Community Consultation

Council considered draft LPP 9 (refer to Attachment A) and draft amended Design Guidelines (refer Attachment B) at its Ordinary Council Meeting held on 8 August 2018, and resolved to adopt the two documents for advertising purposes. In accordance with Council's resolution, City Officers advertised the draft LPP 9 and the draft amended Design Guidelines from 17 August 2018 to 7 September 2018 inclusive, with no submissions being received.

Conclusion

Considering no submissions were received during the advertising period, no modifications to draft LPP 9 and the draft amended Design Guidelines are proposed. The versions that were previously presented to Council on 8 August 2018 are the versions of LPP 9 and amended Design Guidelines that are recommended for adoption (refer to Attachments A and B respectively). Therefore, City Officers recommend that LPP 9 and Design Guidelines be adopted without modifications.

It is also recommended that Council delegates authority to the Chief Executive Officer to exercise discretion under Clause 34.2 of the By-law in approving signage applications, but only when the application complies with LPP 9.

15.1 ADOPTION OF LOCAL PLANNING POLICY NO. 9: ADVERTISING SIGNAGE AND AMENDED KWINANA TOWN CENTRE MASTER PLAN AND DESIGN GUIDELINES

LEGAL/POLICY IMPLICATIONS:

The following strategic and policy based documents were considered in the preparation of this Local Planning Policy:

Legislation
Planning and Development (Local Planning Schemes) Regulations 2015

Schemes
Local Planning Schemes No.2 and No.3

Local Planning Policies
City of Kwinana By-law Relating to Signs and Bill Posting;
City of Kwinana Activities on Thoroughfares and Public Places and Trading Local Law 2011;
City of Kwinana Policy - Promotional Street Banners on Gilmore Avenue; and
City of Kwinana Policy - Advertising and Directional Signage in Thoroughfares and on Local Government Property.

FINANCIAL/BUDGET IMPLICATIONS:

The preparation and advertising of LPP 9 and amended Design Guidelines were undertaken within the City's existing budget. There will be a small cost associated with advertising the adoption of LPP 9 and amended Design Guidelines. This can be accommodated within the City's operational budget. There are no other direct financial implications associated with the adoption of LPP 9 and amended Design Guidelines.

ASSET MANAGEMENT IMPLICATIONS:

No direct asset management implications are associated with draft LPP 9 and amended Design Guidelines.

ENVIRONMENTAL IMPLICATIONS:

No direct environmental implications are associated with the draft LPP 9 and amended Design Guidelines.

STRATEGIC/SOCIAL IMPLICATIONS:

This proposal will support the achievement of the following outcome and objective detailed in the Strategic Community Plan.

Plan	Outcome	Objective
Strategic Community Plan	A well planned City	4.4 Create diverse places and spaces where people can enjoy a variety of lifestyles with high levels of amenity.

15.1 ADOPTION OF LOCAL PLANNING POLICY NO. 9: ADVERTISING SIGNAGE AND AMENDED KWINANA TOWN CENTRE MASTER PLAN AND DESIGN GUIDELINES

COMMUNITY ENGAGEMENT:

A requirement of the *Planning and Development (Local Planning Schemes) Regulations, 2015*, is that local planning policies are advertised for a minimum of 21 days in a paper circulating the Scheme area. In this regard, following Council's resolution of 8 August 2018, draft LPP 9 and the draft amended Design Guidelines were advertised twice during 17 August 2018 to 7 September 2018 in the Weekend Courier. Written letters were also sent to the key stakeholders within the Kwinana City Centre, including the owners of the Kwinana Market Place, advising of the opportunity to provide a submission on the draft LPP and draft amended Design Guidelines. No submissions were received.

In accordance with the provisions of the *Planning and Development (Local Planning Schemes) Regulations, 2015*, notice of adoption of LPP 9 and the amended Design Guidelines is required to be published in a newspaper circulating in the City of Kwinana. This will also be published on the City's website and a post added to the City's Facebook page.

PUBLIC HEALTH IMPLICATIONS:

There are no major public health implications as a result of this report albeit that improved and appropriate signage will assist in better amenity outcomes across the City.

RISK IMPLICATIONS:

Risk Event	Lack of policy may result in ad hoc installation of signage within the City.
Risk Theme	Failure to control the installation/use of signage throughout the City.
Risk Effect/Impact	Reputation Compliance
Risk Assessment Context	Operational
Consequence	Moderate
Likelihood	Possible
Rating (before treatment)	Moderate
Risk Treatment in place	Reduce - mitigate risk
Response to risk treatment required/in place	Adoption of draft LPP 9 provides greater clarity and guidance to developers regarding the City's requirements and standards for signage within the City, thereby mitigating the risk.
Rating (after treatment)	Low

15.1 ADOPTION OF LOCAL PLANNING POLICY NO. 9: ADVERTISING SIGNAGE AND AMENDED KWINANA TOWN CENTRE MASTER PLAN AND DESIGN GUIDELINES

COUNCIL DECISION

312

MOVED CR S MILLS **SECONDED CR P FEASEY**

That Council:

1. **Adopt Local Planning Policy 9: Advertising Signage, as detailed in Attachment A.**

2. **Adopt the amended Kwinana Town Centre Master Plan and Design Guidelines as detailed in Attachment B.**

3. **Publish notice of the adoption of Local Planning Policy 9: Advertising Signage in a newspaper circulating in the Scheme area.**

4. **Publish notice of the adoption of the amended Kwinana Town Centre Master Plan and Design Guidelines in a newspaper circulating in the Scheme area.**

5. **Amend Delegation 1.13 Administration of Local Laws conditions to include the authority to the Chief Executive Officer to exercise discretion under Clause 34.2 of the City's *By-law Relating to Signs and Bill Posting* to approve applications which comply with Local Planning Policy 9: Advertising Signage as per Attachment C.**

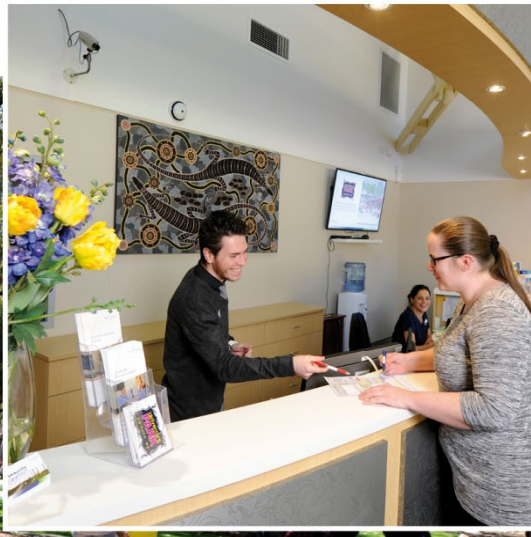
CARRIED BY AN ABSOLUTE MAJORITY OF COUNCIL 8/0

Attachment A

City of Kwinana

Local Planning Policy 9

Advertising Signage



Local Planning Policy 9

Advertising Signage

1. Title

Local Planning Policy 9: Advertising Signage

2. Purpose

The purpose of Local Planning Policy 9: Advertising Signage (LPP 9) is to ensure the design and placement of advertising signage on properties within the City of Kwinana does not adversely impact the amenity of the surrounding areas.

3. Background

Clause 67 of Schedule 2 – Deemed Provisions for local planning schemes of *Planning and Development (Local Planning Schemes) Regulations 2015* details various matters to be considered by the local government in considering an application for development approval. This clause also requires that development applications be assessed against any local planning policy for the Scheme area.

4. Objectives

a) To provide a consistent approach to the development of signage within the City of Kwinana;
b) To ensure signage does not adversely impact on the amenity and streetscapes of the City and is integrated with the surroundings;
c) To ensure signage does not detract from the level of public safety;
d) To ensure that the scale of a sign is appropriate to the size of buildings and site frontages; and
e) To minimise signage clutter along street frontages and/or on buildings.

The objectives provide overarching guidance to the assessment of signage development applications. To provide more specific guidance a series of standards are set out in Table 1 and Table 2 of LPP 9.

5. Policy Application and Interpretation

LPP 9 applies to advertising signage on zoned and reserved land that requires planning approval under the City of Kwinana Local Planning Schemes No.2 and No.3 (LPS2 and LPS3). Signage within a road reserve is not considered under this policy and is subject to the provisions of the City's *Activities on Thoroughfares and Public Places and Trading Local Law (2011).* LPP 9 should be read in conjunction with the City's *By-law Relating to Signs and Bill Posting* and the City's *Activities on Thoroughfares and Public Places and Trading Local Law* (2011) in particular in the assessment of Estate Development Signage Strategy applications. Where there is any inconsistency between LPP 9 and the City's Local Laws specified above, Clause 34.2 of the City's *By-law Relating to Signs and Bill Posting* gives Council discretion to vary the By-law subject to Council being satisfied that advertising signage is not injurious to the amenity or natural beauty or safety of the area.

Signage is a form of development that requires planning approval, other than signage that is exempt from planning approval under Appendix VII – *Exempted Advertisements Pursuant to*

Division 11 and Clause 61 of the Deemed Provisions for Local Planning Schemes of the Planning and Development (Local Planning Schemes) Regulations 2015.

LPP 9 provides guidance on the extent and location of various forms of signage that are not exempt from planning approval under LPS2 and LPS3. LPP 9 also provides guidance to applicants making signage applications and to City officers when assessing such applications under the City's Local Planning Schemes.

Signage that is compliant with LPP 9 and forms part of a Development Application that is submitted to the City is deemed approved only once the Development Application has been approved by the City. Compliance with this policy does not constitute approval.

6. Definitions

Advertising signage is defined as; any word, letter, model, sign, placard, board, notice, device or representation, whether illuminated or not, in the nature of, and employed wholly or partly for the purposes of, advertisement, announcement or direction, and includes any hoarding or similar structure used, or adapted for use, for the display of advertisements. The term includes any airborne device anchored to any land or building and any vehicle or trailer or other similar object placed or located so as to serve the purposes of advertising.

Aggregate area is the total, combined surface area of each particular type of sign on a site.

Kwinana City Centre – the area contained within LPS3.

In addition to the above, the various types of signs subject to this Policy are detailed in Tables 1 and 2.

7. Sign Development Standards

The standards below will be considered by the City when assessing signage applications.

An application for signage should seek to meet the signage requirements specified in Table 1 or Table 2 of LPP 9. City Officers will assess applications against the objectives of LPP 9. Applications that do not meet the objectives of LPP 9 will be referred to Council for determination.

Except for hoarding signs, signs shall only display the following;

a) The name of the occupier/s of the business;
b) Details of the business carried out at the premises;
c) Details of the goods sold in the premises to which it is affixed; and
d) Any other information specifically approved by the City.

No sign shall:

a) Be constructed of glass, unless it is part of an illuminating globe or tube;
b) Be constructed of readily combustible material (including paper, cardboard or cloth), except as part of a banner, flag or poster securely fixed to a signboard or other structure;
c) Affect the stability of any building;
d) Not relate to the land use or occupancy of that land (i.e. advertising that promotes business or activities elsewhere, or products or services names not available at the property, will not generally be permitted) unless otherwise specifically approved by the City;
e) Be located in a position where it will unreasonably or unsafely obstruct driver or pedestrian sightlines;
f) Be flashing or animated, moving or rotating;

g) Contain discriminatory or offensive material as determined by the City;
h) Be detrimental to the general amenity or safety of an area;
i) Extend beyond any boundary of a lot (unless allowed under a verandah or attached to a fascia).
j) If illuminated;
    (i) Be located a minimum of 500m from the nearest residences or land capable of being developed for residential lots;
    (ii) Light emission must be of a low-level not exceeding 300cd/2 and not flash, pulsate, move or rotate and comply with Australian Standard (AS) 4282 – Control of Obtrusive Effects of Outdoor Lighting;
    (iii) Emit light of such intensity that it could, in the opinion of the City, create a traffic hazard or nuisance to the public;
    (iv) Not interfere with or be likely to be confused with traffic control signals; and
    (v) Be maintained to operate as an illuminated sign.

Individual buildings should generally have no more than two approved signs unless otherwise approved by the City with consideration to an approved Signage Strategy.

8. Signage in the Kwinana City Centre (Properties covered under LPS3)

The nature and diversity of signage in a Secondary Activity Centre* has an important impact on the character of the area. While artful and inventive signs add colour and interest to a streetscape, their location, size and content must be managed to avoid visual clutter where the information purpose of signs is lost in the confusion of competing messages.

Apart from a building name, no signs are permitted for residential development anywhere in the Kwinana City Centre. A sign identifying the name of a residential building must be attached to the structure and should be designed as an integral part of the architecture.

Signage within the Kwinana City Centre shall be as per the Commercial Zone development standards contained in Tables 1 and 2 with the exception of signage along Chisham Avenue (Main Street).

Chisham Avenue is the focus of public activity in the Kwinana City Centre and it is important that signage be coordinated and integrated into the design of the building. Acceptable sign types include wall signs, awning signs and sandwich board signs.

The following signs shall not be permitted along Chisham Avenue Main Street (unless as part of a Signage Strategy or to replace an existing sign of the same type);

- Pylon signs
- Roof signs
- Banner signs
- Freestanding banner signs
- Monolith sign
- Inflatable sign
- Hoarding Sign/Billboard
- Sea Container sign

* Defined as Secondary Activity Centre in Perth and Peel @ 3.5 million (March 2018).

OTHER CONSIDERATIONS

9. Signage Strategies

A Signage Strategy is an overall plan for the whole of the development site or area, showing the location, type, size and design of all existing and proposed signs, as well as the outline of

any buildings, landscaping, car parking areas, vehicular access points etc.

For developments such as shopping centres, commercial or industrial complexes, service stations, take away food outlets and land development estates which often include multiple signs, a Signage Strategy for the whole development will be required as part of the application for planning approval. This will enable assessment of signage proposed having regard to the development design and layout.

A Signage Strategy will also be required to be submitted on application for planning approval for:

a) All new buildings or developments where multiple tenancies are proposed;
b) Land development estates which propose more than ten new lots; and
c) Other developments where the total number of signs (existing and proposed) on the site is likely to exceed 50% of the total area of any one elevation of the building.

The Signage Strategy should explain and demonstrate the need for the extent and design of signs proposed, having regard to the objectives and provisions of this policy and should seek to integrate the signage with the development design, particularly through the provision of signage panels within the building facades. Recognising that specific uses may not be known at the planning approval stage, it is not necessary to include specific signage content in the Signage Strategy.

Once approved, all subsequent sign applications will be assessed against previously approved Signage Strategies. Modifications to the Signage Strategy to permit additional signage will be subject to further approval.

The Signage Strategy for a new residential estate development should make provision for:

a) A consistent theme for the estate;
b) Signs to be generally confined to the estate to which it relates;
c) Off-site signs (with approval of relevant landowners) to be within 2km of the estate and to be predominantly for directional purposes; A maximum of two off-site signs per residential estate permitted.
d) A full explanation of the design and location of any entry statements within a new estate and their ongoing maintenance;
e) A requirement for sign removal within 30 days of 95% of the lots being sold;
f) The avoidance of a proliferation of estate signs; and
g) Inclusion of the suburb name, where appropriate.

10. Signage Panels

New commercial and industrial buildings should be designed to incorporate defined areas for signage on the building façade, as part of an integrated building design, to enable signs to integrate with the building's architectural design.

11. Places of Heritage Significance

For either individual places of heritage significance or heritage areas, as identified in the City's Municipal Heritage Inventory, particular care is to be made to rationalize the number and extent of signs. Signs are to be integrated with the building design and not dominate the building architecture. Signs which extend the height of the building, dominate the building or screen parts of the building are not considered appropriate. Signs should be located on the gable end, parapet, verandah, awning edge or end, or above and below windows, and generally should not be fixed to windows.

The style and colour/s of signs should be consistent with the style and period of the building. Internally illuminated signs will not generally be permitted, except where the design refers to

the business name only. Where possible, any illumination should be internal to the sign and should not exceed 300cd/m2 and shall not flash, pulsate or chase. The sign shall comply with Australian Standard (AS) 4282 – Control of Obtrusive Effects of Outdoor Lighting.

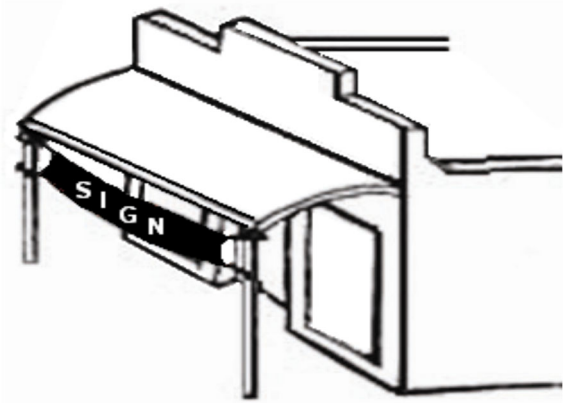
12. Referral Requirements for Signage on land on or abutting Primary Regional Roads and Other Regional reservation

Signage applications that are on land that abuts or that is fully or partly reserved as Primary Regional Roads (PRR) or Other Regional Roads (ORR) in the Metropolitan Region Scheme (MRS) shall be referred to the relevant Public Authority, where required, for comment and recommendation, before being determined.

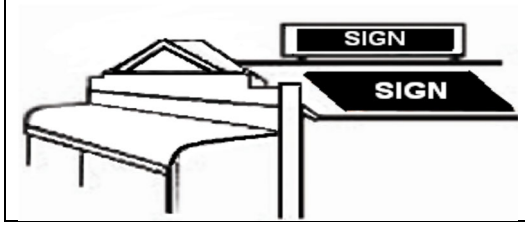
13. Signage Maintenance

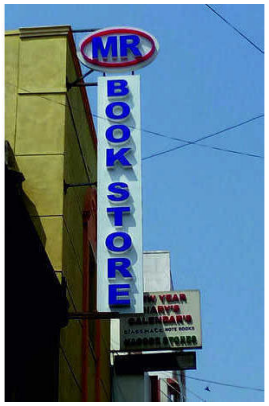
All signs shall be kept clean and free from unsightly matter and shall be maintained by the applicant and/or landowner in good order and repair to the satisfaction of the City, whether requiring approval or otherwise.

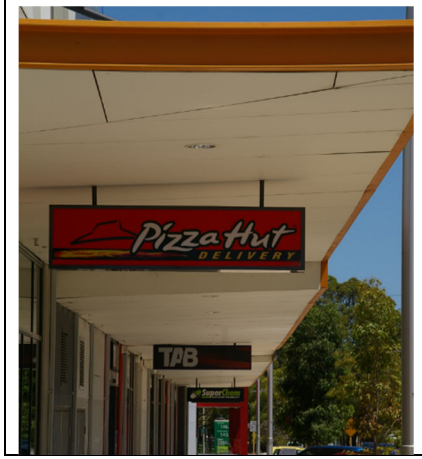
Table 1 – Requirements for signs on buildings

Type of Sign	Applicable Zones			
	• **Residential** • **Special Rural** • **Special Residential** • **Development**	• **Rural**	• **Commercial (Service Commercial & Commercial)** • **Mixed Business** • **Public Recreation**	**Industrial (General Industry & Light Industry)**
Banner Sign A temporary sign normally made of lightweight, non-rigid material, such as fabric, canvas or cloth attached to a part of a building and is generally used to promote a particular event.  	Not permitted Note: May be considered as part of a Signage Strategy	Not permitted	Dimension: maximum height 1m, maximum width 4m. Must: • be restricted to one banner on any occasion; • only be displayed for a maximum period of 21 days at a time at no less than 3 monthly intervals; and • be removed within 24 hours following the event or offer.	Dimension: maximum height 1m, maximum width 4m. Must: • be restricted to one banner on any occasion; • only be displayed for a maximum period of 21 days at a time at no less than 3 monthly intervals; and • be removed within 24 hours following the event or offer.

Type of Sign	Applicable Zones			
	• **Residential** • **Special Rural** • **Special Residential** • **Development**	• **Rural**	• **Commercial (Service Commercial & Commercial)** • **Mixed Business** • **Public Recreation**	**Industrial (General Industry & Light Industry)**
Created Roof Sign A sign affixed to the facsia or parapet, or forms part of a projection above the eaves or ceiling of the building and complements the architectural style of the building, but does not include a Roof Sign. 	Not permitted	Not permitted	Maximum height - 3.5m Maximum area - 5m² Sign shall: • Be limited to one sign per building; • Not project more than 400mm from the portion of the building to which it is attached; • Not be within 500mm of either end of the fascia, roof or parapet of the building to which it is attached; and • require a certificate from a structural engineer certifying that the sign is structurally sound.	Maximum height - 3.5m Maximum area – 5m² Sign shall: • Be limited to one sign per building; • Not project more than 400mm from the portion of the building to which it is attached; • Not be within 500mm of either end of the fascia, roof or parapet of the building to which it is attached; and • require a certificate from a structural engineer certifying that the sign is structurally sound.

Type of Sign	Applicable Zones			
	• **Residential** • **Special Rural** • **Special Residential** • **Development**	• **Rural**	• **Commercial (Service Commercial & Commercial)** • **Mixed Business** • **Public Recreation**	**Industrial (General Industry & Light Industry)**
Roof Sign A sign erected or painted directly on the roof of a building or attached to the top of a parapet wall of a building.  	Not permitted	Not permitted	Not permitted	Not permitted

Type of Sign	Applicable Zones			
	• **Residential** • **Special Rural** • **Special Residential** • **Development**	• **Rural**	• **Commercial (Service Commercial & Commercial)** • **Mixed Business** • **Public Recreation**	**Industrial (General Industry & Light Industry)**
Vertical Sign A sign attached to a building in which the vertical dimension exceeds the horizontal dimension exclusive of mountings. 	Not permitted Note: May be considered as part of a Signage Strategy	Not permitted	Must: • Not project more than 1.0m from the wall and not exceed 3.125m² in area; • Be of a height of at least twice its width but not exceeding 2.5 m; • Have a minimum clearance of 2.5m from ground level; • Be limited to one sign per tenancy per lot; • Not be within 4m of another vertical sign; and • Not project above the top of the wall to which they are attached.	Must: • Not project more than 1.0m from the wall and not exceed 3.125m² in area; • Be of a height of at least twice its width but not exceeding 2.5m; • Have a minimum clearance of 2.5m from ground level; • Be limited to one sign per tenancy per lot; • Not be within 4m of another vertical sign; and • Not project above the top of the wall to which they are attached.

Type of Sign	Applicable Zones			
	• **Residential** • **Special Rural** • **Special Residential** • **Development**	• **Rural**	• **Commercial (Service Commercial & Commercial)** • **Mixed Business** • **Public Recreation**	**Industrial (General Industry & Light Industry)**
Semaphore Sign A sign attached to a structure or building, where the sign is affixed by one of its ends only.  	Not Permitted	Not Permitted	Dimension: maximum height 1.5m. Maximum width 1.5m Clearance: minimum 2.5m Must: • be affixed perpendicular to a wall; and • No more than one sign shall be fixed over or adjacent to any one entrance to a building.	Dimension: maximum height 3m, maximum width 1.5m. Clearance: minimum 2.5m Must: • be affixed perpendicular to a wall; and • no more than one sign shall be fixed over or adjacent to any one entrance to a building.

Type of Sign	Applicable Zones			
	• **Residential** • **Special Rural** • **Special Residential** • **Development**	• **Rural**	• **Commercial (Service Commercial & Commercial)** • **Mixed Business** • **Public Recreation**	**Industrial (General Industry & Light Industry)**
Verandah Sign A sign affixed on, above or under a verandah and includes a sign that is affixed to cantilevered awnings and balconies.  	Not Permitted	Not Permitted	Dimension: maximum height 0.4m; maximum width 2.4m Clearance: minimum 2.5m Must: • not extend above or beyond the width of the fascia, verandah, awning or balcony; and • not be located within 2m of another such sign on the facsia of the same verandah.	Dimension: maximum height 1m; maximum width 3m Clearance: minimum 2.5m Must: • not extend above or beyond the width of the fascia, verandah, awning or balcony; and • not be located within 2m of another such sign on the facsia of the same verandah.

Type of Sign	Applicable Zones			
	• **Residential** • **Special Rural** • **Special Residential** • **Development**	• **Rural**	• **Commercial (Service Commercial & Commercial)** • **Mixed Business** • **Public Recreation**	**Industrial (General Industry & Light Industry)**
Wall Sign A sign painted or attached parallel to the wall of a building or structure. This includes a sign located on support pillars and columns, parapets and fascia.  	Not permitted except where approved in conjunction with an approved business operating from the premises in which the following criteria apply: Area: maximum 1.2m² (non- residential building), maximum 0.2 m² (residential building) Must: • not extend beyond the top or either end of the wall; • not obscure architectural details; • not project more than 600mm from the wall to which it is attached; • not exceed one wall sign per Strata Title or Green Title lot; and not be illuminated.	Area: maximum 4m² (non- residential building), maximum 0.2m² (residential building). Must: • not extend beyond the top or either end of the wall; • not obscure architectural details; • not project more than 600mm from the wall it is attached; and • not exceed one wall sign per lot; and not be illuminated.	Signs shall; • be limited to two signs per tenancy on a lot; • not exceed 10m² in aggregate area per tenancy; • not project more than 600mm from the wall it is attached; • if placed above door openings, have a minimum clearance of 2.5m from ground level; • not obscure architectural details; and • Be not more than one line of signs facing any one street on any storey of a building.	Signs shall; • not exceed 30m² in aggregate area per tenancy; • not project more than 600mm from the wall it is attached; • if placed above door openings, have a minimum clearance of 2.5m from ground level; • not obscure architectural details; and • be not more than one line of signs facing any one street on any storey of a building.

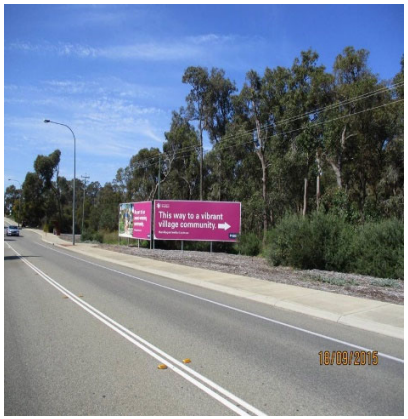
Type of Sign	Applicable Zones			
	• **Residential** • **Special Rural** • **Special Residential** • **Development**	• **Rural**	• **Commercial (Service Commercial & Commercial)** • **Mixed Business** • **Public Recreation**	**Industrial (General Industry & Light Industry)**
Window Sign Sign which is painted or affixed to either the interior or exterior surface of the glazed area of a window.  	Not Permitted	Not Permitted	Area: maximum 50% of the window Must: • be visually permeable ('see through'). • Examples may include the use of cut-out block lettering or transparent materials.	Area: maximum 50% of the window Must: • be visually permeable ('see through'). • Examples may include the use of cut-out block lettering or transparent materials.

Table 2 – Requirements for Freestanding Signs

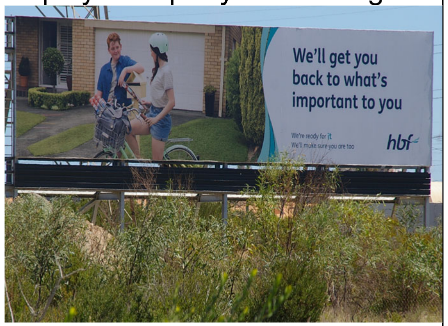
Type of Sign	**Applicable Zones**			
	• **Residential** • **Special Residential** • **Special Rural Zones** • **Development**	• **Rural**	• **Commercial (Service Commercial & Commercial)** • **Mixed Business** • **Public Recreation**	**Industrial (General Industry & Light Industry)**
Community Service Sign A temporary sign which advertises non-profit, short term events such as a fete, fair, or festival for charitable, religious, education, child care, sporting organisations or the like.  	Sign shall: • Be located on the site of a community event or the property of the organisation holding the community event; • Have an area of not more than 3m²; • Be limited to a maximum of one sign per frontage of a lot; • Not be exhibited more than four weeks prior to the event advertised and must be removed not later than one week after the conclusion of the event.	Sign shall: • Be located on the site of a community event or the property of the organisation holding the community event; • Have an area of not more than 3m²; • Be limited to a maximum of one sign per frontage of a lot; • Not be exhibited more than four weeks prior to the event advertised and must be removed not later than one week after the conclusion of the event.	Sign shall: • Be located on the site of a community event or the property of the organisation holding the community event; • Have an area of not more than 3m²; • Be limited to a maximum of one sign per frontage of a lot; • Not be exhibited more than four weeks prior to the event advertised and must be removed not later than one week after the conclusion of the event.	Sign shall: • Be located on the site of a community event or the property of the organisation holding the community event; • Have an area of not more than 3m²; • Be limited to a maximum of one sign per frontage of a lot; • Not be exhibited more than four weeks prior to the event advertised and must be removed not later than one week after the conclusion of the event.

Type of Sign	Applicable Zones			
	• **Residential** • **Special Residential** • **Special Rural Zones** • **Development**	• **Rural**	• **Commercial (Service Commercial & Commercial)** • **Mixed Business** • **Public Recreation**	**Industrial (General Industry & Light Industry)**
Display Home Sign A sign which is erected as part of an approved residential estate display home to be displayed for the duration of the display home and removed on cessation of use of the display home.  	Maximum number of signs per display home: Three The following sign types shall be considered; wall signs, banner signs, and monolith signs with dimensions as per the Commercial Zone requirements in Tables 1 and 2. To be considered as part of a Signage Strategy. Signs shall not be illuminated after 9pm and shall be removed upon the cessation of the Display Home use.	Not permitted	Not permitted	Not permitted

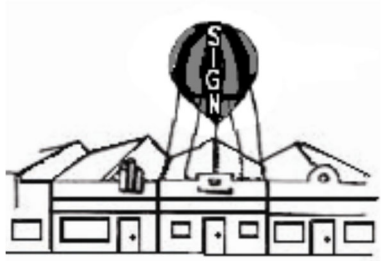
Type of Sign	Applicable Zones			
	• **Residential Zones** • **Special Residential Zones** • **Special Rural Zones** • **Development Zones**	• **Rural Zones**	• **Commercial Zones (Service Commercial & Commercial)** • **Mixed Business** • **Public Recreation**	**Industrial Zones (General Industry & Light Industry)**
Estate Development Sign A sign promoting subdivision approved by the Western Australian Planning Commission, by displaying information about the estate such as the estate name, the plan of subdivision for development, the estate features (including entry statements), sales and real estate agency contact details.	Signs shall; • have a maximum sign face of 35m²; • only be considered in the context of a Signage Strategy except where less than 10 new lots are proposed; • generally be situated on the land that is being subdivided; • be spaced at intervals of at least 200m; • signs fronting the Kwinana Freeway to be spaced at intervals of at least 500m; • maximum of two directional signs allowed outside the land development estate; • be displayed for generally 2 years; and • be removed within 30 days of 95% of lots or buildings within the estate or applicable stage being sold.	Not permitted	Not permitted	Signs shall; • have a maximum sign face of 35m²; • only be considered in the context of a Signage Strategy except where less than 10 new lots are proposed; • generally be situated on the land that is being subdivided; • be spaced at intervals of at least 200m; • signs fronting the Kwinana Freeway to be spaced at intervals of at least 500m; • maximum of two directional signs allowed outside the land development estate; • be displayed for generally 2 years; and • be removed within 30 days of 95% of lots or buildings within the estate or applicable stage being sold.

Type of Sign	Applicable Zones			
	• **Residential** • **Special Residential** • **Special Rural** • **Development**	• **Rural**	• **Commercial (Service Commercial & Commercial)** • **Mixed Business** • **Public Recreation**	**Industrial (General Industry & Light Industry)**
Estate Development Sign (cont.) 	Entry Statements shall; • be located entirely within private property; • where it contains an estate name, an entry statement shall also include the approved locality name depicted in at least equal prominence; and • be maintained by the developer and removed by the developer at a predetermined time linked to the completion of the sales at the estate, unless alternative arrangements are agreed to by the City.	Not permitted	Not Permitted	Entry Statements shall; • be located entirely within private property; • where it contains an estate name, an entry statement shall also include the approved locality name depicted in at least equal prominence; and • be maintained by the developer and removed by the developer at a predetermined time linked to the completion of the sales at the estate, unless alternative arrangements are agreed to by the City.

Type of Sign	Applicable Zones			
	• **Residential** • **Special Residential** • **Special Rural** • **Development**	• **Rural**	• **Commercial (Service Commercial & Commercial)** • **Mixed Business** • **Public Recreation**	**Industrial (General Industry & Light Industry)**
Freestanding Banner Signs A freestanding banner sign is an advertising device made from lightweight material attached to a pole weighted to the ground. These signs come in a variety of shapes and may also be referred to as 'Bali', 'Teardrop', 'Blade' or 'Wing' signs.  	Not permitted	Not permitted	Dimension: max. 2.5m height max. 1.2m width Must: • be limited to 2 per street frontage; • be securely fixed to a building or pole of sufficient size and strength to support the banner under all conditions; • be erected within the boundaries of the lot and not project beyond any lot boundary; • not be located within the street setback line; • not impede vehicle sightlines for access to and from the property; and • not impede pedestrian access to and from the property.	Dimension: max. 2.5m height max 1.2m width Must: • be limited to 2 per street frontage; • be securely fixed to a building or pole of sufficient size and strength to support the banner under all conditions; • be erected within the boundaries of the lot and not project beyond any lot boundary; • not be located within the street setback line; • not impede vehicle sightlines for access to and from the property; and • not impede pedestrian access to and from the property.

Type of Sign	Applicable Zones			
	• **Residential** • **Special Residential** • **Special Rural** • **Development** • **Commercial**	• **Rural**	• **Commercial (Service Commercial & Commercial)** • **Mixed Business**	**Industrial (General Industry & Light Industry)**
Hoarding Sign/Billboard Sign which is affixed to a structure having one or more supports where the overall height (inclusive of the supports) is less than the sign's horizontal dimension and portion of the sign is greater than 1.2m above natural ground level. A Hoarding Sign/Billboard may display third party advertising. 	Not permitted **Note:** Signs may be considered in the Development Zone where no residential development currently exists. Temporary approval may be issued for a Hoarding Sign where residential development has commenced.	Not permitted, but Council may consider a hoarding sign subject to the following; • Number of similar signs approved by Council within 1km of the proposed sign; • Sign not exceeding 50m² in area; • Sign not less than 1.2m or greater than 6m above ground level; • Setback of the sign from the property boundary to be determined subject to the adjoining road hierarchy, width of road reserve, proximity of sensitive uses, size of the sign and any existing vegetation/screening.	Not permitted, but Council may consider a hoarding sign subject to the following; • Number of similar signs approved by Council within 1km of the proposed sign; • Sign not exceeding 50m² in area; • Sign not less than 1.2m or greater than 6m above ground level; • Setback of the sign from the property boundary to be determined subject to the adjoining road hierarchy, width of road reserve, proximity of sensitive uses, size of the sign and any existing vegetation/screening.	Not permitted, but Council may consider a hoarding sign subject to the following; • Number of similar signs approved by Council within 1km of the proposed sign; • Sign not exceeding 50m² in area; • Sign not less than 1.2m or greater than 6m above ground level; • Setback of the sign from the property boundary to be determined subject to the adjoining road hierarchy, width of road reserve, proximity of sensitive uses, size of the sign and any existing vegetation/screening.

Type of Sign	Applicable Zones			
	• **Residential** • **Special Residential** • **Special Rural** • **Development**	• **Rural**	• **Service Commercial** • **Mixed Business**	**Industrial (General Industry & Light Industry)**
Hoarding Sign/Billboard (cont.)		• Not permitted if there is a monolith sign or pylon sign on the same lot. • Light emission must be of a low-level not exceeding 300cd/2 and comply with AS4282 – Control of Obtrusive Effects of Outdoor Lighting.	• Not permitted if there is a monolith sign or pylon sign on the same lot. • Light emission must be of a low-level not exceeding 300cd/2 and comply with AS4282 – Control of Obtrusive Effects of Outdoor Lighting.	• Not permitted if there is a monolith sign or pylon sign on the same lot. • Light emission must be of a low-level not exceeding 300cd/2 and comply with AS4282 – Control of Obtrusive Effects of Outdoor Lighting.

Type of Sign	Applicable Zones			
	• **Residential** • **Special Residential** • **Special Rural** • **Development**	• **Rural**	• **Commercial (Service Commercial & Commercial)** • **Mixed Business** • **Public Recreation**	**Industrial (General Industry & Light Industry)**
Inflatable Sign A sign anchored to a building that provides advertising above that building.  	Not permitted Note: May be considered as part of a Signage Strategy.	Not permitted	Dimension: maximum diameter 7m Maximum height above roof ridge 9m Must: • only be displayed for a maximum period of 21 days at a time at no less than 3 monthly intervals; • require a certificate from a structural engineer certifying that the inflatable object attached to the building or lot is structurally sound; and • be attached to the roof or wall of a building only (i.e. not located on the ground).	Dimension: maximum diameter 7m Maximum height above roof ridge 9m Must: • only be displayed for a maximum period of 21 days at a time at no less than 3 monthly intervals; • require a certificate from a structural engineer certifying that the inflatable object attached to the building or lot is structurally sound; and • be attached to the roof of a building only (i.e. not located on the ground).

Type of Sign	Applicable Zones			
	• **Residential** • **Special Residential** • **Special Rural** • **Development**	• **Rural**	• **Commercial (Service Commercial & Commercial)** • **Mixed Business** • **Public Recreation**	**Industrial (General Industry & Light Industry)**
Monolith Sign A Sign which is not attached to a building with its largest dimension being vertical. Such a sign may consist of a number of modules and is generally uniform in shape from ground level to the top of the sign and is greater than 1.2m in height. 	Not permitted	Not permitted	Dimension: maximum height 7m; maximum width 2.5m Must: • be restricted to one sign per lot except for a corner lot where one sign per frontage is permitted; • where there are multiple tenancies, on one site, incorporate all signs into one composite sign; • not permitted where another free standing sign has been approved;	Dimension: maximum height 7m; maximum width 2.5m Must: • be restricted to one sign per lot except for a corner lot where one sign per frontage is permitted; • where there are multiple tenancies, incorporate all signs into one composite sign;

Type of Sign	Applicable Zones			
	• **Residential** • **Special Residential** • **Special Rural** • **Development**	• **Rural**	• **Commercial (Service Commercial & Commercial)** • **Mixed Business** • **Public Recreation**	**Industrial (General Industry & Light Industry)**
Monolith Sign (cont.)			• be no closer than 15m to the intersecting point of corner truncations; and • not impede vehicle sightlines within the lot for access to and from the property.	• not permitted where another free standing sign has been approved and erected; • be no closer than 15m to the intersecting point of corner truncations; and • not impede vehicle sightlines within the lot for access to and from the property.

Type of Sign	Applicable Zones			
	• **Residential** • **Special Residential** • **Special Rural** • **Development**	• **Rural**	• **Commercial Zones (Service Commercial & Commercial)** • **Mixed Business** • **Public Recreation**	**Industrial (General Industry & Light Industry)**
Panel Sign Sign which is affixed to a panel/fence and is greater than 1.2m above natural ground level, but it does not include a pylon or monolith sign. 	Signs shall; • be limited to one sign per lot; • have a maximum area of 0.2m² for Home Occupations; • have a maximum area of 0.5m² for Home Business; and • have a maximum area of 1.5m² for Child Care Centres and other commercial uses.	Signs shall; • be limited to one sign per lot; • have a maximum vertical dimension of 2m and a maximum area of 5m²; and • not be less than 1.2m or greater than 6m from ground level.	Signs shall; • be limited to one sign per lot; • have a maximum vertical dimension of 2m and a maximum area of 5m²; and • not be less than 1.2m or greater than 6m from ground level.	Signs shall; • be limited to one sign per lot; • have a maximum vertical dimension of 2m and a maximum area of 5m²; and • not be less than 1.2m or greater than 6m from ground level.

Type of Sign	Applicable Zones			
	• **Residential** • **Special Residential** • **Special Rural** • **Development**	• **Rural**	• **Commercial (Service Commercial & Commercial)** • **Mixed Business** • **Public Recreation**	**Industrial (General Industry & Light Industry)**
Portable Sign A sign not permanently attached to the ground or to a structure, wall, fence, or building and including, but not limited to a sandwich board sign which consists of two sign boards attached to each other at the top or elsewhere by hinges or other means.  	Not permitted	Not permitted	Dimension: Maximum height 1.2m. Area: Maximum double-sided area of 2m² (i.e. 1m² for each side). Must: • be located wholly within the boundaries of land owned or occupied by the person who erected or who has maintained the sign; • be removed at the close of business each day; and • one sign only per business operating from the subject site.	Dimension: Maximum height 1.2m. Area: Maximum double-sided area of 2m² (i.e. 1m² for each side). Must: • be located wholly within the boundaries of land owned or occupied by the person who erected or who has maintained the sign; • be removed at the close of business each day; and • one sign only per business operating from the subject site.

Type of Sign	Applicable Zones			
	• **Residential** • **Special Residential** • **Special Rural** • **Development**	• **Rural**	• **Commercial (Service Commercial & Commercial)** • **Mixed Business** • **Public Recreation**	**Industrial (General Industry & Light Industry)**
Pylon Sign A sign which is affixed to a structure which has one or more supports, where the overall height (inclusive of the supports) is greater than the sign's horizontal dimension, but does not include a Monolith Sign.  	Not permitted	Not permitted	**Single Tenancy Pylon Sign:** Area: maximum 6m² Dimension: maximum height 6m Clearance: minimum 2.7m **Multi-Tenancy Pylon Sign:** Area: maximum 12m² Dimension: maximum height 8m Clearance: minimum 2.7m All Pylon signs must: • Be wholly contained within the boundaries of the lot; • Be restricted to one sign per lot except for a corner lot where one sign per frontage may be permitted; • Where there are multiple tenancies, incorporate all signs into one composite sign;	**Single Tenancy Pylon Sign:** Area: maximum 6m² Dimension: maximum height 6m Clearance: minimum 2.7m **Multi-Tenancy Pylon Sign:** Area: maximum 12m² Dimension: maximum height 8m Clearance: minimum 2.7m All Pylon signs must: • Be wholly contained within the boundaries of the lot; • Be restricted to one sign per lot except for a corner lot where one sign per frontage may be permitted; • Where there are multiple tenancies, incorporate all signs into one composite sign;

Type of Sign	Applicable Zones			
	• **Residential** • **Special Residential** • **Special Rural** • **Development**	• **Rural**	• **Commercial (Service Commercial & Commercial)** • **Mixed Business** • **Public Recreation**	**Industrial (General Industry & Light Industry)**
Pylon Sign (cont.)			• not be permitted where another free standing sign has been approved and erected; • be no closer than 15m to the intersecting point of corner truncations; • not impede vehicle sightlines within the lot for access to and from the property; and • where a pylon sign is supported on two or more piers or columns, the space between the piers or columns shall not be wholly or partially filled with any material.	• not be permitted where another free standing sign has been approved and erected; • be no closer than 15m to the intersecting point of corner truncations; • not impede vehicle sightlines within the lot for access to and from the property; and • where a pylon sign is supported on two or more piers or columns, the space between the piers or columns shall not be wholly or partially filled with any material.

Type of Sign	Applicable Zones			
	• **Residential** • **Special Residential** • **Special Rural** • **Development**	• **Rural**	• **Commercial (Service Commercial & Commercial)** • **Mixed Business** • **Public Recreation**	**Industrial (General Industry & Light Industry)**
Rural Producer Sign A sign erected on land lawfully used for rural purposes which advertises goods or products produced, grown or lawfully manufactured on the land within the boundaries of which the sign is located.  	Not Permitted	Sign shall; • Not exceed 1.0m² in area; • Not exceed 2m in height; • Be no more than one sign per lot; and • Only be erected and maintained on land on which the goods or products are produced, grown or lawfully manufactured.	Not Permitted	Not Permitted

Type of Sign	Applicable Zones			
	• **Residential** • **Special Residential** • **Special Rural** • **Development**	• **Rural**	• **Commercial (Service Commercial & Commercial)** • **Mixed Business** • **Public Recreation**	**Industrial (General Industry & Light Industry)**
Sea Container Sign A Sign that is constructed from one or more shipping containers with advertising material printed or affixed on the structure.  	Not permitted	Not permitted, but Council may consider a sea container sign subject to the following; • A maximum of two stacked sea containers permitted per lot. Maximum area: 50m² Maximum Height: 6m • Sea container(s) to be entirely wrapped by a weather and tear-resistant 'skin' onto which advertising material is printed; • Sea container(s) to be designed so as to minimise visual amenity impacts and blend harmoniously with the locality; and	Not permitted, but Council may consider a sea container sign subject to the following; • A maximum of two stacked sea containers permitted per lot. Maximum area: 50m² Maximum Height: 6m • Sea container(s) to be entirely wrapped by a weather and tear-resistant 'skin' onto which advertising material is printed; • Sea container(s) to be designed so as to minimise visual amenity impacts and blend harmoniously with the locality; and	Not permitted,but Council may consider a sea container sign subject to the following; • A maximum of two stacked sea containers permitted per lot. Maximum area: 50m² Maximum Height: 6m • Sea container(s) to be entirely wrapped by a weather and tear-resistant 'skin' onto which advertising material is printed; • Sea container(s) to be designed so as to minimise visual amenity impacts and blend harmoniously with the locality; and

Type of Sign	Applicable Zones			
	• **Residential** • **Special Residential** • **Special Rural** • **Development**	• **Rural**	• **Commercial (Service Commercial & Commercial)** • **Mixed Business** • **Public Recreation**	**Industrial (General Industry & Light Industry)**
Sea Container Sign (cont.)		• Light emission must be of a low-level not exceeding 300cd/2 and comply with AS4282 – Control of Obtrusive Effects of Outdoor Lighting.	• Light emission must be of a low-level not exceeding 300cd/2 and comply with AS4282 – Control of Obtrusive Effects of Outdoor Lighting.	• Light emission must be of a low-level not exceeding 300cd/2 and comply with AS4282 – Control of Obtrusive Effects of Outdoor Lighting.

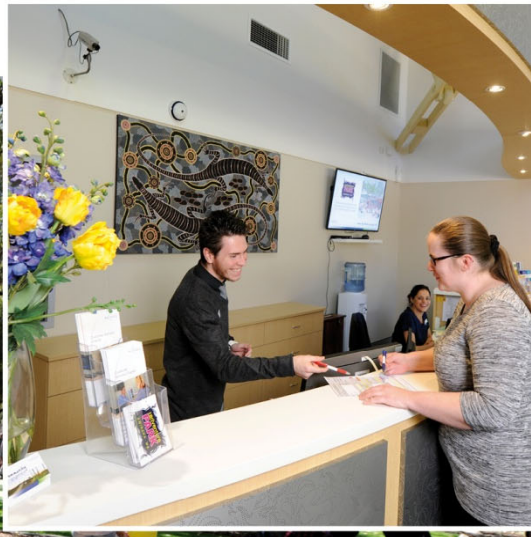
Type of Sign	Applicable Zones			
	• **Residential** • **Special Residential** • **Special Rural** • **Development**	• **Rural**	• **Commercial (Service Commercial & Commercial)** • **Mixed Business** • **Public Recreation**	**Industrial (General Industry & Light Industry)**
Temporary Signs **Construction Site/Property Transaction Signs** *Sign which is displayed only for the duration of the construction or transaction period.* **Display Home Signs** *Advertisement signs displayed for the period over which homes are on display for public inspection. These signs include 'Home Open' signs only and do not include residential estate display home signs.*	These temporary signs are exempt from requiring Planning Approval as per Appendix VII – *Exempted Advertisements Pursuant to Division 11* of Local Planning Scheme No. 2. Signs larger than the exempt signs will not be approved.			

Name of Policy	Local Planning Policy 9: Advertising Signage
Date of Adoption and resolution No	*Insert the date on which the Policy was first adopted by Council and the resolution No*
Review dates and resolution No #	*List the dates on which the Policy was reviewed by Council and the resolution Nos*
Next review due date	*Insert the date on which the next review should be completed by*
Legal Authority	Planning and Development (Local Planning Schemes) Regulations 2015 – Schedule 2 Deemed Provisions (Division 2)
Directorate	City Regulation
Department	Planning
Related documents	This Policy shall be read in conjunction with the City of Kwinana's *By-law Relating to Signs and Bill Posting and Activities on Thoroughfares and Public Places and Trading Local Law*.

Attachment B

City of Kwinana

Kwinana Town Centre Master Plan and Design Guidelines



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Introduction

The City of Kwinana is embarking on an exciting period of growth and redevelopment. When the Perth-Mandurah rail line begins service in late 2007, two new stations in Kwinana will make it one of the most accessible locations in the swiftly growing southern corridor of the Perth metropolitan area. A progressive transit-oriented development is already well advanced around the Wellard Village station, and recent estimates indicate that Kwinana can expect further public and private investment in the order of $11.5 billion in infrastructure improvements and industrial, commercial and residential development projects.

At the core of this dramatic growth is redevelopment and expansion of the Town Centre area. Covering over 92 hectares at the centre of the township, this area has the opportunity to provide first class civic and educational facilities, as well as a rich mix of commercial, cultural and entertainment functions, and a range of housing options with convenient access to all these services and recreation activities. Building on the existing strengths of the area, revitalization and expansion of the Town Centre has the potential to change the image of Kwinana and provide its residents with the levels of choice and convenience expected of Perth's finest suburbs.

Figure 1: Regional Setting

Figure 2: Town Centre precincts

Scope

For the purposes of this manual, the Town Centre is defined as the four blocks east of Gilmore Avenue, from Bolton Way in the north to Wellard Road in the south. This extensive area is made up of three distinct sub-areas:

- the **Education Precinct** includes property controlled by the Department of Education and Training (DET), be- tween Bolton Way and Sulphur Avenue, from Gilmore to Orelia Avenue. The existing High School on this block is currently being redeveloped and a new TAFE (Technical and Further Education) Automotive Training facility is under construction on the corner of Gilmore and Sulphur Avenue.
- the **Civic Marketplace** includes the blocks north and south of Chisham Avenue, from Sulphur to Challenger Avenue, between Gilmore and Meares Avenue. This area currently contains a mix of civic, recreation and commercial uses, including the Council offices, Arts Centre and Police Station on Sulphur Avenue, the Kwinana Recquatic Centre on Gilmore Avenue, and the Hub Shopping Centre, south of Chisham Avenue, which is Kwinana's largest concentration of retail development,.
- the Challenger Neighbourhood includes the block
- south of Challenger Avenue which is controlled by the Department of Housing and Works (DHW) and is currently undeveloped natural bushland.

Throughout this manual, each of the sub-areas will be referred to with the names above. These are not generally used location names — the Challenger Neighbourhood, for example, is more commonly referred to as Lot E-26 — but they are adopted here to provide a more obvious link to the proposed character of each precinct, and will suffice until new names are formally defined as different sections of the development evolve. "Town Centre" in this document is used to mean the whole area, including all three sub-areas collectively.

The new high school under construction in the Education Precinct

The existing Kwinana Hub (Marketplace) Shopping Centre

Existing bushland of the Challenger Neighbourhood

Purpose

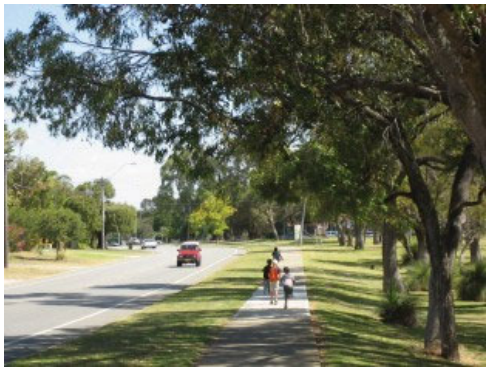
Development in the area between Sulphur and Challenger Avenues (previously known as the "Town Centre" but designated here as the "Civic Marketplace") is controlled by Local Planning Scheme No. 3 which was adopted in 1998. In the decade since this scheme was prepared, market conditions in and around Kwinana have changed dramatically and the demand for new housing is putting pressure on DHW to release land in the Challenger neighbourhood. At the same time, planning for new schools by DET and TAFE in the Education Precinct underscores the importance of clear connections between the commercial core and surrounding community service and residential areas.

The "town centre" therefore was redefined to include the Education Precinct and Challenger Neighbourhood, and an up-dated consolidated concept plan was prepared to co- ordinate the development of all three sub-areas. The design principles of this overall conceptual plan are outlined in the next section of this manual, while the design guidelines presented in the following sections offer further detail on implementation of the plan. Their purpose is to provide direction for individual projects to ensure that together, they achieve the intended qualities of the overall plan.

These guidelines have been prepared to help property owners and their design consultants develop improvement plans that are consistent with the community's vision for the future of the Kwinana Town Centre. They are also intended to assist in the review of plans by both the Councillors and the staff responsible for approving plans and issuing the required development permits.

Gilmore Avenue

Chisham Avenue



Meares Avenue

What are design guidelines?

Design guidelines are the link between a plan and its implementation. A plan specifies the community's development intentions for an area – the agreed "vision" for the future. Implementing the plan, however, involves numerous design decisions, made at different stages in the development process, by a wide range of different people including property owners and tenants, developers, architects, landscape architects, engineers, traffic planners, design review boards and the municipal authorities responsible for issuing zoning and building permits.

Design guidelines help to coordinate the design decisions made by all these different participants. They define the limits within which design choices must be made to achieve the intentions of the plan. Their purpose is to ensure that design decisions complement each other and contribute effectively to creating the quality of place envisioned in the plan.

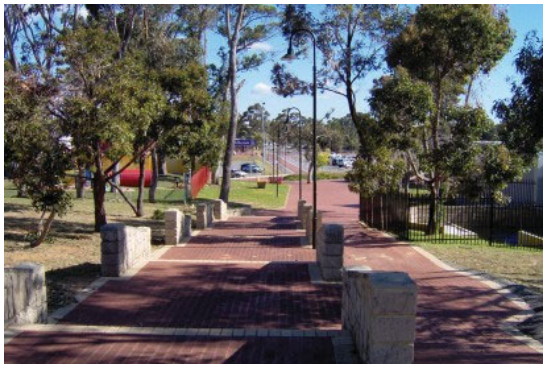
While design guidelines establish limits, they are not intended to stifle creativity or to limit a property owner's opportunity to maximize the value of his property. Guidelines recognize the value of the interest and variety that different designers bring to a town centre like Kwinana's, and they encourage innovative and unique design solutions. By containing these solutions within some general parameters, however, guidelines help to avoid the visual chaos and functional inefficiencies of environments where design decisions are made independently, with no regard for how they affect one another and influence an overall perception of the district.

Guidelines also establish an overall level of design quality that protects private property owners from sub-standard design decisions on neighbouring properties or in the public realm. Incompatible or poor quality building and landscape elements can have a significant impact on the market value of adjacent properties and contribute to negative perceptions of the district as a whole.

Design guidelines typically include two kinds of requirements:

1. Specific **development controls** that govern quantitative development decisions, such as the alignment of key streets, the location and height of buildings, or the nature of public open spaces. These types of controls are usually fixed and non-negotiable. They are expressed with terms like "must" and "shall be", and illustrated with diagrams that show precise dimensions or fixed limits within which the proposed solution must fall.
2. General **aesthetic guidelines** that provide direction on more subjective or qualitative issues, such as the architectural character of buildings, materials, colours, signage and landscape elements. These types of requirements are more open to interpretation and allow for a variety of solutions that support the general design intentions of the plan. They are expressed with terms like "should be" and "no more (or less) than", and are illustrated with descriptive sketches or examples of similar kinds of elements from elsewhere.

Pedestrian axis from Sulphur Road…



… over the hill, and down to Chisham Avenue

How to use this manual

The guidelines contained in this manual are a supplement to the Local Planning Scheme and other current development regulations. Anyone involved in the design or review of a development project, therefore, should consult this manual in combination with any other pertinent documents on Kwinana's general development regulations and specific policies relating to the Town Centre. A list of potentially relevant materials is provided in an appendix to this document.

To prepare or review a proposal for a particular property or section of the public realm, participants should first familiarize themselves with the;

- **Town Centre Development Framework:** This section of the manual presents the overall development intentions for the Town Centre as a whole. Since many of the guidelines are qualitative in nature, it is important to understand the City of Kwinana's broader vision for the future of the area, and the design principles underlying the more detailed design requirements for specific sites.

After reviewing this section of the manual, readers should then refer to the;

- **Urban Design Guidelines** and locate the specific section that applies to the locality of their project. To verify in which sub-area a particular property is located, consult the diagram of Figure 3. The guidelines of this chapter of the manual specify requirements related to the structure, land use, building form, street design and other urban design qualities of each sub-area.

For more specific guidance on the character of buildings and landscape treatments, refer to the;

- **Building Guidelines** which provide direction on the general architectural character of key building types and 'green building' requirements across all sub-areas of the Town Centre; and the
- **Landscape Guidelines** which outline overall landscaping concepts for each of the three sub-areas, more detailed information for particular sites, and installation and maintenance requirements.

The final section of the manual explains the;

- **Administration** of these guidelines, including typical submission requirements and contact details for further information from the City of Kwinana.

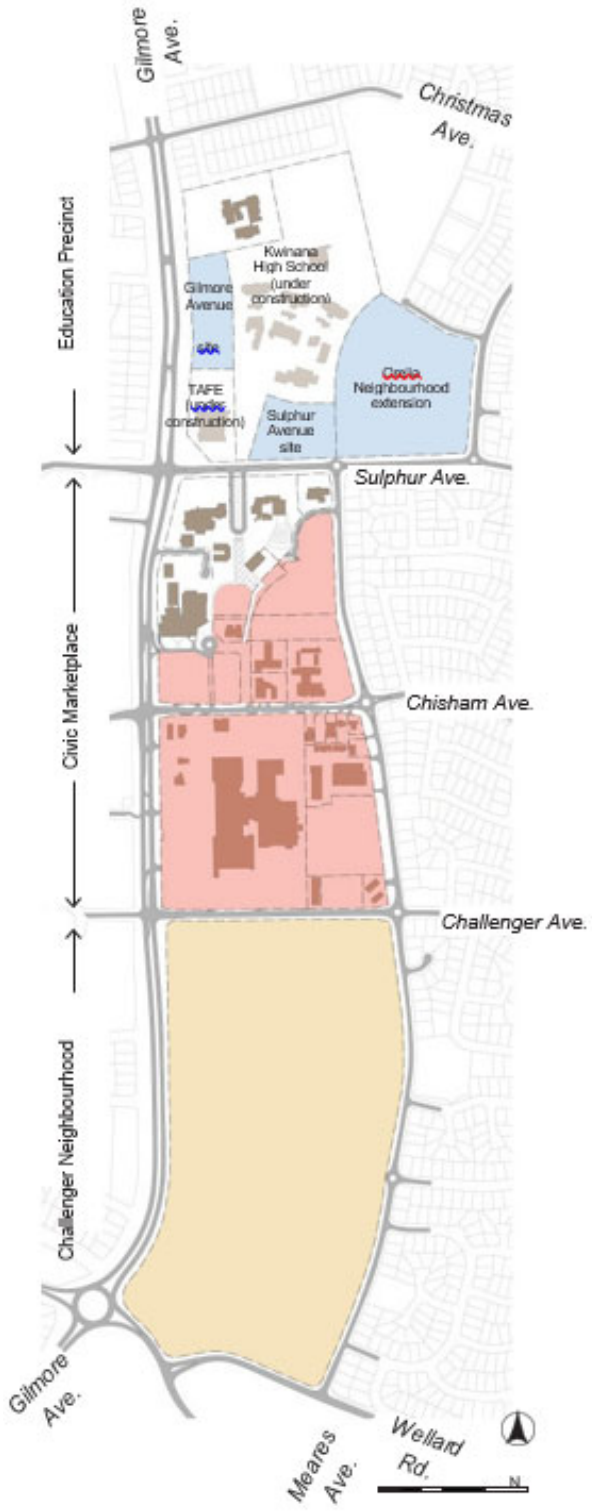


Figure 3: Sub-areas of the Town Centre

Development Framework

Background

The opportunity of the Town Centre area has been recognized for many years and previous planning studies have laid a strong foundation for future development. The most important of the earlier studies was a master plan prepared by Hames Sharley in 1996 which established clear design principles for the Civic Marketplace sub-area, from Sulphur to Challenger Avenues[1]. The elements of this master plan were adopted in Local Planning Scheme No.3 which specifies the development requirements currently in force for the central area.

In 2002, Hames Sharley was commissioned to prepare a broader master plan that extended the principles for the central area into the adjacent blocks north and south. In response to changing market conditions and changes in ownership of key properties, particularly The Hub shopping centre which was acquired by the Mirvac Group in 2005, the City of Kwinana organized a Town Centre Master Plan workshop to review and update the Hames Sharley master plan.

Town Centre Master Plan Workshop November, 2005

The workshop was held over two days in November, 2005. Participants included representatives of each of the four major stakeholders in the Town Centre area: the City of Kwinana, DET, DHW and the Mirvac Group, along with a range of independent technical experts including planners, urban designers, architects, landscape architects, engineers, a traffic planner, and a retail analyst familiar with the economic trends of the region. The process incorporated community consultation through an initial community visioning session which provided information on stakeholders' and residents' interests and ideas for improvement of the Town Centre[2].

The debates and sketch designs of the workshop con- firmed the objectives for development of the Town Centre and established a series of 11 key design principles to guide the development of a more detailed conceptual plan, as presented below. The Concept Plan has been endorsed by Council as an overall framework for development of the Town Centre and is the basis for the design guidelines presented in this manual.

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[1] Hames Sharley: *Kwinana Town Centre Guidelines*, April 1996 (Revised: August 1998)

[2] For further information on the process and conclusions of the workshop, see the report prepared by the Urban Design Centre: *Kwinana Town Centre Master Plan Workshop, 3-4 November 2005.*

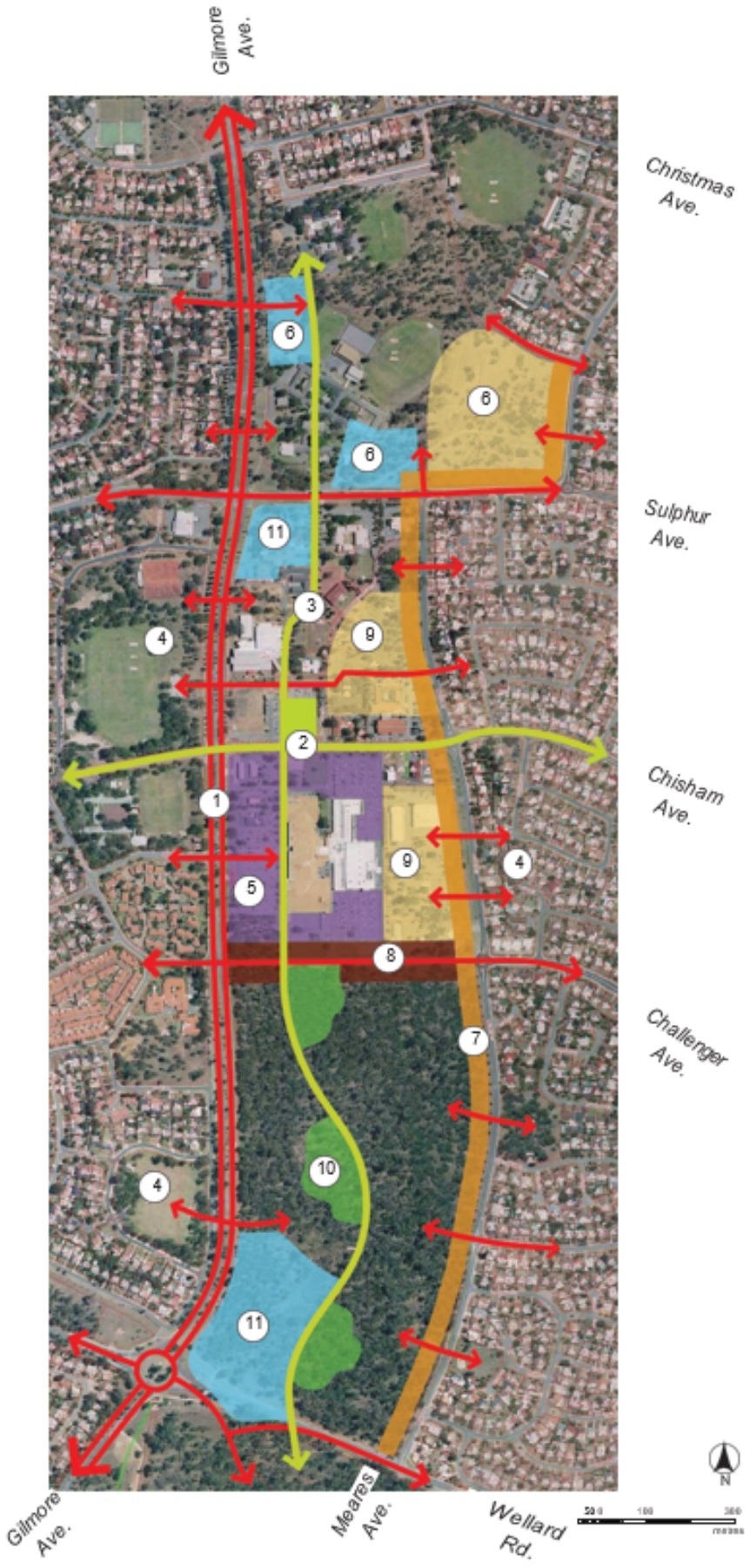


Figure 4: Town Centre design principles

Development Objectives

The following objectives for development of the Town Centre were distilled from the community visioning session at the beginning of the workshop:

- The Town Centre is to be the focus of retail, commercial, community, civic and entertainment uses in Kwinana.
- Encourage mixed use development.
- Support walkability and access to public transport.
- Plan for a vibrant and safe community.
- Provide for housing choices and variety with higher densities near activity centres.
- Maximise the range and mix of employment opportunities.
- Enhance and develop a Kwinana character and identity.

Design Principles

Participants in the workshop explored different ways to achieve these objectives in diagrams and sketches. The various approaches, however, shared a series of common values — or development principles — which together produce a strong conceptual diagram for redevelopment of the **Town Centre (Figure 4):**

1. Improve the appearance of Gilmore Avenue
2. Convert Chisham Avenue into a “main street”.
3. Connect the three precincts of the Town Centre.
4. Connect the Town Centre to surrounding residential neighbourhoods.
5. Improve retail function, parking and bus access.
6. Develop compatible uses on excess land in the Education precinct
7. Establish appropriate relationships to residential development on Meares Avenue
8. Control the interface between the retail core and residential development on Challenger Avenue
9. Provide a diversity of housing types within the Town Centre.
10. Preserve the natural land forms and significant vegetation of the Challenger neighbourhood.
11. Preserve long term development opportunities.

Existing pedestrian improvements between Sulphur Road and Chisham Avenue provide a strong foundation for construction of the north-south link.

Concept Plan

The more detailed concept plan of Figure 5 is based on these objectives and design principles. This plan is illustrative only, showing a general layout of streets, public spaces and building footprints which meet the intentions for development of the Town Centre. The final form of buildings and open spaces may differ from those shown here, but they must maintain the essential qualities outlined in the following description of the eleven development principles and the more detailed design guidelines for each of the three precincts presented in the next section of this manual.

Figure 5: Town Centre illustrative plan

1. Gilmore Avenue

One of the most distinctive and memorable features of Kwinana is its unusual amount of open space, wide street reserves and generous landscaping. This is a legacy of the original plan of the town prepared by Margaret Feilman, Perth's first female town planner, who adapted the British 'new town' model to local conditions in her innovative plan for Kwinana[3].

Based on a philosophy of 'responding to the land', the plan provided for four neighbourhoods on the north-south ridges of the site, accessed by an elegant parkway — Gilmore Avenue — which runs through the central valley between the ridges. This parkway, which is the main artery of Kwinana's hierarchical circulation system, occupies a road reserve of approximately 70 metres in width and provides a gracious entry into the town, showcasing many of the tree species native to the area. Through the town centre area, however, its distinctive landscape character has been eroded by the commercial development on the east side, by intrusive signage, unrelated building forms, and exposed parking lots and service areas.

Because of its width and the speed and volume of traffic it carries, Gilmore Avenue would be difficult to convert into the active, pedestrian oriented 'main street' typical of most successful town centres. Its role, however, is to provide a graceful entry and memorable route through the centre, high- lighting the attractions of the area and distributing traffic to the various destinations along the way. A special design concept should be developed for the town centre segment of Gilmore Avenue to emphasize the significance of the area and improve the visual quality and traffic function of the street. This concept should compliment the unique landscape qualities of the original parkway, but be distinctly different, coordinating planting, paving, lighting and signage elements to create a unique and intriguing streetscape through the Town Centre.

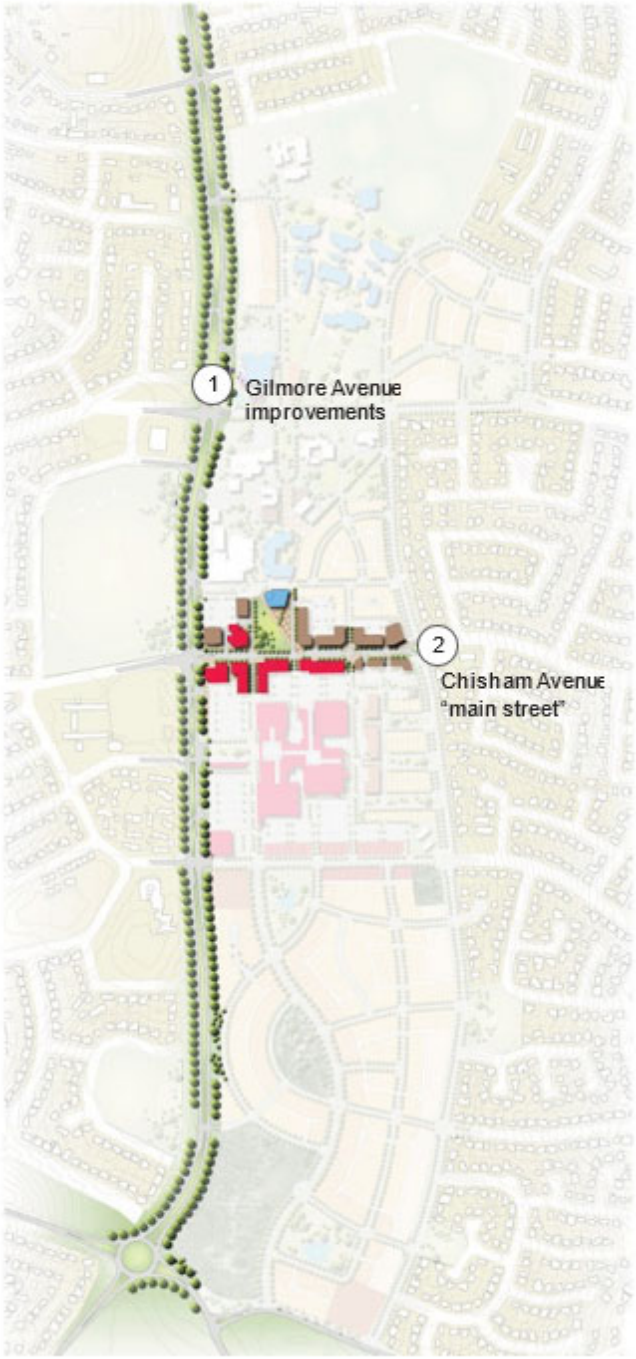


Figure 6: Principles 1 and 2: Gilmore and Chisham Avenues

Typical "main street": continuous retail frontage, consistent scale, sheltered sidewalks, slow moving traffic and convenient short-term parking

[3] Sarah Brown: "Surveying Our Past and Building Our Future: An Environmental History of an Australian Suburb" in *Limina: A Journal of Historic and Cultural Studies,* Volume 13, 2007. pp. 23-33.

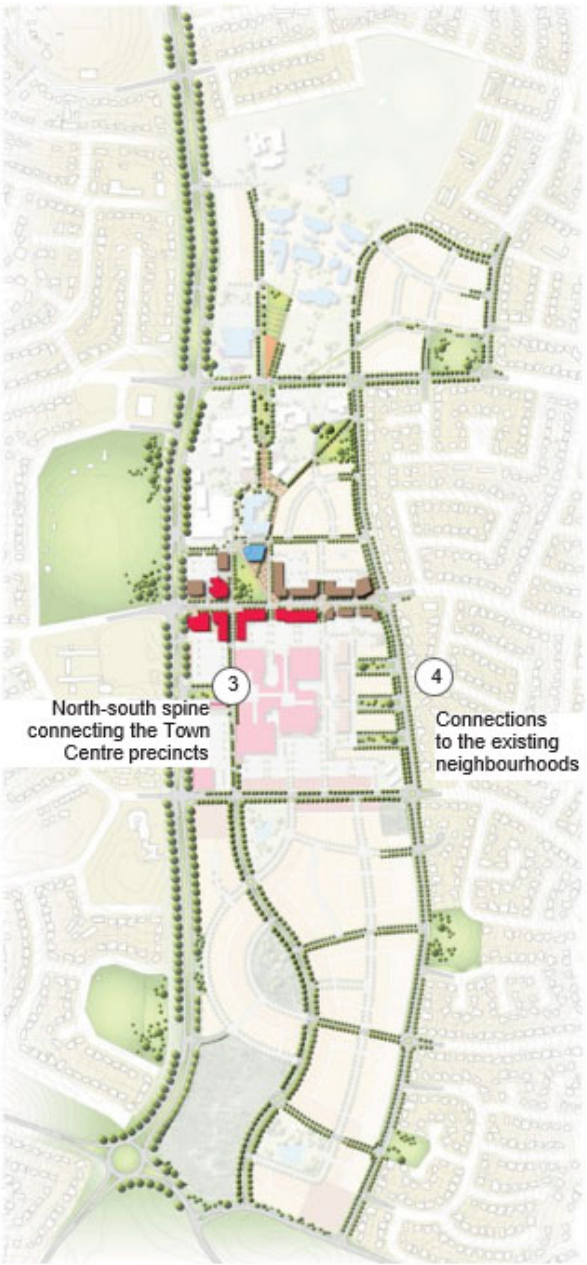


Figure 7: Principles 3 and 4: Connecting precincts and neighbourhoods

Key sections of the north-south spine are already in place in the walkway connecting from Sulphur Avenue to Chisham Avenue

2. Chisham Avenue

In contrast to Gilmore Avenue, the two blocks of Chisham Avenue, between Gilmore and Meares, are to achieve the character of a bustling commercial street, with a high level of pedestrian activity, slow moving traffic, a rich mix of uses, and comfortable, sheltered sidewalks and quality public spaces where people spend time with their friends or gather for special events and community festivals.

Development on Chisham Avenue will include retail and office uses, restaurants, cafés and other services and entertainments, in 2 to 3 storey mixed-use buildings that front directly onto the sidewalks, creating a relatively continuous façade of activity on both sides of the street.

The buildings will also frame a central space, or Town Square, that becomes the 'heart' of the Kwinana community, offering a place for weekend markets or other occasional events, as well as a casual, outdoor meeting place for day-to-day visitors to the Town Centre.

3. Connecting the precincts:

Given the size of the overall town centre area, it is important to link all three precincts with a strong north-south spine that will encourage pedestrian access from the Education Precinct and the Challenger Neighbourhood into the Civic Marketplace area. Key elements of this spine are already in place in the grand axis leading up the hill from Sulphur Avenue, and the two stepped pathways that

connect from the crest of the hill to Chisham Avenue. These paths are to be reinforced and extended north into the TAFE and high school complex, and south through the shopping centre area, into the Challenger Neighbourhood.

This critical connection must be public and accessible at all times of the day and at night. It should be clearly visible as a structural component of the town centre's circulation network. It needs to be a safe and attractive way through the area, with quality paving and landscape treatments, good lighting, comfortable places to sit and interesting things to see along the way, including public art elements, interesting display windows and elegantly articulated building facades. This connection should also provide for bicyclists, with a dedicated bike path through the Challenger Neighbourhood, and bike racks and water fountains where appropriate.

4. Connecting to the neighbourhoods:

One of the present problems with the town centre area is that it is made up of four very large 'super blocks', with a limited number of places where they can be penetrated from the surrounding neighbourhoods. The area needs to become more permeable, with a network of streets and pedestrian paths dividing the large blocks into a more finely grained pattern of development.

New streets should be cut through the blocks where possible, and existing neighbourhood streets extended into the town centre to blur the north-south 'barriers' created by Gilmore and Meares Avenues. Public spaces in new housing developments should be designed as amenities for the whole area within a walking distance radius, not just for the new units; and connection should be made to existing parks to help integrate new housing into the existing neighbourhoods.

Key sections of the north-south spine are already in place in the walkway connecting from Sulphur Avenue to Chisham

5. Improving retail function:

Much of the success of the Town Centre will depend on the quality of the retail experience and the level of convenience that the area offers. This is largely a function of the quality and mix of retail tenants, but it also depends on the array of other uses provided in the centre, and on supply of adequate amounts of easily accessible parking, appropriately located in relation to the retail functions and other public activities.

With respect to quantity, parking requirements should be calculated for the district as a whole, taking advantage of shared parking opportunities between complimentary land uses. For example, office and retail uses with peak demand during the day can share parking spaces with recreation and entertainment functions which attract most custom outside of normal business hours. In terms of location, parking should be well distributed throughout the centre, but located strategically to draw pedestrians past tempting shops and through key public spaces. Access to parking areas should be clearly visible, but where possible, parking lots

should be screened from full view to minimize the impact of large expanses of paving.

The attraction of the centre is also affected by the convenience of public transport. Existing bus services will be modified when the Perth-Mandurah rail line opens and the lay- over function of the existing bus station on Gilmore Avenue will be replaced by more frequent through service. This creates an opportunity to provide more convenient access to the shops by bringing buses further into the centre. It also suggests replacing the visual barrier of the existing bus station with a lighter, more modern bus shelter which can be integrated into the design of the centre's pedestrian amenities.

6. *Peripheral uses in the Education Precinct:*

The new high school and TAFE facility use only about half of the land controlled by DET north of Sulphur Avenue. The remainder should be developed in land uses that both benefit from a close relationship to learning institutions and support the education functions. Housing is an obvious option because it offers opportunities for students to live within walking distance of the facilities, while also providing surveillance of the school grounds at night and during the weekend. Extension of the Orelia neighbourhood is clearly the best use of the eastern part of the precinct, between Orelia and Meares Avenues.

The future of the sites on Gilmore and Sulphur Avenues, however, is not so clear. With high visibility and immediate connection to the central pedestrian spine of the Town Centre, these sites provide valuable opportunities for commercial or institutional uses with a connection to education, such as a corporate training facility, research laboratory or adult education centre. Although housing is always a fall- back option, the Gilmore and Sulphur Avenue sites should be reserved while efforts are made to attract non-residential uses that expand opportunities for community education and training in Kwinana.

Figure 8: Principles 5 and 6: Retail improvements and Education Precinct sites

7. Meares Avenue:

With low density housing on one side and a variety of commercial uses low density housing on one side and a variety of commercial uses and undeveloped sites on the other, Meares Avenue presents an incoherent streetscape which creates a poor image of the Town Centre from the east. However, the relatively wide reserve, occasional stands of mature vegetation, and significant number of developable sites on the west side offer an opportunity to create an elegant streetscape, with an appropriate transition in land use between the existing neighbourhood and the commercial activities of the Town Centre.

Development on the west side of Meares Avenue, therefore, should be primarily residential, in types and densities that generally relate to the existing housing across the street. Higher densities are appropriate in the Civic Marketplace sub-area, arranged to allow regular penetrations through the blocks to the commercial uses, as required under Principle 5 above.

8. Challenger Avenue:

The interface between commercial development of the Civic Marketplace sub-area and new housing of the Challenger Neighbourhood occurs at Challenger Avenue. To avoid an abrupt change of character across the street, Challenger Avenue should be developed as a transition between the two sub-areas, with a mix of commercial and residential uses on both sides of the street and strong vehicular and pedestrian links across the corridor, connecting into the hearts of the areas on either side.

Suitable types of development include mixed use buildings with housing over professional offices or showrooms, or live/work units providing studio, office or workshop space on the ground floor for low-impact, home-based businesses.

Figure 9: Principles 7 and 8: Meares and Challenger Avenues

Mixed use development on Challenger Avenue can take a variety of forms, depending on the specific uses

9. Housing types:

Residential development is a high priority in all sub- areas of the Town Centre to promote activity throughout the day and at night, and to provide a constant level of surveillance of the streets and public spaces. Its other objective is to take advantage of the opportunity to increase the range of housing choices available in Kwinana, providing options to live within walking distance of the commercial, institutional, entertainment and recreation facilities of the Town Centre.

While more traditional single-family detached housing is appropriate in the Education Precinct and the Challenger Neighbourhood, the Civic Marketplace sub-area provides a unique setting for higher density living in more urban unit types, including townhouses, garden apartments or other forms of group dwellings, apartments above retail or office space, and live/work units. Housing for the elderly could also be appropriate on Meares Avenue or in the Challenger Avenue corridor since these sites are somewhat removed from core activity areas but maintain easy access to the retail services, public transport and open space amenities.

10. The natural environment:

The site of the proposed Challenger Neighbourhood is a treasured area of natural bush land which has contributed for a long time to the special landscape character of Kwinana. Its development is inevitable, but through careful design of the patterns and forms of development, much of the natural bush land quality of the area can be maintained.

As far as practically possible, the natural land forms and drainage patterns of the site should be preserved in the layout of new roads and the location of open spaces. The streets should generally follow the existing contours of the land, and open space should be located on the low points of the site to serve as natural drainage areas. Significant stands of natural vegetation and mature specimen trees should be preserved wherever possible, and new plantings should use species indigenous to the area, or compatible with the existing vegetation.

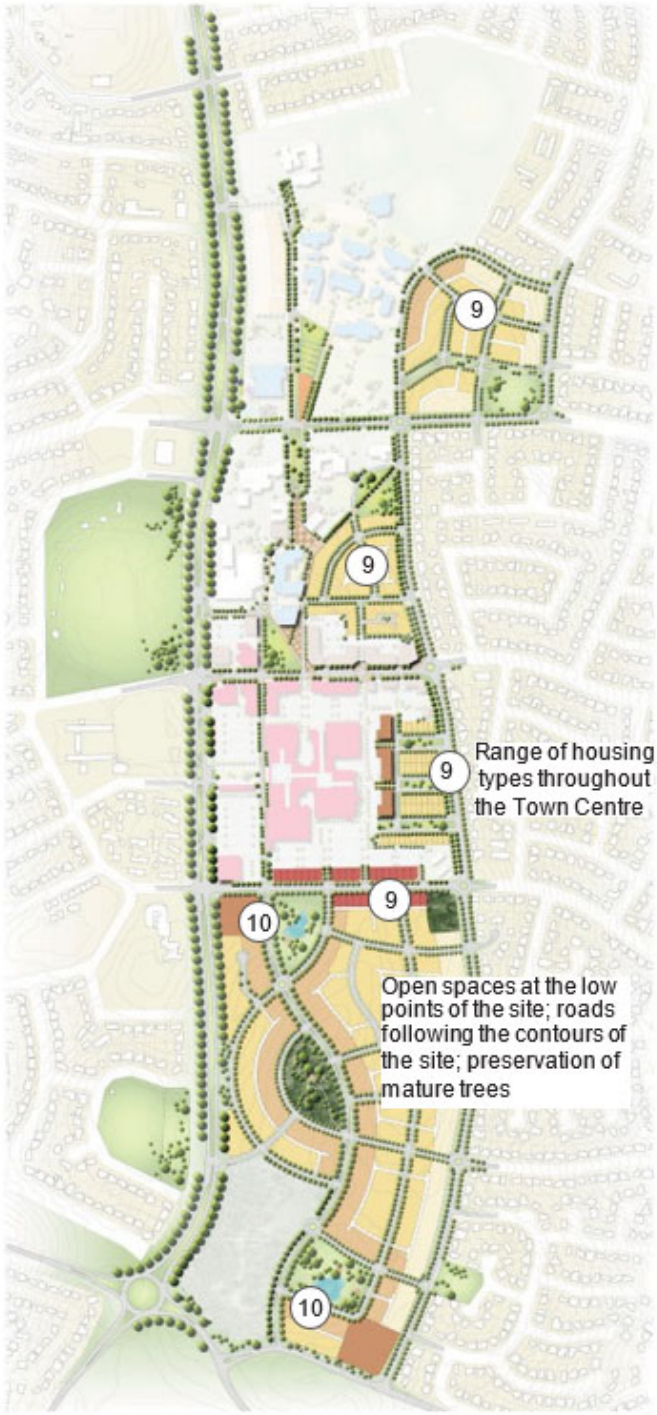


Figure 10: Principles 9 and 10: Housing types and the natural environment

Existing natural bushland of the Challenger Neighbourhood

11. *Long term development opportunities:*

The rebirth of Kwinana is only just beginning and it is impossible to predict future opportunities for major new developments such as a regional hospital, the branch campus of a University, corporate headquarters or training facilities. It is important, therefore, to reserve key sites for future development, in highly visible locations where a variety of potential functions could be successfully accommodated.

As noted under Principle 6 above, the sites on Gilmore and Sulphur Avenues in the Education Precinct should be reserved for further institutional or corporate development compatible with the educational focus of the area.

In the Civic Marketplace sub-area, the City of Kwinana owns a valuable freehold property in the site of the existing Council offices on the corner of Gilmore and Sulphur Avenues. Although this site can only be made available with relocation of the administrative functions, a significant redevelopment opportunity could make it feasible to relocate the Town Hall to Calista Oval, at the corner of Gilmore and Chisham Avenues, where its presence in a landmark building would anchor the centre of the town and add considerable activity to the “main street”.

In the Challenger Neighbourhood, a site of approximately 4 hectares is reserved in the southwest corner, with frontage on Gilmore Avenue and Wellard Road and immediate connection to the central spine connecting the three sub-areas of the town centre. The layout of the rest of the Challenger Neighbourhood should ensure that this site can be integrated into the surrounding housing development as an integral part of the new area, if the possibility of an alternative strategic use does not eventuate within a reasonable time frame.

Figure 11: Principles 11: Long-term development opportunities

Urban Design Guidelines

1. Civic Marketplace

1.1 Objectives

The role of the Civic Marketplace is to become the ‘heart’ of the community — the place where people go to take part in the government of their town, to enjoy cultural activities, to socialize, to recreate and be entertained, and to access the goods and services they need every day.

Many of the essential elements are already in place: the Council offices, Arts Centre and Police Station on Sulphur Avenue, the popular Recquatic Sports Centre on Gilmore Avenue, the Kwinana library and almost 17,500 square metres of retail in The Hub shopping centre, a clinic and various other offices and commercial services. The existing development, however, fails to create a successful “place” and there is little synergy between any of the functions in the area. This is partly because the uses are dispersed over too large an area, with weak connections between different activities and no obvious “centre”. The existing buildings bear little relationship to each other and the sidewalks and pathways between facilities are generally exposed and unattractive. In addition, most of the retail functions are located in The Hub, an internalized shop- ping mall which concentrates pedestrian activity on the interior and does little to activate the surrounding areas.

Correcting these deficiencies and improving the overall function and appeal of the area is promoted by the following specific objectives for the Civic Marketplace sub-area:

- to create a vibrant, safe, convenient, prosperous Town Centre that is cherished by the residents of Kwinana, their friends and visitors;
- to create a central public space that is identified with the Town Centre and makes a suitable venue for weekend markets and special events;
- to provide a range of services and amenities that will attract people to the area and sustain a constant level of public activity;
- to increase the range of housing choices available in Kwinana and maximize the number of people living within walking distance of the Town Centre; and
- to improve access and circulation for cars and service vehicles, buses, pedestrians, and cyclists.

Achieving these objectives will require significant redevelopment and in-fill of vacant sites, in a series of coordinated projects that follow the urban design guidelines below, and the general building and landscape guidelines presented in the following sections of this manual.

Figure 12: Civic Marketplace: Structure of the Precinct

1.2 Structure of the precinct

The key to the success of the Civic Marketplace is to develop a clear, comprehensible structure of streets, pedestrian paths and public open spaces which link the different parts of the area into a network of connected places and activities. Parts of this structure are already in place — in the major streets: Gilmore, Meares, Chisham, Sulphur and Challenger Avenues; and in the internal pedestrian route that leads from Sulphur Avenue to Chisham Avenue. The challenge is to build on these existing elements to achieve a unifying structure for the whole area.

1.2 (a) As required under Principle 3 of the overall development framework, a key component of the Town Centre structure is a central north-south corridor, providing a continuous pedestrian connection through all the precincts, and linking peripheral development directly to the core area. Existing pedestrian amenities leading into the Town Centre from Sulphur Avenue are to be preserved and extended to create this corridor — leading through the Civic Marketplace from Sulphur Avenue to Challenger Avenue, and extending north into the Education Precinct and south into the Challenger Neighbourhood.

1.2 (b) Under Principle 2, Chisham Avenue is converted into a 'main street', with a continuous frontage of active uses lining the street, and roadway improvements defined under Guideline 1.5 (b) below.

1.2 (c) A market square, or central public open space, is an essential component of the north-south spine and is to be located on the north side of Chisham Avenue, contributing to the 'main street' vitality of the corridor. This space should be at least 0.5 hectares in area, and of a generally simple and well defined shape. It should connect directly to the two existing pathways from the north, and have streets on at least two sides to provide night time surveillance from passing cars.

1.2 (d) To strengthen the definition of the north-south spine over the crest of the hill and provide more activity in and around the existing public space of this landmark location, further development or expansion of the existing Business Incubator and former TAFE facility is recommended.

1.2 (e) Between Chisham and Challenger Avenues, the central north-south spine is to run along the western facade of The Hub retail complex, providing a direct vehicular and pedestrian connection from the Challenger Neighbourhood, past the main entry to the shopping centre, to the market square. In addition to the design features specified under Guideline 1.5 (a) below, this route is to be enlivened by active retail frontage wherever possible, or

artful advertising or display panels on any unavoidably inactive walls.

1.2(f) To further break down the scale of the blocks (Principle 4), an east-west connection between Gilmore and Meares Avenues is to be developed north of Chisham Avenue. In addition, the existing service road on the east side of the shopping centre is to be extended north across Chisham Avenue, connecting to the new community park that is to be developed North of the residential development along Meares Avenue (Lots 4 and 11). To discourage their use as traffic short-cuts, neither of these secondary streets should be direct through-block connections.

1.2 (g) A major vehicular entry to The Hub is to be provided from Gilmore Avenue, approximately mid-way be- tween Chisham and Challenger Avenues. This entry should be designed as the formal 'front door' of the shopping centre, configured to act as a landmark for passing traffic on Gilmore Avenue, and to break down the scale of this oversized block which is over 375 metres long, from Chisham to Challenger Avenue.

The intersection at this entry should be the only full, four-way intersection on Gilmore Avenue between Chisham and Challenger Avenues, and it may be signalized, pending advice from Main Roads WA. It should also be appropriately configured to provide for the easy entry and exit of buses, with the bus stop located as close to the entry of the shopping centre as possible, providing immediate access to the central north-south spine for transit passengers.

1.2 (h) On Meares Avenue, further penetrations into the Civic Marketplace blocks are to be provided in a minor access road into the development area between the park at Hutchins Cove and the new cross block connection [Guideline 1.2(f)], and in at least two entries to development between Chisham and Challenger Avenues. If possible, one or more of these entries should continue in a pedestrian path into The Hub, providing convenient access to the shopping centre for employees and residents of new development on Meares Avenue and the existing neighbourhood to the east.

Chisham Avenue will be the focus of commercial activity in the Civic Marketplace

The market square will provide a relaxing alternative to the commercial bustle of Chisham Avenue

Blank walls can be activated by artful advertising and display panels, especially at night

Figure 13: Civic Marketplace Land use

1.3 Land use

To ensure a vibrant Civic Marketplace, the area should provide a wide range of community services and commercial, entertainment and residential uses that attract people through- out the day and at night. An appropriate mix of uses provides opportunities for visitors to do a number of different things in a visit to the Town Centre, thus encouraging them to stay longer, patronize food and beverage outlets, and participate in public activities. To achieve these benefits, however, the land uses of the area must be strategically located to entice pedestrian movement through the centre and extend the average length of time people spend in the area, while at the same time, mak- ing their experience comfortable and convenient.

1.3 (a) The retail space of the Town Centre will remain con- centrated in The Hub, but a complementary corridor of street-oriented shops, galleries, cafés, bars and restaurants is to be developed on Chisham Avenue, focused on the western end of the street, from Gilmore Avenue to the service road behind the shop- ping centre. Expansion of The Hub is to extend the retail area to the north, providing retail frontage on Chisham Avenue and, ideally, an entry into the mall that opens directly onto the street.

1.3 (b) Sites on either side of the central spine, between The Hub and Chisham Avenue, are to orient active retail frontage to both Chisham Avenue and the north-south connector, enticing shoppers parked in the main park- ing area on Gilmore Avenue to head north, along the spine, to Chisham Avenue, the market square and the public facilities beyond.

1.3 (c) The remainder of the ground floor frontage on Chisham Avenue, through to Meares Avenue, may be office, showroom or community service functions, with active, 'store front' facades fronting the public domain.

1.3 (d) Upper storey development throughout the Chisham Avenue corridor may be residential, office, or other low impact commercial uses.

1.3 (e) The area immediately east of the Recquatic Centre, between the existing pedestrian paths stepping up the hillside, is being planned for public uses, including

a new library and associated Community Resource Centre. Should the currently proposed development not progress, every effort should be made to identify a similar type of public use for this site, taking advantage of its prominent position in relation to the market square, excellent pedestrian access and proximity to established recreation facilities.

1.3 (f) Additional office, laboratory or related uses such as professional meeting and function facilities are recommended in expansion of existing development on the crest of the hill, above the Recquatic Centre.

1.3 (g) The area on the east side of the slope, from the straight hillside path to Meares Avenue, is designated for residential use, in detached, semi-detached or townhouse units at a density of R50.

1.3 (h) To develop an appropriate relationship with existing development to the east of Meares Avenue (Principle 7), sites on the west side of Meares Avenue are proposed for residential use, in medium density dwelling types including townhouses, garden apartments, other forms of group dwellings and aged-care facilities. Given the depth of these sites (approximately 150 metres), they may also be developed in a mix of land uses, with lower density residential development fronting Meares Avenue, and on the rear part of the site, higher density apartments, back office space or other service commercial uses requiring only limited visibility from the street.

1.3 (i) The Challenger Avenue corridor is a similar transition area between the commercial uses of the Civic Marketplace and new residential development in the Challenger Neighbourhood (Principle 8). Appropriate uses include a mix of residential, office, showroom and workshop space, preferably in mixed-use buildings with active, street-oriented functions on the ground floor, and uses that are not dependant on pedestrian access and visibility above. To expand the housing choices of the area with a unique residential type (Principle 9), live/work units with business proprietors living above studio, office or workshop space on the ground level would be particularly suited to the Challenger Avenue corridor.

A minimum site depth of 25 metres should be designated for this type of mixed-use development, on both sides of Challenger Avenue.

1.3 (j) A location for a larger, free-standing retail outlet or showroom, such as a hardware or electronics super- store or a furniture warehouse, may be defined on the northeast corner of the Challenger and Gilmore intersection, or flanking the main entry to the shopping centre on Gilmore Avenue, where the new buildings could add to the definition of a ‘gateway’ into the area.

A rich mix of retail, office, entertainment, civic and residential uses keeps the Civic Marketplace active throughout the day and at night

1.4 Building location and scale

The type and distribution of land uses, as defined above, have significant impacts on the function of the Town Centre. The siting and scale of the buildings that contain those uses, however, have a greater influence on the visual character, comfort and quality of the streets and public spaces that make up the area.

In general, buildings should be sited to define public places and movement corridors, creating outdoor ‘rooms’ for public activity. To ensure these rooms have ‘walls’ of a comfortable height, the scale of the buildings should relate to the width of the open space(s) they enclose, and the height of adjacent structures and buildings on the other side of a space.

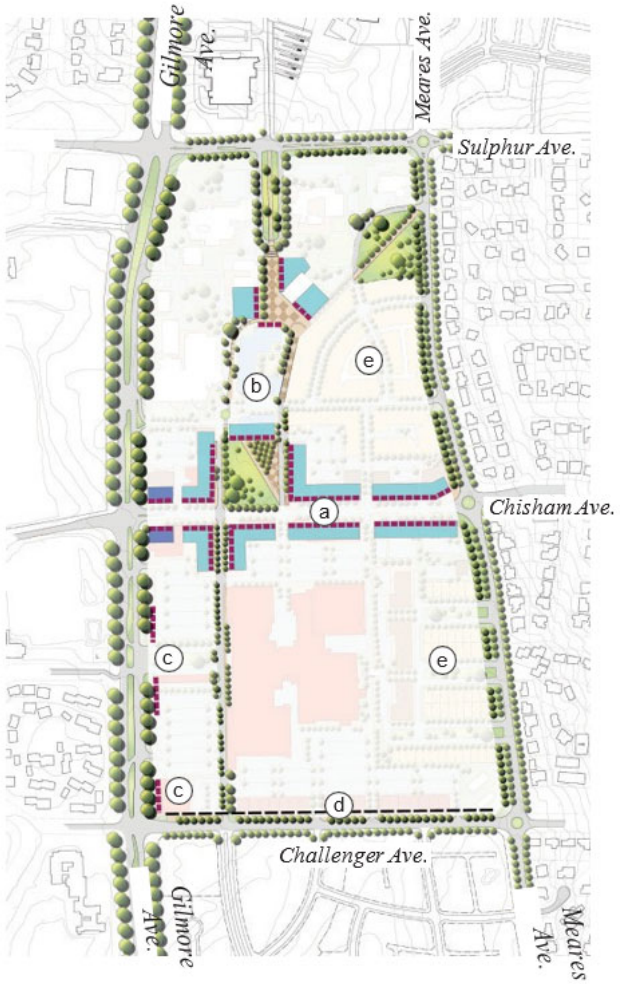


Figure 14: Civic Marketplace: Building location and scale

Siting and scale requirements for specific parts of the Civic Marketplace are summarised in the diagram of Figure 14 below.

1.4 (a) The Chisham Avenue corridor and market square should be recognizable as the focus of public activity in the Town Centre – the most vibrant, colourful, active part of town where one can always find other people and something intriguing to see or do. To emphasize the importance of this ‘main street’, the buildings must work together to clearly define the street and market square. They must be sited to form a continuous building edge enclosing the public space, and they should be of a consistent scale and related architectural character.

Building height recommended on Chisham Avenue is a minimum of two storeys and a maximum of three. Additional height is appropriate at the intersection of Gilmore and Chisham Avenues to create a ‘gateway’ into the Chisham main street. Where a specific use requires only a single storey structure — for example, the tavern at the corner of Chisham and the central north-south spine — special architectural treatments should be included to increase the visual scale of the building, such as extended parapets or a landmark corner element.

All buildings on Chisham Avenue should be built to the property line. This guideline may be contradicted where the alignment of the building facades is set back to define the geometry of the market square, as suggested in the alternative concepts for the market square in Figure 15 below. Any other setbacks in the street facade, such as entry recesses or indentations to provide space for outdoor dining, should be sufficiently subtle that the overall alignment of the building is maintained.

Figure 15: Civic Marketplace: Alternative concepts for the market square

1.4 (b) The public facilities adjacent to the Recquatic Centre and new office development to the north should be sited to define the pedestrian paths leading up the hill and the public space at the top, filling as much of the available land as possible and enclosing the public spaces with more continuous building facades.

1.4 (c) Any stand-alone retail or showroom development on the shopping centre site should be located on the Gilmore Avenue property line to maximize its expo- sure and add visual interest to the Gilmore Avenue corridor. The most suitable locations for such development are at Challenger Avenue where a corner building would anchor the southern end of the retail precinct, or at the main entry where street-oriented development could strengthen the gateway into the retail area.

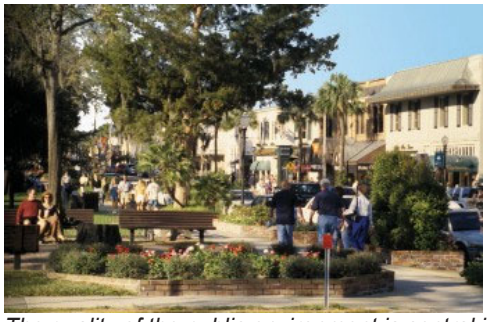
1.4 (d) To achieve a soft, landscaped character on Challenger Avenue, all development is to be setback at least 4 metres from the property line. This setback may contain driveways and short-term parking spaces, but no more than 50% of the total setback area is to be paved.

1.4 (e) All residential development in the Civic Marketplace should conform with the setbacks and lot coverage provisions of the Residential Code.

A generally consistent building line helps to define the public domain

1.5 The public domain

Much of the success of the Civic Marketplace will de- pend on the quality and character of the public domain which is comprised of the streets and sidewalks, public open spaces and pedestrian pathways that will have an effect on the experience of every visit to the Town Centre. The City of Kwinana is planning to commission the design of a suite of public improvements through the central area, which will detail selections in planting, paving, lighting and street furniture, including directional signage, benches, rubbish bins, bike racks, water fountains, etc. The following guidelines do not attempt to preempt any of those detailed design decisions, but to provide the key structural requirements for the major components of the public realm in the Civic Marketplace.



The quality of the public environment is central in attracting people to the Civic Marketplace − and enticing them to stay

1.5 (a) The central north-south spine is, arguably, the most important functional element of the Town Centre, and potentially its most memorable. Everyone coming to the Town Centre will walk, drive or cycle some section of this route during his or her visit, and it will be a critical way-finding cue that will help people comprehend the layout of the area and orient themselves as they move through it. The 'new' section of the spine, from the Recquatic Centre to Challenger Avenue, should be designed to allow comfortable, safe, efficient movement for a mix of cars, pedestrians and bicyclists, according to the indicative sections of Figure 16.

Civic Marketplace: Key elements of the public domain

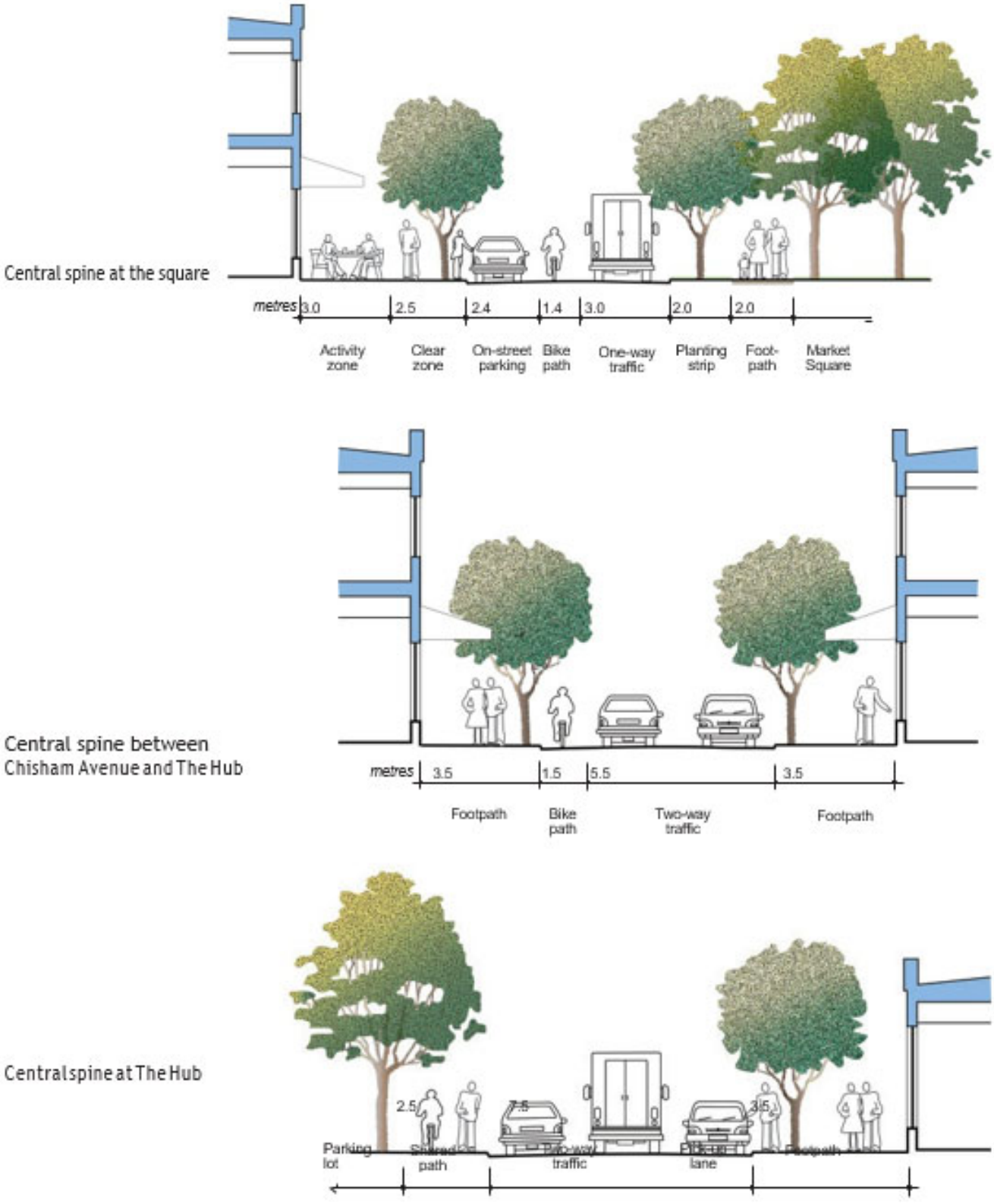


Figure 16: Civic Marketplace: Central spine sections

1.5 (b) To achieve its purpose as a bustling corridor of mixed commercial uses and sidewalk activity, Chisham Avenue needs to strike an appropriate balance be- tween vehicular convenience and pedestrian safety and enjoyment. Figure 17 shows the typical section recommended for this street. The final dimensions of this section may vary to minimize disturbance of the paving and landscape improvements that have already been installed.

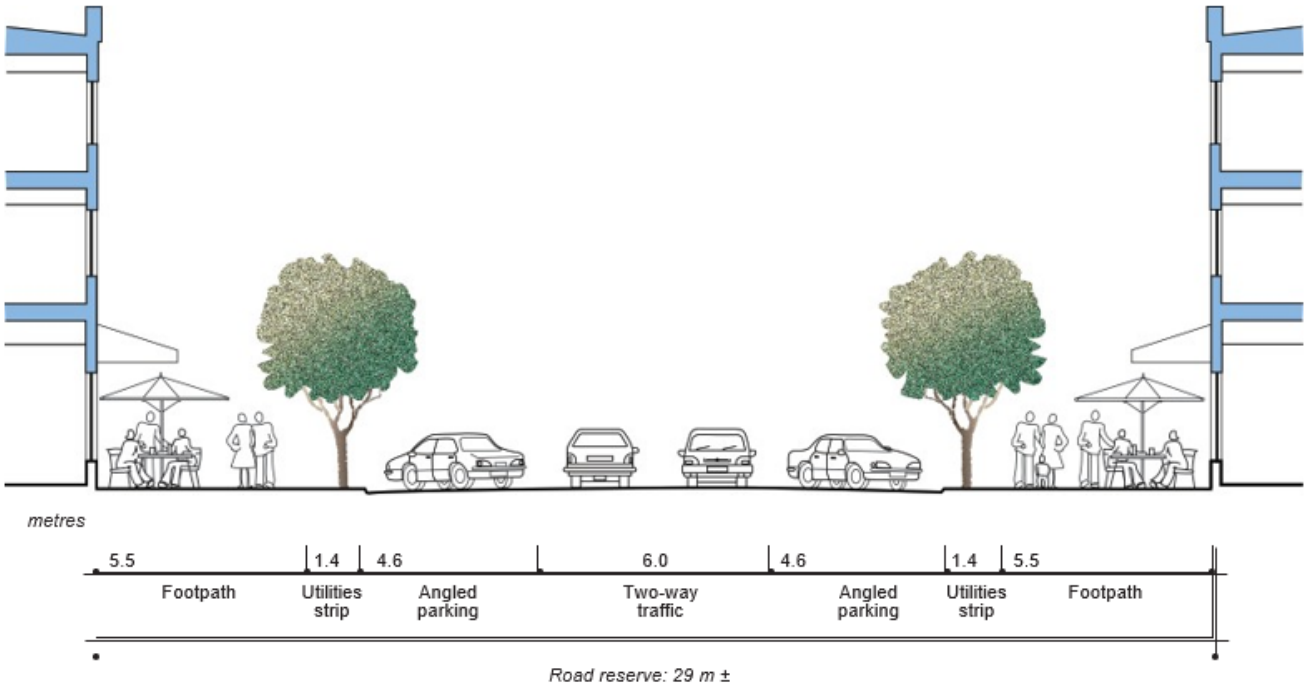


Figure 17: Civic Marketplace: Chisham Avenue indicative section

Paved area for markets and exhibits and lawn section for casual sitting

1.5 (c) Like Chisham Avenue, the market square is to be a multi-functional space that provides for casual, every- day use by shoppers, as well as for occasional markets and special community events. The detailed design of the space will be conditioned by its geometry, but irrespective of its final form, the following characteristics should be included:

- clear connections to the Recquatic Centre and new public facilities adjacent to it —from several points on Chisham Avenue;
- extension of the two hillside paths through the space;
- a section of lawn that will invite casual seating on the grass;

- adequate paved area for temporary market stalls or special exhibits;
- deep shelter during the summer but adequate exposure to winter sunshine;
- power and water supply to support special events;
- adequate lighting to ensure a sense of security at night; and
- public art integrated into the design of the space.

as paving patterns, tree grates, benches, lighting fixtures and bike racks.

1.5 (d) Although Challenger Avenue is also a mixed-use street, it should have a less urban, more relaxed streetscape than Chisham Avenue, according to the typical section of Figure 18.

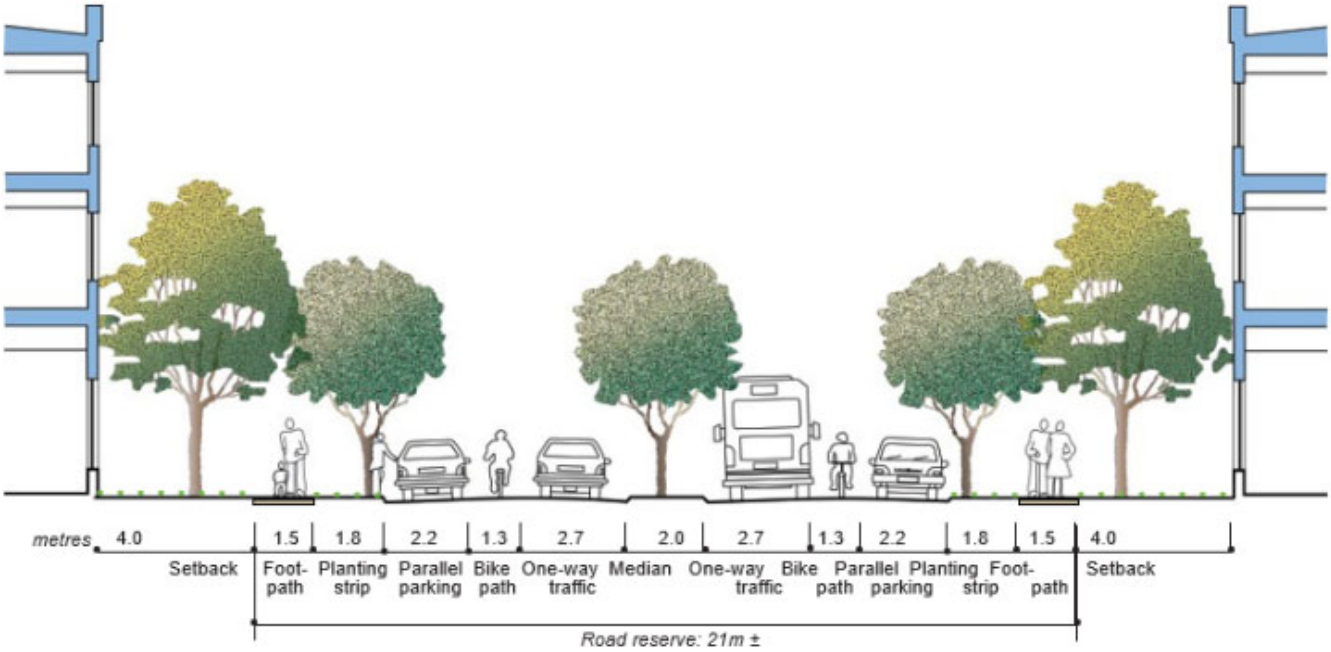


Figure 18: Civic Marketplace: Challenger Avenue indicative section

1.5 (e) Including art in the design of the public realm adds interest to the experience of a place and provides opportunities to educate visitors about the history of the community and the ecology of the region. By commissioning work from local artists and youth groups, or by enlisting the community in judging public art competitions, it is also an effective way to engage residents in the design of their Town Centre, building a sense of local ownership and pride in the revitalization initiative. Rather than monumental installations in designated 'public art locations', a more intriguing approach is to integrate art into buildings and the everyday elements of streetscapes, such

Integrating art into everyday objects and unexpected places adds interest to the public environment

2. Education Precinct

2.1 Objectives

Much of the design character of the Education precinct has already been established in the new high school and TAFE Automotive Centre of Excellence which are currently under construction. These facilities, therefore, are included as given in the concept plan and the guidelines for this precinct focus on the remaining development sites on Gilmore, Sulphur and Orelia Avenues.

The high school and TAFE facilities are the core of this precinct and have established the character of an integrated campus of related buildings, set amongst an elegant landscape of connecting paths and public gathering spaces. Continuation of the "grand axis" of the Civic Marketplace is a central organising element of the new campus which emphasises its connections to other activities in the Town Centre and its integral part in the community life of Kwinana.

Building on this design direction, the objectives for development of the remaining sites are:

- to attract related institutional or corporate uses that will expand education and employment opportunities in Kwinana;
- to reinforce an open and welcoming character in the precinct;
- to create quality public spaces that invite community use; and
- to establish strong connections to surrounding development and the other sub-areas of the Town Centre.

Figure 19: Education Precinct: Development sub-areas

2.2 Gilmore Avenue site

The future use of this site is uncertain at this time. DET has indicated it as a residential site, providing an opportunity to maximize the number of households within walking distance of the educational facilities, and increasing the level of surveil- lance of the school grounds, particularly at night. Alternatively, frontage on Gilmore Avenue and excellent exposure to traffic entering the Town Centre may make the site attractive to other institutional uses with a connection to the education functions, or to a corporate headquarters or cluster of smaller office tenants.

The development future of this site will be determined as the market for residential and office space in Kwinana matures and the need for further institutional sites is revealed over time. Irrespective of the ultimate land use of the site, the following general development guidelines are recommended:

2.2 (a) Primary access to the site is to be from Gilmore Avenue, at the northern end of the parcel, with a new break in the Gilmore Avenue median to allow two- way entry and exit. This access should be a public right-of-way — not a private entry drive — connecting to the new north-south road proposed between the high school and TAFE facilities.

2.2 (b) As a major entry point to the Education Precinct as a whole, the new intersection at Gilmore Avenue should be marked with signage displaying the collection of facilities accessible via this entry, and special landscape treatments indicating entry into the Town Centre area.

2.2 (c) If, based on the development intensity of the site, a second access from Gilmore Avenue is required, it should be aligned with the existing break in the median, approximately 250 metres north of Sulphur Avenue.

2.2 (d) No part of the new development, including access drives and surface parking lots, may intrude into the Gilmore Avenue reserve.

2.2 (e) Buildings should address Gilmore Avenue, presenting an elegantly articulated and, as far as possible, continuous building line along Gilmore Avenue. Buildings fronting Gilmore Avenue may be no more than three (3) storeys in height, stepping down to a maximum of two (2) storeys on the internal north-south road.

2.2 (f) No front setback is required, but buildings may be setback no more than 10 metres from the Gilmore Avenue property line. The setback area, if any, may contain an access drive, but no long-term parking spaces.

2.2 (g) To reinforce the sense of a single, integrated precinct, buildings fronting the internal road should relate in massing and architectural treatments to buildings of the high school across the road. In addition, pedestrian paths and landscape treatments of the Gilmore Avenue site should connect across the road into the high school complex where appropriate, enabling for a seamless integration of the boundaries between different projects and land uses of the precinct.

Figure 20: Education Precinct: Gilmore Avenue site requirements

2.3 Sulphur Avenue site

As for the Gilmore Avenue site, the ultimate use of the area fronting Sulphur Avenue is currently unknown. It is suit- able for office or institutional use, preferably with a functional connection to the educational facilities, or the civic and cultural uses across the road, on the south side of Sulphur Avenue. Because of the very public nature of the Sulphur Avenue corridor west of Meares Avenue, the site is not suitable for housing which would tend to privatize the forecourt of the new high school.

Irrespective of the ultimate land use of the site, the following general development guidelines are recommended:

2.3 (a) Vehicular access to the site is only from the northern extension of Meares Avenue, leaving car-free, landscaped areas fronting Sulphur Avenue and the central pedestrian pathway from Sulphur Avenue to the high school complex.

The TAFE facility under construction on the corner of Gilmore and Sulphur Avenues

2.3 (b) The primary facades of the building (or buildings) on the site must address Sulphur Avenue and the pedestrian spine of the precinct. Buildings should be designed to take advantage of the natural topography of the site, and should relate in scale and character to the adjacent TAFE facility.

2.3 (c) Minimum setbacks from Meares Avenue north and the southern boundary of the school complex are 10 metres. To make a transition between the deep setback of the TAFE facility and the setback line of future housing east of Meares Avenue, a 30 meter zone is defined along Sulphur Avenue, within which the street face of the building must be located. To maintain the visibility of the high school complex from Sulphur Avenue, this zone begins 40 metres east of the pedestrian spine and strikes an angled building setback line to the north, exposing at least half of the first building of the high school complex. No building elements may extend west of this line and the landscape of the setback area should be an extension of the treatments designed for the entry to the school.

2.3 (d) If the southern face of the building is closer to Sulphur Avenue than the TAFE facility, its western corner should include an iconic treatment that will act as a landmark for traffic turning into Sulphur Avenue from Gilmore Avenue, and mark the entry to the precinct for pedestrians using the “grand axis” through the Civic Marketplace.

2.3 (e) If possible, the route of the historic trail across the southeast corner of the site should be preserved, either as an external pedestrian path or as a route through the building, incorporated as an organizing feature of the layout of internal spaces.

Figure 21:
Education Precinct: Sulphur Avenue site requirements

2.4 Orelia neighbourhood expansion

The area east of Meares Avenue is intended for residential development, filling the gap in the existing housing along Orelia Avenue and north of Sulphur Avenue. The key objective of this area is that it is closely knitted into the fabric of the existing neighbourhood, rather than developed as a separate housing enclave or gated community. To meet this objective, while also maximizing the advantage of proximity to the new high school and associated open space amenities, the following development guidelines are recommended:

2.4 (a) A minimum of 10% of the site is to be reserved in a significant public open space or community park. This space is to be located on the Orelia and Sulphur Avenue corner so that it serves existing residents as well as the new homes, and helps to tie the new development into the larger context of the existing neighbourhood.

2.4 (b) The route of the historic trail through the site should be preserved — as a pedestrian access way, a traditional footpath along a residential street, or in a grander celebration of its historic significance, as illustrated in the Concept Plan of Figure 5.

2.4 (c) The western boundary of the development will be the extension of Meares Avenue to the north, connecting with Dargin Place, and hence, to Orelia Avenue. This new street, which is currently under construction, forms the interface between the housing development and the high school and it will be the primary entry route for school staff and students being dropped-off by car. It will therefore carry significant traffic at the beginning and end of the school day, including bus services. To minimize traffic conflicts, the number of intersections with internal roads of the residential area should be limited, but at the same time, the development should be sufficiently permeable to encourage pedestrian access to the high school complex.

The historic trail through the Orelia Neighborhood site

Figure 22: Education Precinct: Orelia Neighbourhood expansion requirements

2.4 (d) Internal streets will be contained in 16 meter road reserves, with one lane of on-street parking, footpaths on both sides and landscaped verges.

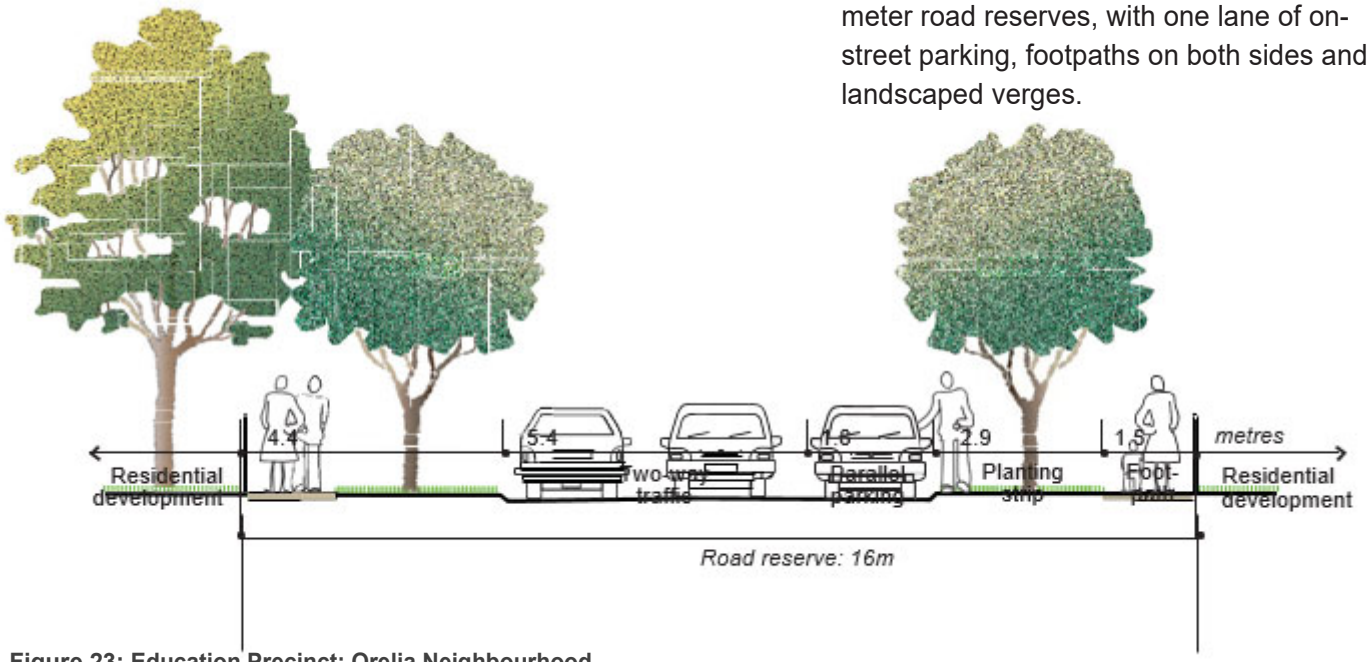


Figure 23: Education Precinct: Orelia Neighbourhood internal roads indicative section

2.4 (e) To avoid garages lining the streets, lots should be provided with rear access laneways wherever possible. These lanes are typically 6 metres wide and should be narrowed to 3 metres at their intersection with neighbourhood streets to reduce the impact of mid-block breaks in the streetscape. Laneways are to be surfaced with pigmented asphalt that differs in colour from the surface of public streets to emphasize their semi-private, service function. They are centrally drained, with the property lines on both sides marked by flush concrete banding.

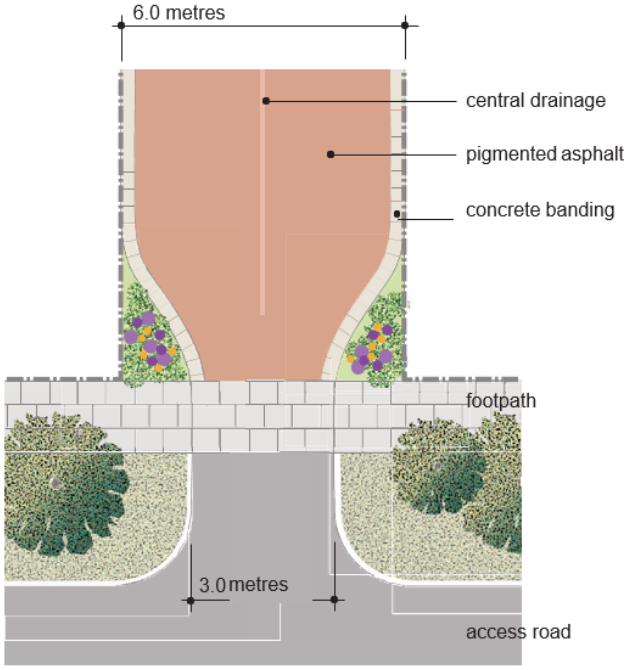


Figure 24: Education Precinct: Orelia Neighbourhood laneways

2.4 (f) To maintain an appropriate relationship with existing housing around the site, the density of development fronting existing streets — Sulphur and Orelia Avenues and Dargin Place — is R20. On the interior of the development, densities of R30 to R50 are recommended to increase the range of housing choice in the area and maximize the number of units within easy walking distance of the high school, TAFE and other facilities of the Town Centre.

Typical rear alley

2.4 (g) Building setbacks, lot coverage and all other matters relating to the development of individual lots are to follow the provisions of the Residential Code.

2.4 (h) Existing mature trees should be preserved wherever possible, and special attention should be paid to the landscaping of public open space, streets and pedestrian paths to reinforce Kwinana's image as a City with extensive open space assets, a unique appreciation of its natural bush land, and a tradition of quality landscape design.

3. Challenger Neighbourhood

3.1 Objectives

At over 37 hectares, the block of undeveloped land south of Challenger Avenue offers an extraordinary opportunity to produce a high quality residential environment with easy access to all the amenities and services of the Town Centre.

At the same time, this large area of natural bushland has been an important community asset for many years. Its development, therefore, should attempt to retain as much of the natural character of the site as possible —maintaining the existing topography where practical, conserving natural drain- age systems, and protecting as many mature specimen trees as possible.

The objectives for this important precinct are:

- to expand the range of in-town housing choices in Kwinana and increase the number of residents within the trade area of the central retail and entertainment uses of the town centre;
- to develop the area in an environmentally sensitive manner that integrates development into the natural bushland quality of the site;
- to tie the development into the fabric of existing neighbourhoods; and
- to reserve a site of approximately 4 hectares for strategic development opportunities of various kinds.

These objectives are addressed by the following design guidelines.

Existing bush of the Challenger Neighbourhood

Gilmore Avenue at the Challenger Neighbourhood

Existing open space on Meares Avenue, opposite the Challenger Neighbourhood

3.2 Site layout

3.2 (a) The proposed development pattern of the neighbourhood should preserve significant stands of native trees, the existing topography, and natural drainage patterns of the land, wherever possible.

3.2 (b) The primary organizing feature of the neighbourhood is to be continuation of the central spine, from Challenger Avenue to Wellard Road, in a special street designed according to the indicative section of Guideline 3.5 be- low. This connection must link directly to the road in front of the shopping centre in the Civic Marketplace, and exit at a point on Wellard Road where a combined pedestrian and bike path can continue south, skirting the Community School at the end of Meares Road, to access the new rail station in Wellard Village.

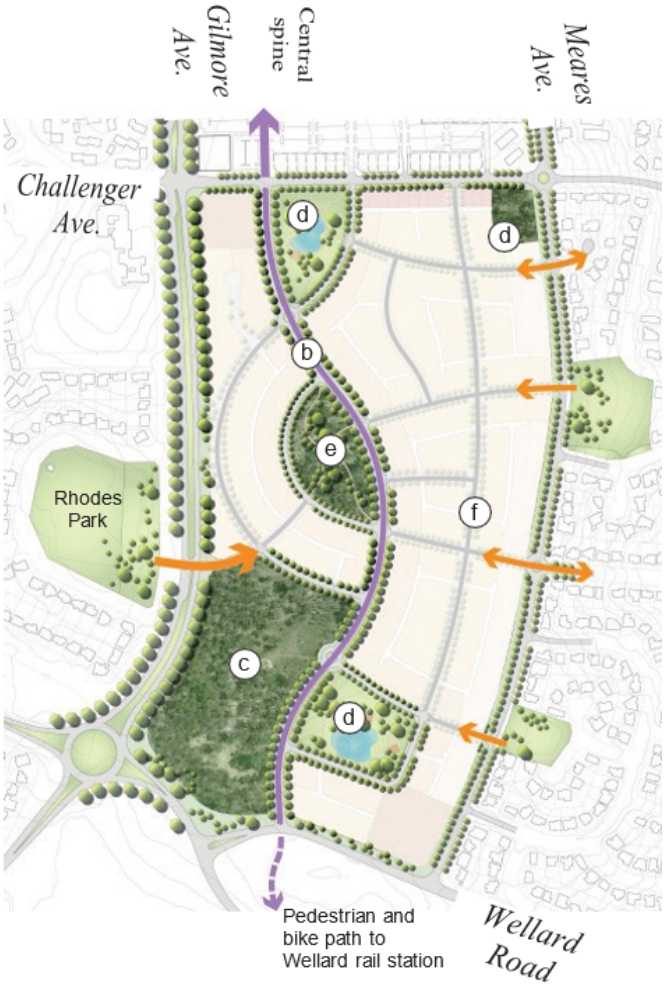


Figure 25: Challenger Neighbourhood: Site layout

The spine road should contact, or provide easy access to, the public open spaces of the Challenger Neighbourhood to create a connected system of amenity through the site. The central spine should also be connected to Rhodes Park on the west side of Gilmore Avenue, and to the two smaller parks on the east side of Meares Avenue, providing a wider network of public open space that helps to knit the new neighbourhood into the fabric of existing development.

3.2 (c) The required strategic development site should remain undeveloped on the corner of Gilmore Avenue and Wellard Road. Since the ultimate development pro- gram is unknown, the flexibility of the site should be maximized in an approximately square configuration, with access available from both internal sides.

Because the likelihood of a strategic development is only speculative at this time, the layout of internal streets in adjacent sections of the Challenger Neighbourhood should allow for extension of the residential fabric through the reserve site, without a break in the continuity of the neighbourhood, should a suitable strategic use not materialize within a reasonable time frame.

3.2 (d) A minimum of 15% of the site must be developed for the purposes of public open space. This area should include the existing drainage basin on the corner of Challenger and Meares Avenues, and two spaces located on the lowest points of the site where they can serve as both community recreation facilities and natural drainage areas. One or both of these spaces could be developed to contain an artificial pond as part of the landscape concept of a ‘manicured’ community park. Alternatively, they could maintain a more natural bushland quality, with native wetland species introduced to purify stormwater run-off in an educational “eco-park” environment.

3.2 (e) If a third open space is required to make up the necessary 15%, it should be located on the highest point of the site (see Figure 25) to provide a variety of open space qualities in the development.

3.2 (f) Internal streets through the site should be designed as an inter-connected network, providing multiple entry points and circulation routes through the new neighbourhood. Cul-de-sac and staggered junctions are to be avoided. Intersections with Meares Avenue should align with existing streets where possible to create a seamless integration with existing development to the east. No single street, however, should connect directly between Gilmore and Meares Avenues to avoid encouraging through traffic to short-cut through the Challenger neighbourhood.

At least one of the open spaces should be developed as a manicured park suitable for special events such as a wedding or neighbourhood picnic ....

.... the other can be more 'natural', with an un-structured water body and native plant materials

3.3 Land use

3.3 (a) In order to preserve the concentration of commercial uses in the Civic Marketplace, the Challenger neighbourhood is focused on residential development of various types and tenure, including single family homes and group dwellings, ownership and rental options, special needs housing and retirement complexes.

3.3(b) Non-residential uses may only be developed on the strategic development site provided at the corner of Gilmore Avenue and Wellard Road, on the Gilmore and Challenger Avenue corner, and on sites fronting Challenger Avenue, to a maximum depth of 25 metres from the street frontage (Figure 26). Mixed use development is strongly encouraged in the Challenger Avenue corridor, in a variety of live-work combinations that provide a unique housing option, supporting small, home-based businesses, professionals working from home, or members of the creative community who need suitable studio space near where they live.

3.4 Development density

3.4 (a) To achieve a variety of housing types in residential- only sections, the density of development across the neighbourhood should vary, from single-family houses similar in density to existing development, to higher density complexes of garden apartments or other types of multi-family dwellings. The average, density of the neighbourhood, however, must not exceed R40 (40 dwelling units per hectare).

3.4 (b) Development fronting Meares Avenue should be at the lowest density, matching the density of the existing housing across the street (R20). This is to achieve a consistent building edge on both sides of the avenue which will help to integrate the new development into the character of the existing neighbourhood to the east.

Typical R-30 townhouse development

Higher densities should be located around the public open spaces

Figure 26: Challenger Neighbourhood: Land use and density

3.4 (c) Medium densities (R40 – R50) are recommended for sites fronting Gilmore Avenue. Although this is inconsistent with the R20 density of existing development to the west, the width of the Gilmore Avenue corridor makes it impossible to form visual connections across the street, particularly with single-storey buildings on either side. A higher density is warranted to create a stronger street edge along Gilmore Avenue, and to take advantage of the wide street verge which provides a buffer from traffic impacts and adequate space for an attractive landscaped setting for the new housing.

3.4 (d) The highest density sections of the development (R60 − R80) should be on sites adjacent to public open spaces, where the effects of density are mitigated by immediate access to outdoor amenities, and impacts on existing residential areas are minimized. In addition to internal, open space oriented sites, a higher density complex may also be developed on the corner of Meares Avenue and Wellard Road. Additional bulk and height in a building or buildings at this intersection will anchor the southeast corner of the new neighbourhood, and visually mark the entry to the Town Centre area from the south and east.

3.4 (e) To maintain a coherent scale and character in the streetscapes of the neighbourhood, densities should typically be the same on both sides of a street. Significant changes between density zones should occur mid-block or along rear access alleys, rather than along a street or other public right-of-way.

3.5 Street design

The concept of a network of streets differs from the typical practice of a functional hierarchy of streets. Its purpose is to provide multiple routes between destinations, thus distributing traffic more evenly across an area and avoiding the congestion that inevitably arises when traffic is channelled onto a single major route. The street sections of a network system, therefore, tend to be relatively consistent throughout the neighbourhood.

Nevertheless, street sections of the Challenger neighbourhood should vary in response to changing traffic volumes in different parts of the site, and to provide variety in the streetscapes of the development. The indicative sections below are recommended for the different street types indicated in the diagram opposite.

Rear alleys are also recommended for utilities, services and access to garages. They should be designed according to Guideline 2.4 (e) [Figure 24] of the Orelia Neighbourhood.

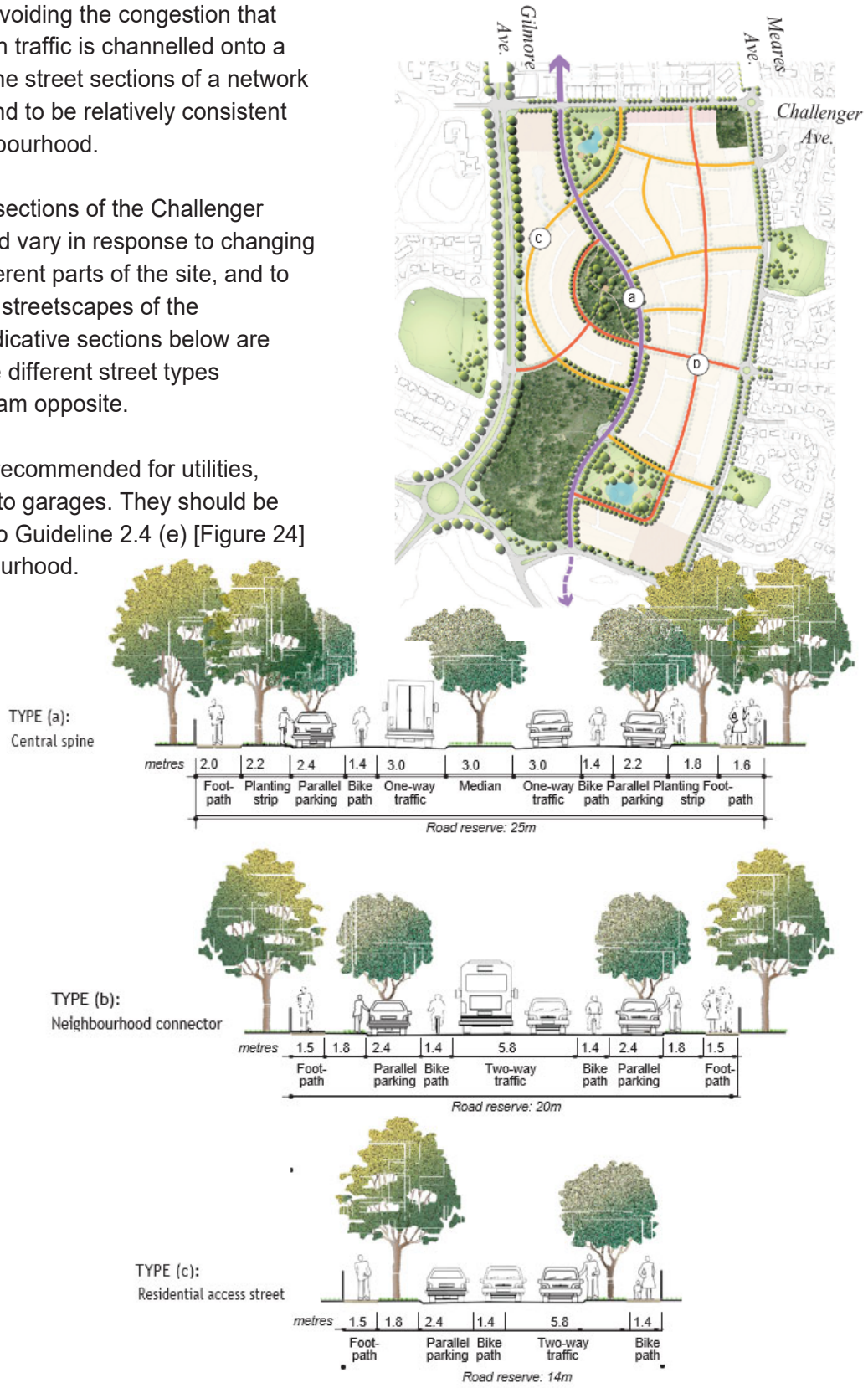


Figure 27: Challenger Neighbourhood: Street Types

With appropriate management and augmentation, the existing bush provides a strong foundation for a variety of public open spaces in the Challenger Neighbourhood

3.6 Landscape principles

The primary landscape objective for the Challenger neighbourhood is to retain as close a connection as possible to the natural bushland character of the existing site. In addition to the general landscape guidelines of Section 5 below, the following approaches to treatment of the existing vegetation of the Challenger Neighbourhood are recommended:

3.6(a) Existing indigenous vegetation should be retained, wherever possible.

- Healthy upper canopy trees such as tuart (Eucalyptus gomphocephala) and jarrah (E. marginata, and E. calophylla), with a trunk diameter greater than 400 mm, should be retained where possible and trimmed of any dead wood.
- Grass trees (Xanthorrhoea preissii) with a trunk height greater than 750 mm should be retained in situ if possible. Alternatively, they should be suitably prepared and relocated nearby.
- Remnant middle canopy endemic species such as banksias (e.g. Banksia attenuate or B. menziesii) and she-oaks (e.g. Allocasuarina fraseriana) generally have shorter life cycles than the eucalypts and therefore, can be removed without significantly affecting the natural ecology of the site.
- Remnant indigenous vegetation, particularly jarrah, is sensitive to changes in soil conditions such as the nutrient load or level of compaction. Existing topography, therefore, should be retained in the vicinity of remnant vegetation. A zone around each remnant specimen, approximately equivalent to the area of the crown, should be mulched or planted as a more satisfactory alternative to turf.

Building Guidelines

4.1 Architectural objectives

Existing buildings of the Town Centre vary widely in form and style and offer nothing of an architectural expression that is unique to Kwinana or the region. Arbitrarily adopting a style as a 'theme' for new construction is a common way of establishing a recognizable image, but it is a superficial approach that holds no particular relevance or meaning for the community. Instead, it is ultimately more effective to avoid the notion of style altogether and commit to:

- contemporary buildings of quality construction and materials,
- designed as a contribution to the collective, rather than as individual monuments,
- in sympathy with adjacent buildings, natural land forms and existing vegetation,
- with flexible floor plans that can be readily converted to alternative uses, and
- environmentally responsible features that make them energy efficient and water-wise.

Buildings of the Town Centre will be generally between one and three storeys in height, with footprints that vary according to their function. Although the centre supports a wide range of building types, the following general principles apply to all structures.

Simple, contemporary architecture of quality materials and construction is expected in all building types of the Town Centre

4.2 Building form

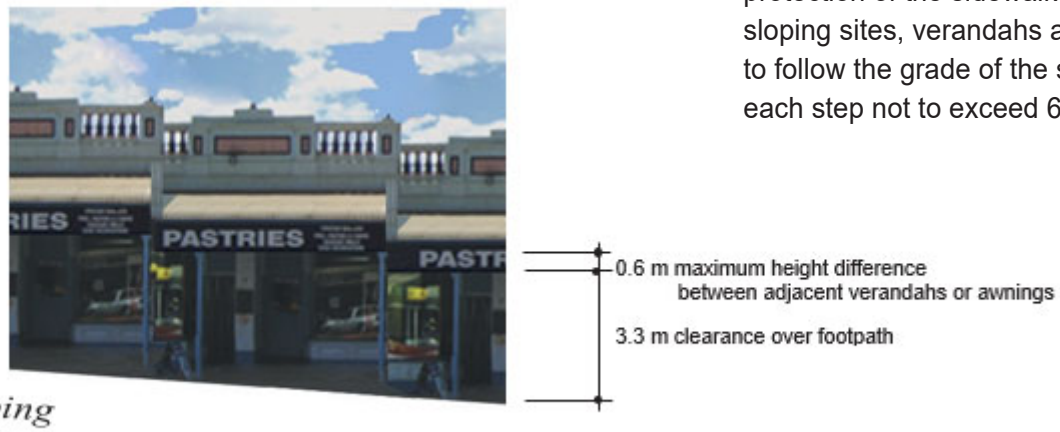
4.2 (a) Traditional pitched roofs are preferred in most parts of the Town Centre, but alternative roof forms, such as skillions, saw tooth and curved roofs, may be approved in appropriate locations. Mansard roofs, complex forms that combine several roof types, and pseudo-historical details such as dormers and cupolas will not be approved. On Chisham Avenue, where the buildings are to create the continuous frontage of a traditional main street, flat roofs behind parapets are encouraged.

4.2 (b) Building facades, on all sides of the structure, shall be designed to promote a sense of human scale, including recessed doors and deep window reveals, string courses that express floor levels and window sill and head lines, articulated parapets, projecting balconies and awnings, and pilasters that break up the expanse of otherwise featureless walls. Blank, unarticulated walls should be avoided in all instances, and will not be permitted facing a street, pedestrian pathway or public space.

4.2 (c) The main entry to a building or tenancy should be clearly identifiable and expressed with a pediment, awning or recess, as appropriate to the overall composition of the facade.

4.2 (d) Balconies, awnings and verandahs are encouraged to break down the mass of a continuous facade and to provide shade. Balconies may project up to 900mm beyond the property line, with a minimum clearance of 600mm above passing traffic, including buses and emergency service vehicles. Projections beyond a lot boundary must also avoid interference with the growth of nearby street trees.

Balconies or verandahs over footpaths must have a clearance of 3.3 metres. Abutting projections should be of similar, preferably the same, design and must be finished to maintain continuous weather protection of the sidewalk below. On sloping sites, verandahs are to be stepped to follow the grade of the sidewalk, with each step not to exceed 600mm.



Sloping sidewalk

4.3 Building materials

4.3 (a) Masonry is the preferred building material − predominantly natural brick, face rendered or painted. Clay or ceramic tiles, and marble, granite or other stone claddings should only be used to delineate entrances or provide special decorative features. Standing seam or corrugated sheet metal panels may be used as decorative accents or in feature walls, but not as the primary building material. Other unacceptable materials include pre-manufactured timber panelling and faux-stone claddings, which should be removed from any existing structures undergoing renovation and expansion.

4.3 (b) Acceptable roof materials include clay tiles, copper, zinc, natural or reconstructed slate, colour bond steel and zincalume custom orb. 'Green' roofing systems are encouraged but will be reviewed on a case-by-case basis, evaluating the environmental benefits, potential impacts on adjacent properties and the view from the public domain. Similarly, solar panels, photovoltaic modules, wind power generators and any other renewable energy equipment mounted on a roof will be reviewed on its merits.

4.3 (c) No reflective materials will be permitted on walls or roofs, and reflective or obscure glass in windows and doors is prohibited.

4.4 Shopfront design

4.4 (a) While allowing each tenancy to express its individual identity, storefronts on the ground floor of mixed-use buildings are to be designed as an integral part of the overall building. Although the elevation of the storefronts will be different from the floor(s) above, the entire building facade should read as a coherent com- position, and the margin that separates each tenancy should be consistent with the materials and detailing of the overall building.

4.4 (b) Storefronts should be highly articulated with bay windows and recessed doorways to add interest to the sidewalk. The predominant material of a storefront should be glazing, with a solid base panel of a maxi- mum height of 600mm. The materials and finishes of this base panel must be hard-wearing, capable of withstanding damage from shopping carts, delivery trolleys and other potential hazards on the footpath.

4.4 (c) Roller shutters will not be permitted unless they provide a clear view into the store when closed and are totally concealed from view when open.

4.5 Service areas

4.5(a) All services, transformers, storage and deposit areas, and wheeled rubbish bins must be effectively screened from view.

4.5(b) Screening walls or plant masses shall be at least 2.4 metres high and must conform to the following requirements:

- All screening shall be designed to allow free and easy access to the facilities, as required to permit maintenance and checking by all relevant parties, including service authorities, township officials, tenants and property owners.
- Screening walls and plant materials shall be selected which have no adverse impacts on the operation of the facilities.
- Service cubicles, transformers and boxes shall be painted according to the required standards of the relevant service authority, in colours that limit their visual impact.
- Planting types shall be evergreen species, providing sol- id visual screening to a minimum height of 2.4 metres. While planting approaches to screening are preferred, walls or fences may be used where appropriate, in form, scale, colour and texture related to adjacent structures and the building to which the services are attached.

4.5(c) All air conditioners must be located in areas where any noise and dripping condensation will have minimal impact on the public domain. No roof or wall mounted air conditioners shall be visible from public areas.

4.5(d) Television antennas are to be located within the roof space wherever reception permits. Special planning permission is required for the installation of satellite dishes and radio masts.

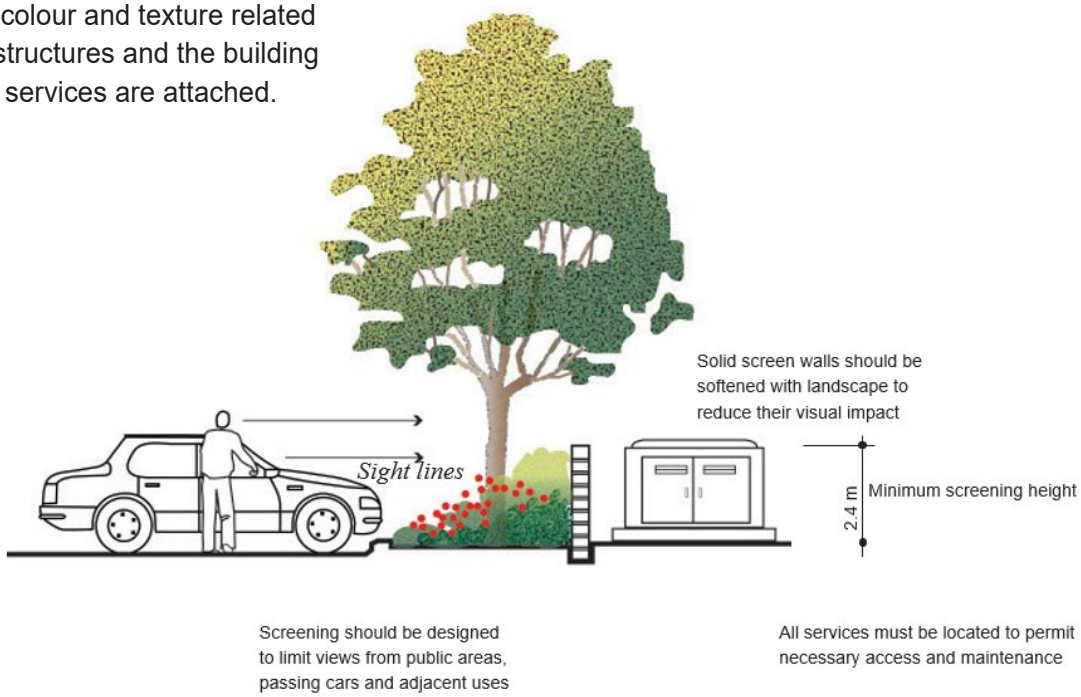


Figure 28: Screening of service areas

4.6 Security and maintenance

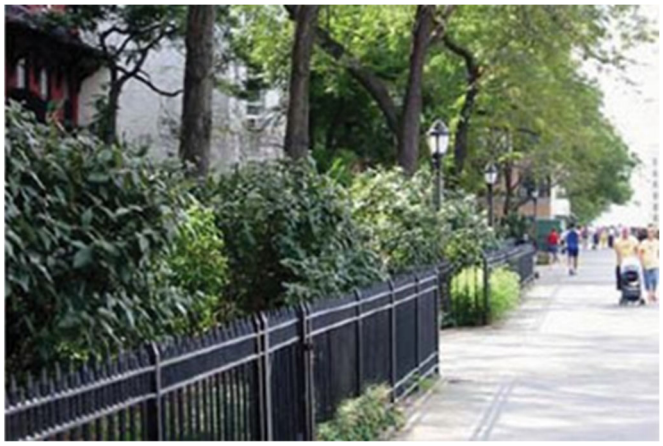
4.6(a) The design of all buildings, fences and landscape elements shall take sight lines, both horizontal and vertical, into consideration to minimize blind spots and promote a sense of security throughout the Town Centre for pedestrians, bicyclists and motorists.

4.6 (b) All streets, alleys, bike paths and pedestrian walkways must be adequately lit at all times. In general, lighting shall be installed to ensure the safety of all circulation routes, to floodlight large, open areas, including parking lots and public open spaces, and to highlight landmarks and other special building features.

Lighting fixtures must be sturdy, durable, vandal resistant and easily maintained. Fixtures visible from the public domain should be mounted at a height of at least 2.7 metres, and their appearance should compliment the architectural and landscape character of the location.

All light sheds must minimize impacts on adjacent commercial premises, and have no impact on any residential property.

4.6(c) All buildings and open spaces of the Town Centre must be adequately maintained at all times, including the timely repair of damage to any building or land- scape element, removal of graffiti and regular rubbish pick-up. Durable and easily cleaned materials should be selected in all areas exposed to the public, and all masonry surfaces to a height of 3 metres should be protected with an approved anti-graffiti treatment.



Fencing and planting should be designed to achieve an appropriate balance between screening and security

4.7 Sustainable design

The City of Kwinana is committed to sustainable design and will expect a strong commitment to the principles of 'green architecture' in all building projects. In particular, building applications will be reviewed for:

4.7(a) Energy efficiency, demonstrated through:

- siting to take advantage of opportunities to integrate passive and active solar strategies,
- maximizing natural ventilation,
- incorporating strategies to maximize natural lighting,
- orientation to maximize north-facing windows and reduce the amount of glazing facing directly south or west,
- the appropriate use of eaves, overhangs, pergolas or other external shade devices to permit winter sun and block summer sun.
- using light colours in roofing and wall materials to re- duce heat gain in summer,
- using high R-value wall and ceiling insulation, and
- use of alternative energy sources such as photovoltaics and fuel cells.

4.7(b) Material efficiency:

- Select sustainable construction materials by evaluating characteristics such as reused and recycled content, sustainably harvested materials, high recyclability, longevity and local production.
- Use dimensional planning and other material efficiency strategies to reduce the volume and waste of materials needed.
- Allow for the reuse and recycling of construction and demolition materials and require that all development plans incorporate sustainable practices in the management of materials throughout demolition and construction.
- Design with adequate space to facilitate recycling col- lection and to incorporate a solid waste management program that prevents waste generation.

New energy efficient technologies, such as solar roofing, should be used wherever feasible

4.7 (c) Stormwater management and water efficiency:

- Limit disruption and pollution of natural water by managing and reducing runoff and promoting infiltration through: green roofs, pervious paving, grey water reuse, constructed wetlands, vegetated filter strips and bioswales.
- Design for dual plumbing to use recycled water for toilets or a grey water system that recovers rainwater or other non-potable water.
- Landscape with natives and plants that have low water and pesticide needs as well as generate minimum plant trimmings, and
- Use composts and mulches.

On-site rainwater collection should be considered in both commercial and residential development

'Green screens', in fencing and on building façades and courtyard walls, can significantly reduce heat loads and improve air quality

Landscape Guidelines

5.1 Landscape objectives

The quality of Kwinana's public open spaces and streetscapes is one of the town's most distinctive features, providing a unique landscape tradition that has preserved much of the natural quality of the native bushland. The Town Centre should seek to capitalize on this special character, in the development of streets and public places that:

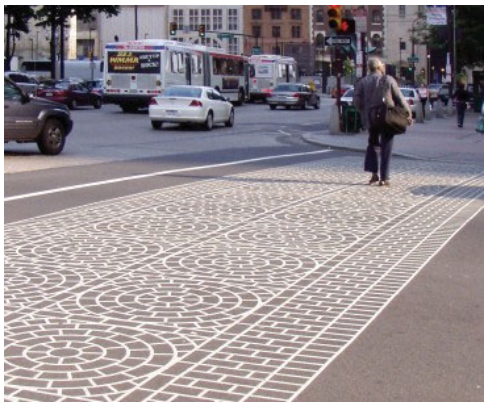
- preserve the qualities of the natural bushland of the area, wherever possible,
- mitigate the disturbance of natural systems and plant and animal habitat,
- minimize energy and water use,
- provide information about the ecology of the area and its environmental challenges, and
- encourage people of all ages and abilities to enjoy the outdoor amenities of the Town Centre.
- To achieve these broad objectives, the following practices should be observed in all public and private landscape projects:

5.2 Hardscape elements

5.2 (a) Paving design in public and private areas should conform to the following requirements:

- Readily available segmented paving materials should be used throughout to ensure easy access to underground services and cost-effective replacement in the event of damage or discolouration.
- All paving materials must conform to relevant standards for durability, non-slip textures, strength and surface treatment to withstand use by light automobiles, service vehicles, pedestrians and bicycles.
- Paving materials should also be certified colour stable for a period of at least 20 years to ensure a reasonable match to existing paving when damaged sections are replaced.
- All paved areas should be adequately drained, and follow 'best practises' in installation, including sub-surface preparation and stormwater management.
- All paved areas must be properly designed to facilitate use by the elderly and disabled.

Existing open space to be preserved as a community park on Hutchins Cove, in the Civic Marketplace



Special crosswalk treatment, using common modular paving materials

Coordinated bench, rubbish bin, bike rack and lamp post

Unique paving patterns, designed by local community artists

5.3 Softscape elements

5.3(a) In keeping with the special landscape qualities of Kwinana, a generally high standard of planting and landscape design is expected throughout the Town Centre. Planting in all precincts must:

- consist of species which complement remnant native vegetation,
- focus on hardy, drought tolerant, easily maintained species,
- be of an appropriate scale in relation to the function of the area, and
- be designed to contribute to, or create, specific character areas, preferrably with simple and clearly identifiable themes.

5.3 (b) In all parts of the Town Centre, existing vegetation must be preserved wherever feasible, and particularly where it is determined to be 'valuable' — either aes- thetically, because of its maturity or visual domination of a specific location, or ecologically, because of its role in the natural systems of a specific location, such as a wetland or old growth forest.

5.3 (c) Plants should be selected with regard to the level of on-going maintenance that is likely to be available. Maintenance is an integral part of landscape design, and before designing a planting scheme for an urban area, it is vital to know what maintenance resources are available. Irrespective of their suitability on other dimensions, species with heavy maintenance demands should be avoided wherever the resources for proper maintenance are not fully committed.

5.3 (d) To ensure plants establish successfully, they require the appropriate soils, conditions and maintenance for the first two years after planting. They also need to be guarded against vandalism, and additional plants should be set aside in the event that replacements are required during this critical period. Irrigation is essential in this period and adequate provision should be made for sufficient underground irrigation, both during establishment and ongoing as necessary.

5.3 (e) Urban environments are often hostile to planting and trees may require protection from the mechanical damage of vandalism and vehicle impacts, as well as the environmental damage of polluted surface run-off. In highly trafficked areas, tree guards must be installed to protect young trees from mechanical damage, and tree grates should be installed to allowing surface water to percolate into the soil. Raised kerbs or edgings should not be used around the base of a tree as they obstruct drainage and can collect litter.

5.3(f) In accordance with current 'best practice', all planting works should observe the following procedures:

- all planting is to be carried out in the correct planting season,
- the ground is to be properly prepared in advance of the delivery of planting stock,
- the plants are to be properly prepared by the nursery,
- back-fill material is to be a good quality soil − as specified by the landscape architect, and tested if necessary,
- correct staking materials and methods are to be used, and
- the works should be supervised by a landscape architect or arborist, particularly if the location of any specimen trees or plants need to be finely tuned on site.

5.4 Parking areas

The landscape of parking lots is critical to the visual appeal of any area and can contribute significantly to the comfort and convenience of motorists by clarifying circulation patterns and increasing the amount of shade available. All surface parking areas of the Town Centre should conform to the following requirements:

5.4 (a) Trees of a minimum 100 litre pot size shall be provided in the ratio of 1 tree for every 8-10 car bays. All tree planting areas shall be a minimum of 2 square metres in area and shall be located to meet all requirements related to safe vehicle and pedestrian circulation and preserving required sight lines.

5.4 (b) Selected trees must be hardy, deciduous shade trees, capable of under-pruning to a minimum height of 2.5 metres to ensure clear sight lines and reduce vehicle conflicts. Species should compliment the landscape character of adjacent areas where possible, but not at the expense of compromising their function in the parking area.

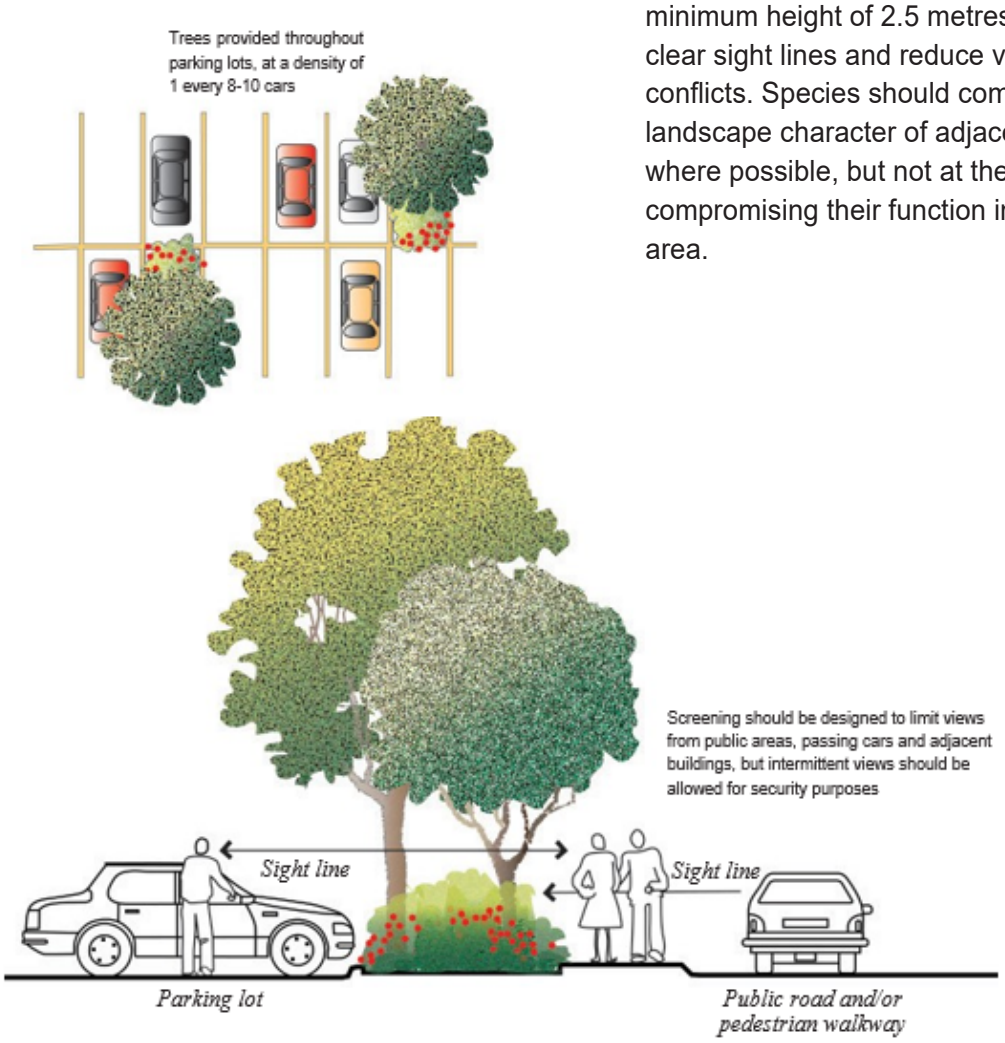


Figure 29: Parking lot planting requirements

5.4 (c) Understorey planting is to be incorporated at the base of trees in traffic islands that are greater than 20 square metres in area. Understorey planting should be designed to allow pedestrian access across traffic islands at regular intervals of 20 metres, or 8 parking bays. Islands smaller than 20 square metres are to be paved.

Where possible, planting islands should be designed as natural drainage swales, allowing run-off from parking lots to irrigate trees and understorey planting and re-enter the groundwater. Breaks should be provided in parking kerbs to allow water to flow into the swale, and native grasses and shrubs should be selected that contribute to the purification of the run-off.

5.4(d) Installation of parking area plantings should observe the following practices:

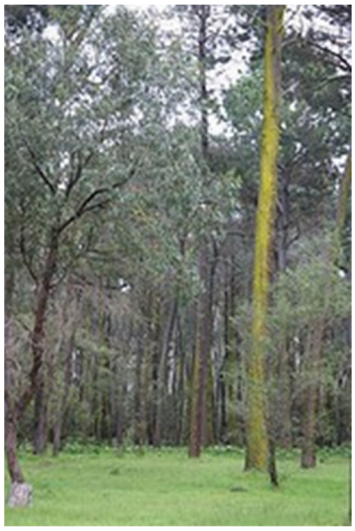
- all planting areas shall contain at least 1 cubic meter of imported black soil, free of road base, bitumen, concrete, limestone or other rocks;
- all planting beds are to be properly drained to prevent ponding or saturation of root balls;
- all trees are to be mulched and staked with at least 2 hardwood or treated pine stakes tied to the tree trunk; and
- all trees in small planting areas surrounded by hard surfaces shall have some method of root control to prevent up-lifting of the paving.

5.4(e) Perimeter planting is required wherever a surface parking area faces a public street or pedestrian walk- way. While screening is a key objective of perimeter planting, it should be sufficiently transparent to allow views into the carpark from adjoining public areas for security purposes.

Perimeter plant materials shall include trees similar to (or the same as) the species used on the interior of the lot, spaced at 10 metres on centre. Evergreen shrubs, rather than grasses, shall be used as understorey planting, in a continuous line along the perimeter. These shrubs should be trimmed to a maximum height of 1.2 metres to maintain visual surveillance of the interior of the parking lot.

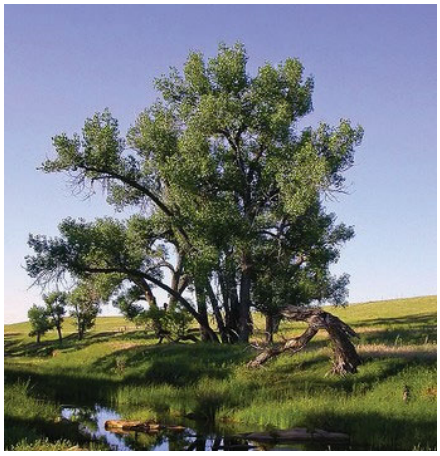
Parking lot drainage swales

Large, mature trees provide deep shade in an inner suburban parking lot



Eucalyptus gomphocephala: Tuart

Banksia grandis: Bull Banksia



Acer negundo: Box Elder

5.5 Recommended plant list

This list is intended as a guide only and is provided to illustrate the general design intent of landscape development in the Town Centre.

It is divided into trees and shrubs. In both sections, plants marked with an 'E' are evergreens which maintain year- round foliage and are useful for structure planting. Typical mature heights are noted for the trees, and predicted mature height x spread is included for each of the shrubs.

5.5 (a) Trees

Medium/large canopy trees
Informal habits, suitable for use in shelterbelts, parkland or roadside woodland

- Casuarina cunninghamiana: River She-Oak (10-30m) E
- Casuarina equisetifolia: Beach She-Oak (6-15m) E
- Casuarina glauca: Swamp Oak (10-15m) E
- Casuarina torulosa: Forest Oak (6-20m) E
- Eucalyptus gomphocephala: Tuart (15-35m) E
- Eucalyptus microtheca: Coolibah (10-20m) E
- Eucalyptus nichollii: Willow Leafed Peppermint (12-16m) E

Small/medium trees
Informal habits, suitable for use in parkland, reserves, shelterbelts and for screening.

- Banksia grandis: Bull Banksia (8-14m) E
- Banksia prionotes: Acorn Banksia (4-12m) E
- Eucalyptus lansdowneana: Crimson Mallee Box Tree (3-12m) E
- Eucalyptus macrocarpa: Mottlecah (3-4m) E
- Eucalyptus platypus var. heterophylla: Marlock (4-8m) E
- Eucalyptus torquata: Coral Gum (5-10m) E
- Grevillea barklyana: Gully Grevillea (4-10m) E
- Melaleuca lanceolata: Dryland Tea Tree (4-6m) E
- Metrosideros excelsa: Pohutukawa (9-12m) E

Medium/large canopy trees
Formal habits, suitable for street trees, major entry areas, carparks, and as large feature trees

- (10-20m)
- Agonis flexuosa: Willow Myrtle (8-15m)
- Angophora costata: Red Gum (10-25m) E

Brachychiton acerifolius: Illawarra Flame Tree

- Brachychiton acerifolius: Illawarra Flame Tree (6-15m)
- Celtis australis: European Hackberry (15-20m)
- Eucalyptus ficifolia: Red Flowering Gum (12-15m) E
- Eucalyptus maculata: Spotted Gum (20-30m) E
- Eucalyptus microtheca: Snow Queen (10-20m) E
- Fraxinus griffithii: Griffith's Ash (9-12m) E
- Jacaranda mimosifolia: Avenue (10-15m)
- Liquidamber styraciflua: Gumball (15-20m)
- Lophostemon conferta: Queensland Box Tree (10-25m) E
- Platanus orientalis: Oriental Plane Tree (15-18m)

Small/medium trees

Formal habit, suitable for street trees, entry areas, residential areas, and smaller feature trees

- Fraxinus oxycarpa 'Raywoodii': Raywood Ash (7-9m)
- Hibiscus tiliaceus rubra: Bronze Hibiscus (7-9m)
- Hymenosporum flavum: Native Fragipani (3-8m) E
- Olea europea 'Mission': Wild Olive(8-10m) E
- Pyrus ussuriensis: Chinese Pear (7-9m)
- Robinia pseudoacacia 'Frisia': Black Locust (5-8m)
- Sapium sebiferum: Chinese Tallow Tree (8-10m)
- Tipuana tipu: Pride of Bolivia (9-12m)
- Citrus species (lemon, orange)

5.5 (b) Shrubs

Ricinocarpus tuberculatus: Wedding Bush

Medium/Large Shrubs

Native shrubs or small trees generally over 2.5m which provide a substantial physical and visual barrier. Character is informal. Uses include wind break/ shelterbelts and green buffers. They also contribute to wildlife habitat creation. Usually at or above eye level and can help to screen low rise buildings.

- Adenanthos sericea: Coastal Woolly Bush (6 x 5m) E
- Callistemon phoeniceus: Lesser Bottlebrush (2.5 x 4m) E
- Callistemon viminalis: Weeping Bottlebrush (10 x 5m) E
- Calothamnus quadrifidus: One-sided Bottlebrush Sims (4 x 4m) E
- Grevillea olivacea: Grevillea (3.5 x 2.5m) E
-

Acacia pulchella: Prickly Moses

Callistemon viminalis: Weeping Bottlebrush

- Melaleuca fulgens: Scarlet Honey Myrtle (2.5 x 2m) E
- Melaleuca incana: Grey Honey Myrtle (2.5 x 2.5m) E
- Ricinocarpus tuberculatus: Wedding Bush (3.5 x 3m) E

Small/Medium Shrubs

Native shrubs, generally between 1 and 2m high, which provide a physical barrier and help to enclose or edge informal spaces. Character is informal. Native shrubs also contribute to the creation of wildlife habitats. Generally the height remains below eye level and therefore, can screen at a lower level, or provide a graduated edge to shelterbelts.

- Acacia pulchella: Prickly Moses (1.5 x 1.5m) E
- Correa reflexa: Native Fuchsia (prostrate/2m – 1.2m) E
- Grevillea brachystylis: Grevillea (1 x 0.65m) E
- Leptospermum scoparium: Manuka/Tea Tree (prostrate/2.2 x 1.2m) E
- Leptospermum sericeum: Leptospermum (1.5 x 2m) E
- Olearia axillaris: Coast Daisy Bush (2 x 2m) E
- Thryptomene saxicola: Payne's Thryptomene (1 x 1.5m) E

Medium/Large Shrubs

Mostly native shrubs and small trees, generally over 2.5m, which provide a substantial physical and visual barrier. General character is more formal, with valuable amenity features such as attractive flowers or foliage providing seasonal colour and accents.

Uses include the creation of a green background to planting areas, or as a screen at or above eye level that can help to screen low rise buildings and provide privacy in gardens.

- Beaufortia squarrosa: Sand Bottlebrush (3 x 2.2m) E
- Grevillea thelemanniana pinaster: Grevillea (1.5/3 x 3m) E
- Callistemon viminalis 'Captain Cook':
- Bottlebrush (2 x 1.2m) E
- Metrosideros 'Springfire': New Zealand Christmas Bush cultivar (3 x 3m) E

Small/Medium Shrubs

General character is more formal, with particular amenity value including attractive flowers or foliage providing seasonal colour and accents. Native shrubs generally between 1 and 2m provide a physical barrier, and help to enclose or edge informal spaces, while also contributing to the creation of wildlife habitats. Generally the height remains below eye level and therefore can screen at a lower level.

- Agonis flexuosa 'Nana': Dwarf Willow Myrtle (1.5 x1.5m) E
- Grevillea bipinnatifolia: Fuchsia Grevillea (1.2 x 1.5m) E
- Darwinia citriodora: Lemon-scented Myrtle (1.5 – 1.5m) E
- Grevillea thelemanniana: Spider-net Grevillea (variable forms: 0.3 x 2.5m) E
- Melaleuca scabra: Rough Honeymyrtle (0.6 x 1m) E
- Melaleuca nesophilla: Little Nessy (0.6 x 1m) E
- Pimelea ferruginea: Coast Banjine (1 x 0.9m) E
- Templetonia retusea: Cockies' Tongues (2.5 x 2m) E

Darwinia citriodora: Lemon-scented Myrtle

Groundcovers

General character is more formal, with particular amenity value including attractive flowers or foliage. Native shrubs generally between 0.25 and 1.2m provide a ground level cover and edging to paths and paving areas, while also contributing to the creation of wildlife habitats.

- Arctotis stoechadifolia: African daisy (0.4 x 0.3m) E
- Banksia prostrata: Prostrate Banksia (prostrate x 2-3.5m) E
- Eremophila glabra: Tar Bush (prostrate/1.5 x 3m) E
- Eremophila maculate: Spotted Emu Bush (prostrate/0.3 x 2.5m) E
- Callistemon ''Little John': (prostrate/0.3 x 1m) E
- Grevillea crithmifolia: Grevillea (prostrate/2 x 2m) E
- Grevillea obtecta: Rock Grevillea (prostrate/0.2 x 2m) E
- Grevillea thelemanniana obtusifolia: Grevillea spp.(prostrate/0.3 x 2m) E
- Hemiandra pungens: Snake Bush (prostrate x 4m) E
- Isolepsis nodosa: Knotted Club-Rush (0.5 x 0.5m)

Arctotis stoechadifolia: African daisy

Hardenbergia comptoniana: Native Wisteria

- Myoporum parvifolium: Creeping Boobialla (prostrate x 2.5m) E
- Hardenbergia comptoniana: Native Wisteria (creeper or climber) E
- Kennedia conferta/prostrata: Running Postman (creeper or climber) E
- Lechenaultia biloba: Blue Lechenaultia (0.45 x 0.60m) E

Small-Medium Shrubs and Groundcovers
General character is formal, with particular amenity value including attractive flowers or foliage, some with architectural accents. Non-native shrubs generally between 0.25 and 2.0m provide a range of plant sizes and habits, to be used in key areas of a more urban character, such as around buildings, pedestrian courtyards, and feature/entrance areas.

- Angiozanthus spp.: Kangaroo Paw (size varies)
- Cordyline spp.: eg. 'Purple Sensation' (1.5 x 2m) E
- Crinium pendunculatum: Swamp Lily/River Lily (1.5 x 2m) E
- Dietes bicolor: Dietes (0.5 x 0.5m) E
- Hebe 'Beverley Hills' (1 x 1.5m) E
- Juniperus conferta: Japanese Shore Juniper (prostrate/0.2 x 2m) E
- Lavendula spp.: Lavendar (1 x 1.5m) E
- Liriope muscari: Lilyturf (0.3 x 0.5)
- Macrozamia riedlei: Zamia palm (0.3 x 0.5) E
- Ophiopogon japonica: Mondo Grass (0.3 x 0.5) E
- Phormium spp.: eg. 'Anna Red' (1 x 1.5m) E
- Rosmarinus 'Blue Lagoon': Rosemary (prostrate x 1.5m) E
- Strelitzia reginae: Bird of Paradise/Crane Flower (1 x 2m) E
- Trachelospermum jasminoides: Chinese Star Jasmine (0.4 x 2.0) E

Crinium pendunculatum: Swamp Lily

Administration

The guidelines of this manual will be administered by the City of Kwinana through its Planning Department.

All development proposals for construction within the City Centre, including buildings, parking areas, public amenities, landscape improvements and signage are to be submitted for approval by the Town Planner who will refer to this document in reviewing proposals. It is strongly recommended that project proponents and their design consultants familiarize themselves with these provisions, and seek clarification of any items as necessary, before embarking on detailed design.

For major projects, it is further recommended that the development proponent and his or her design team schedule a preliminary meeting with City staff to review in-progress sketch designs and discuss any possible modifications prior to finalising the submission documents. Since these guidelines have deliberately avoided prescriptive controls where the ideas and creativity of different designers will enrich the quality of place in the City Centre, many issues remain open to interpretation. Project teams, therefore, should seek confirmation of the direction of a project before investing significant time in detailed design.

Submission requirements

For details of the City of Kwinana's requirements for Planning Approval, Building Licenses and required application fees, call (08) 9439 0200 or check the City's website: www.kwinana.wa.gov.au, which offers a link to a comprehensive description of the complete approvals process.

In general, project proponents are required to submit three (3) sets of documents, including:

- Site Plan (1:200) indicating building outline, contours and proposed levels, entry points, existing buildings and landscape features on adjacent sites, carparking and service provisions.
- Landscape Plan (1:200) including plant species, paving and reticulation types.
- Floor Plans (1:100) indicating room functions, all openings in internal walls, floor levels and overall dimensions.
- Elevations and Sections indicating overall heights, roof profiles, openings in external walls and materials.
- At least one (1) perspective sketch indicating colours, materials and general appearance.
- Signage Strategy indicating the location, type, size and design of all existing and proposed signs.
- Report including design philosophy, description of building function(s), services, materials and compliance with the design guidelines.
- Structural and Services Plans and Specifications describing method of construction, equipment and systems proposed.

Any variations between the Approved drawings and those submitted for building licence must be referred to the Town Planner for approval prior to application for a building licence.

Appendix

Related policy documents

The following State and Local Government policy documents define the broader context of development in the Kwinana Town Centre. Although not all their provisions apply, they should be consulted to understand the historical background to development of the guidelines in this manual, and the wider State policies governing the growth of metropolitan centres and residential development throughout the metropolitan area.

The list is divided into State documents published by the Western Australian Planning Commission (WAPC), and local policies developed by the City of Kwinana.

WA Planning Commission documents
These are available on the WAPC website: www.wapc.wa.gov.au.

- Statement of Planning Policy: *Network City*
- *Network City*: Community Planning Strategy for Perth and Peel
- *Metropolitan Region Scheme*
- *Metroplan* (now superceded but nonetheless influentual on urban form)
- *Metropolitan Centres Policy Statements*, 1991 and 2000
- *Development Control Policies*
- *Liveable Neighbourhoods Policy*
- *Residential Design Codes* of Western Australia

City of Kwinana documents
These are available on the City of Kwinana website: www.kwinana.wa.gov.au

- Local Planning Scheme No. 2 and associated policies:
    1. Policy 3.3.8: Design Guidelines for Medium
    2. Density Development
    3. Policy 3.3.24: Residential Development
    4. Policy 3.3.25: Development within the Cockburn Sound Catchment
    5. Policy 3.3.27: Guidelines for Subdivision
    6. Development
    7. Policy 3.3.7: Community Purpose Sites
    8. Policy 4.3.1: Conservation of Remnant Vegetation
    9. Policy 4.3.2: Street Trees and Streetscapes
    10. Policy 4.3.3: Public Open Space
    11. Policy 8.2.1: Pavement and Drainage for Residential, Commercial and Industrial Areas.
    12. Policy 9: Advertising Signage.

- *Local Planning Scheme No. 3* (Town Centre) and Town Centre Strategy Plan and Report
- *Draft Local Planning Strategy*
- *Commercial Centres Strategy*
- *Local Housing Strategy*
- *Department of Education & Training Kwinana Education Precinct Master Plan*, Hames Sharley, August 2005

Attachment C

1.13 Administration of local laws	
Function to be performed:	Authorised to: Administer the City of Kwinana's local laws and do things required by those local laws that are necessary or convenient to be done for, or in connection with, performing its functions under the Local Government Act 1995.
Legislative power or duty delegated:	Local Government Act 1995 s3.18 Performing executive functions
Legislative Power to Delegate:	Local Government Act 1995 s5.42 Delegation of some powers to the CEO
Date Delegation made or reviewed:	24 February 2016 Council Resolution #125 14 June 2017 Council Resolution #513 13 June 2018 Council Resolution #196 14 November 2018 Council Resolution #
Delegation to:	Chief Executive Officer
Conditions and Exceptions:	~~Nil~~ *By-law Relating to Signs and Bill Posting* The Chief Executive Officer can only exercise discretion under Clause 34.2 of the City's *By-law Relating to Signs and Bill Posting* to approve applications which comply with Local Planning Policy 9: Advertising Signage.
Statutory Power to sub-delegate:	Local Government Act 1995 s5.44 CEO may delegate some powers and duties to other employees
Reporting Requirements:	Any exercise of this delegation is to be recorded in the Delegated Authority Register.

15.2 Request to Waive Planning Application Fees by a Community Organisation for a Proposed Redevelopment of Mead Farm, Lot 9001 Mead Road, Leda

DECLARATION OF INTEREST:

There were no declarations of interest declared.

SUMMARY:

An application has been received for the proposed redevelopment of Mead Farm at Lot 9001 Mead Road, Leda (refer Attachment A). The subject property is zoned Parks and Recreation under the Metropolitan Region Scheme (MRS) and is not zoned under the City's Local Planning Scheme No. 2 (LPS 2). The application requires determination by the Department of Planning, Lands and Heritage (DoPLH), with the City required to provide comments to DoPLH prior to the application being determined.

The proposed development consists of a number of upgrades and improvements to Mead Farm relating to equestrian activities.

The works have an estimated development value of $1,300,000, which triggers a planning application fee of $3,756.00 as per the City's Planning Fees and Charges. This is a statutory planning fee that is prescribed under the *Planning and Development Regulations 2009* (PD Regulations). The proponent requests that Council consider supporting the community-run project via exercising discretion to waive the $3,756.00 planning application fee associated with this application (refer Attachment B).

The authority to waive a fee for a planning service (including a development application), is vested in the local government under Regulation 52 of the PD Regulations. This authority has not been delegated to the Chief Executive Officer (CEO), hence Council's determination is required.

The proponent has provided the following as justification for waiving the planning application fees:

- the organisation is a not-for-profit and entirely volunteer-run community service organisation that provides education and therapeutic horse-based activities to disabled children and young adults. It also operates as a branch of the state wide Riding for the Disabled Western Australia (RDA WA) and has been providing a service to the Rockingham and Kwinana communities for over 30 years.
- the project has been generously supported by grant funding (including State Government Local Projects, Local Jobs project fund), sponsorships and donation and all funds will go directly into the development of facilities and programs that support this valuable community service.
- the services provided by Peel RDA have been proven to improve the social, cognitive and physical development outcomes for kids both with and without disability, and also provide a supportive community for volunteers and parents.

Regulation 52 of the PD Regulations states, "A local government may waive or refund, in whole or in part, payment of a fee for a planning service." City Officers have considered this request and recommend that Council exercise its discretion to waive the planning application fee.

15.2 REQUEST TO WAIVE PLANNING APPLICATION FEES BY A COMMUNITY ORGANISATION FOR A PROPOSED REDEVELOPMENT OF MEAD FARM, LOT 9001 MEAD ROAD, LEDA

Whilst it is not the purpose of this report (which is to seek Council support to waive the payment of fees), City Officers advise that they have reviewed the development application and are generally supportive. The assessment of the development application is progressing and City Officers intend to recommend conditional support to the DoPLH.

This advice will be provided to the DoPLH prior to Council's consideration of the waiving of the planning application fee in order to meet statutory timeframes.

OFFICER RECOMMENDATION:

That Council waives the $3,756.00 planning application fee for the Peel Group of the Riding for the Disabled Association at Lot 9001 Mead Road, Leda.

DISCUSSION

An application for proposed redevelopment of Mead Farm requires determination by the DoPLH, with the City required to provide comments to DoPLH prior to the application being determined.

Comments to DoPLH are required within 42 days of the receipt of the application. If no comments are received, DoPLH will proceed to determine the application within the statutory timeframes and without the City's input. City Officers have reviewed the development application and are generally supportive. City Officers intend to forward the City's recommendation of conditional support to the DoPLH to meet the statutory timeframe.

The proposed development consists of the following works:

- upgrades to the state heritage listed Mead Homestead into café/tearooms;
- Caretaker's residence;
- New clubrooms/amenities building;
- Undercover riding arena;
- Carriage driving arena;
- Equipment and carriage storage shed; and
- Re-establishment of pasture paddock areas for the keeping of horses.

The above works have an estimated development value of $1,300,000, and attract a planning application fee of $3,756.00 as per the City's Planning Fees and Charges.

The proponent is seeking that Council waives the planning application fee as this community organisation provides services that have been proven to improve the social, cognitive and physical development outcomes for kids both with and without disability. The organisation also provides a supportive community for volunteers and parents.

15.2 REQUEST TO WAIVE PLANNING APPLICATION FEES BY A COMMUNITY ORGANISATION FOR A PROPOSED REDEVELOPMENT OF MEAD FARM, LOT 9001 MEAD ROAD, LEDA

Authority to Waive Fees and Delegation

The authority to waive a fee for a planning service (including a development application), is vested in the local government under Regulation 52 of the PD Regulations, which states the following; "A local government may waive or refund, in whole or in part, payment of a fee for a planning service." The CEO would only have authority to waive the fee if the authority had been delegated to the CEO by Council. The Chief Executive Officer has a current delegation that allows the waiving of fees as provided under section 6.12 of the *Local Government Act 1995* (LG Act) but this is not relevant in this case as this only applies to fees due or payable under the LG Act and is not effective to delegate authority to waive a fee for a planning service under Regulation 52 of the PD Regulations.

There is no express power to delegate under the *Planning and Development Act 2005* (PD Act) and PD Regulations.

Clause 62(1)(c) of the *Planning and Development (Local Planning Schemes) Regulations 2015* (Deemed Provisions) require the Application Fee in accordance with the PD Regulations. However, the power to waive is exercised under Regulation 52 of the PD Regulations and not by a provision of LPS 2 (including the Deemed Provisions).

Each determination of an application for a waiver of the development application fee would need to be made by the Council as there is no ability to delegate power to waive a development application fee under Regulation 52 of the PD Regulations to the CEO.

The City has reimbursed community organisations in the past for planning, building and health application fees under its Community Funding Policy which allows for these community groups to be reimbursed up to a maximum of $1,000. In this instance, City Officers take the view that due to the significant scale and cost of the development and given the applicant's request for a full waiver of fees, it is not considered appropriate to apply the Community Funding Policy.

Conclusion

The proposed development is to be undertaken by a not-for-profit community organisation which provides a service to the community. The determination of the application lies with DoPLH, following an assessment and recommendation by the City. City Officers have reviewed the request to waive fees and recommend that this be supported.

LEGAL/POLICY IMPLICATIONS:

For the purpose of Councillors considering a financial or impartiality interest only, the proponent/owner is Department of Biodiversity, Conservation and Attractions and the applicant is the Peel Group of the Riding for the Disabled Association WA.

The following strategic and policy based documents were considered in assessing the application:

Legislation
Planning and Development Act 2005
Planning and Development Regulations 2009
Planning and Development (Local Planning Schemes) Regulations 2015
Local Government Act 1995

15.2 REQUEST TO WAIVE PLANNING APPLICATION FEES BY A COMMUNITY ORGANISATION FOR A PROPOSED REDEVELOPMENT OF MEAD FARM, LOT 9001 MEAD ROAD, LEDA

Schemes
Metropolitan Region Scheme
City of Kwinana Local Planning Scheme No. 2

FINANCIAL/BUDGET IMPLICATIONS:

The waiving of fees will result in no income from the assessment of this development application to the City.

ASSET MANAGEMENT IMPLICATIONS:

There are no asset management implications as a result of this report.

ENVIRONMENTAL IMPLICATIONS:

There are no environmental implications as a result of this report.

STRATEGIC/SOCIAL IMPLICATIONS:

This proposal will support the achievement of the following outcome and objective detailed in the Strategic Community Plan.

Plan	Outcome	Objective
Strategic Community Plan	Services for an active community	1.4 A healthy and active community with services for everyone's needs.
	Accessibility for everyone	1.10 Improve levels of disability access and inclusion throughout the community.

COMMUNITY ENGAGEMENT:

There are no community engagement implications as a result of this report.

PUBLIC HEALTH IMPLICATIONS

The services provided by the Peel RDA are considered to contribute to a healthy and active community with services to meet everyone's needs. The organisation also assists in improving levels of disability access and inclusion throughout the community.

15.2 REQUEST TO WAIVE PLANNING APPLICATION FEES BY A COMMUNITY ORGANISATION FOR A PROPOSED REDEVELOPMENT OF MEAD FARM, LOT 9001 MEAD ROAD, LEDA

RISK IMPLICATIONS:

The risk implications in relation to this proposal are as follows:

Risk Event	That Council does not waive the planning application fees.
Risk Theme	Failure to fulfill statutory regulations or compliance requirements
Risk Effect/Impact	Financial Reputation Compliance
Risk Assessment Context	Operational
Consequence	Minor
Likelihood	Possible
Rating (before treatment)	Low
Risk Treatment in place	Reduce - mitigate risk
Response to risk treatment required/in place	Consideration of the application within the statutory timeframes
Rating (after treatment)	Low

COUNCIL DECISION

313

MOVED CR D WOOD **SECONDED CR S LEE**

That Council waives the $3,756.00 planning application fee for the Peel Group of the Riding for the Disabled Association at Lot 9001 Mead Road, Leda.

CARRIED
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Attachment A - Proposed Overall Plan

Master Plan – Mead Farm Riding Centre

Peel Group of the Riding for the Disabled Association (Peel RDA)

v3 - 11 August 2018

1:2500 @ A3

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Attachment B - Cover Letter

Attn: City of Kwinana – Planning Department

Subject: Planning application for the development of riding facilities, café/tearoom and caretaker's residence at Mead Farm, Leda

To whom it may concern,

Please accept the attached development application submitted on behalf of the Peel Group of the Riding for the Disabled Association (Peel RDA) for the development of the abovementioned community purpose facilities at Mead Farm on Gilmore Avenue in Leda. We respectfully request your immediate attention to this matter, as the expediting of this application will enable works to commence immediately upon the granting of approval.

This proposal constitutes the land use/ development proposal for the entire site, further to a planning approval received on 25 June 2018 for preliminary improvements. This proposal will realise the vision for the establishment of Peel RDA's riding facilities and agistment at the site, supportive caretaking arrangements that provide for property management and security, and the refurbishment and adaptation of the state heritage listed 'Lealholme' homestead into a publicly-accessible facility.

Peel RDA is a not-for-profit and entirely volunteer-run community service organisation that provides educational and therapeutic horse-based activities to disabled children and young adults. The Group operates as a branch of the statewide Riding for the Disabled Western Australia (RDA WA), and has been providing service to the Rockingham and Kwinana communities for over 30 years. The services provided by Peel RDA have been long proven to improve the social, cognitive and physical development outcomes for kids both with and without disability, and also provide a supportive community for volunteers and parents.

This project has been generously supported by grant funding (including the WA State Governments *Local Projects, Local Jobs* project fund), sponsorships and donations and all funds will go directly into the development of facilities and programs that support this valuable community service. We would like to request that you please consider supporting this community-run project via the discretion available to you to waive the fees associated with this application.

The proposed development of Mead Farm is comprised of the following components:

Riding Facilities

Riding facilities to be developed at the site support the community service riding programs that are provided by Peel RDA which will take place during day hours and ultimately over seven days of the week.

The riding facilities have been located central to the site but separated from the 'Lealholme' homestead in order to preserve the main vantage points of the homestead and retain its context. The existing of riding facilities in predominantly 'agricultural' type buildings is considered complementary to the homestead given the historic purpose of the property.

- Clubrooms/ Amenities Building

  The clubroom/ amenities building will include toilets and showers, laundry and kitchen facilities, an office, storage areas, and a general meeting and activities room to provide for the day to day

operations of Peel RDA's services. Detailed plans for the proposed clubroom/ amenities building are attached to this proposal.

- Riding Arena/ Undercover Arena

  The riding arena is a 60m x 25m fenced area where horse riding activities will be focused, partially covered by a 33m x 25m covered roof (wall height 4.0m, ridge height 6.25m), and enclosed on the southern and western sides. The riding arena will be surfaced with a 300mm layering of limestone and river sand imported to the site. The arena roof structure will be relocated from Peel RDA's current site. A photograph of this existing structure is attached to this proposal.

  Adjoining this arena will be 5-6 fenced yards where horses will be kept for short periods while readied for riding.

- Carriage Driving Arena

  The carriage driving arena is a 60m x 80m fenced area that will be used for horse riding programs. This arena will be maintained as a grassed paddock, with minor earthworks to assist in levelling the surface.

- Equipment Shed & Carriage Shed

  The equipment and carriage sheds will be used to store large equipment associated with Peel RDA's riding programs. These sheds will be relocated from Peel RDA's current site. The equipment shed 6.2m x 12.4m floor area (wall height 3.4m, ridge height 3.6m) and the carriage shed is 6.8m x 9.8m floor area (wall height 3.6m, ridge height 4.0m).

  Photographs of these existing buildings are attached to this proposal.

A previous planning approval also provides for a vehicle shed and composting bays, as shown in the plans attached to this proposal.

Horse Agistment

Approximately 25ha of the 27.5ha property is identified for the maintenance and re-establishment of pastured paddock areas for the keeping of Peel RDA's horses. All of this area has been grazed historically but is in a poor condition owing to a lack of active management of weeds and pests. This area was cleared but has experienced some regrowth of weeds and native colonising species (predominantly *acacia saligna*), and with the retention of remnant Tuart trees (*eucalyptus gomphocephala*) no environmental values will be compromised.

The agistment of horses on the site will occur in accordance with an adopted Property Management Plan, which details the relevant infrastructure and operational arrangements for the keeping of horses and for site management more broadly. The Plan details proposed fertiliser, irrigation and waste management regimes – and demonstrates that the property can be appropriately managed to mitigate any potential environmental risks associated with this land use. The Plan will be submitted in accompaniment of an application for an equine license to the relevant local government/s.

The Property Management Plan demonstrates a greater stocking rate above traditional dry stocking would support, as horse management will occur according to a hybrid stabling approach (commonly known as

'paddock paradise'). With reference to relevant guidelines, detailed site investigations have taken place and professional advice has been received in order to determine the appropriate stocking rate for this site by this management approach.

Caretaker's Residence

In order to appropriately provide for stock welfare, property management and site security it is proposed to accommodate a caretaker on the site. This proposal seeks approval for a caretaker's residence as a land use, in the location specified in site development plans. Detailed development plans for this residence will be prepared and submitted for approval at a future date, once certainty has been achieved via project partnership agreements, funding sources and land use approval (subject of this application).

The location of the residence has been selected to maximise property surveillance, maintain occupant privacy, provide ready access to utility services, and to minimise bushfire risk.

Tearoom/ Café

The property occupied by Peel RDA contains a derelict farm residence; a building known as 'Lealholme' that is included on the State Heritage Register for its significance as one of the earliest homesteads established in the East Rockingham district, by the pioneering Mead family.

This proposal includes the refurbishment of the homestead and its conversion to future use as a tearoom/ café, and occasional reception/ events facility. This facility will incorporate:

- Open service area, comprised of indoor and alfresco dining areas and a service counter;
- Kitchen/ food preparation area, located in the historic kitchen building;
- Small meeting/ function room available for public bookings;
- Ancillary shop space, providing for the sale of cottage goods;
- Office (no public access);
- Toilet block; and,
- Various landscaped areas.

In support of this refurbishment a Conservation Management Plan and detailed architectural drawings have been prepared by Hocking Heritage Studio and are attached to this application. Also attached are landscape development plans, prepared by Cara Sealey Design and Hocking Heritage Studio. Preliminary discussions have occurred with the State Heritage Office, who are generally in support of the proposal.

This homestead is currently in a very poor condition, and extensive works will be required in order to address asbestos, termite damage, damp issues and general structural shortcomings. Notwithstanding, the proposed plans guiding the refurbishment are sensitive to the integrity of the building and seek to restore a number of original features that have been modified over time. Significant modifications have only been proposed in support of its adaptation for a new use (eg. doorway widening to support contemporary universal access requirements) and where re-creation is not possible (eg. eastern façade – subject to past renovation, no historic documentary evidence of original layout).

Planning approval is sought for the tearoom/ café as a land use and for development works associated with the refurbishment of the homestead. Construction details are advanced and will be finalised in accordance with the conditions of this approval, and as part of preparing a building license subsequently.

The exact details associated with the operation of this facility as a hospitality enterprise have not yet been finalised. It is expected that this will occur following the granting of planning approval and requirements associated with licensing and registration will be provided for as appropriate.

This facility will be open for public custom; however, consistent with the proposed use of the site for community purposes, it will be operated as a social enterprise that supports the ongoing development and maintenance of the property as well as complementary services (eg. disability employment).

The following considerations relevant to the proposal are discussed in further detail:

Tenure

The Mead Farm site that is referred to in this application comprises:

- Portion of Lots 800, 9001 and 500 and the whole of Lot 9002 (part Reserve 51658), the subject of a lease to Peel RDA granted by the Department of Biodiversity, Conservation & Attractions (DBCA); and,
- Portion of Lot 8010 on Deposited Plan 69486 (formerly Lot 455 on Deposited Plan 220559), the subject of a license (A3240137) to Peel RDA granted by the Department of Planning, Lands & Heritage (DPLH).

The western portion of Reserve 51658 (Lot 800) is within the City of Rockingham while the remainder of the site and all proposed facilities (including the existing homestead) are located within the City of Kwinana. All proposed facilities are located within leasehold areas.

DBCA has provided consent for the submission of this application as the managing landowner for the relevant reserves, and it is requested that the Department of Planning, Lands & Heritage provides likewise upon receipt of this application.

Zoning

The site is predominantly zoned as a Metropolitan Region Scheme reserve for recreational purposes, and the proposed use of the site for this community service is considered wholly consistent. This is supported by the granting of a lease for this purpose by the managing State agency.

The site is not directly affected by land reserved for primary regional roads, but is immediately adjoining land under this designation. However, it is understood that there is currently no intention to utilise these reservations beyond existing and no potential conflict with Peel RDA's use of the site currently exists. If this is to occur in future design can incorporate appropriate noise shielding and consider other relevant factors.

The area is also subject to classification as a Bush Forever site. While this is an accurate representation of the environmental values of the surrounding bushland, the Mead Farm site that is the subject of this proposal comprises only of land that was historically either fully or parkland cleared. The rehabilitation of this site's working and environmental qualities, as described in this application and as has occurred to date, is considered to provide an appropriate balance that reflects this designation but acknowledges the highly degraded environmental conditions within the farm site itself. This is acknowledged via the granting of a lease to Peel RDA by the DBCA.

Kwinana Industry Buffer

Potential future industrial land uses within the vicinity of the subject site are relevant to consider with regards to the proposed caretaker's residence at Mead Farm. It is considered that the proposed riding facilities and café/ tearoom would not constitute sensitive land uses in this regard, as neither would involve permanent or ongoing occupation of the site, and officer level advice has been received from DPLH to this effect.

In 2008 the Western Australian Planning Commission (WAPC) published a discussion paper concerning buffering to industries within the Kwinana Industrial Area. The paper broadly but unscientifically identifies areas of influence, including Mead Farm at the outer extent of Area B. The paper does not constitute a formal strategic or statutory document in its own right but recommends that further investigation to occur and consideration be given to the development of statutory controls on land use relative to proposed future industry. It has also been advised that other residences have been approved in 'Area B' since 2008.

Similarly, Draft State Planning Policy 4.1 advocates for the use of statutory buffers via the prescription of a Special Control Area where necessary to preserve the opportunity for strategic industrial development. At present no statutory buffer has been proposed in relation to the subject site and broader area, and as such the assessment of a sensitive land use within this location relies upon the provisions of Cl. 5.2.2 and precautionary principles.

Based on all available information and a reasonable assessment of the likely future pattern of industrial land use, it is considered that this proposal is consistent with the provisions of the SPP and would not result in future land use conflict. In this regard, it is noted that:

- There are currently no incompatible industrial land uses in the near vicinity – the existing Waste Water Treatment Plant is some 1700m from the subject site (well in excess of the standard 500m separation distance for this type of facility);
- The proposed caretaker's residence is located centrally to the site and will be approximately 400m from the nearest possible future industrial land use (should in fact clearing be approved to support such);
- Potential future industrial land use will (in all reasonable likelihood, as evident in nearby development in the Dixon Road area) be phased towards light industry and service commercial land uses at the outer extent of the proposed industrial area. Further, other existing non-conforming uses nearby may prove limiting to the development of offensive industrial land uses in this vicinity;
- The prevailing wind directions (South Westerly and Easterly) reduce the potential for odour, noise and air quality impacts from general/ core industrial precincts within the Kwinana Industrial Area.

In accordance with Cl 5.2.2(a) the proposed caretaker's residence is not impacted by any existing or proposed industrial land use or infrastructure facility. Furthermore, the proposed caretaker's residence will not prejudice future industrial development due to the separation distance to be maintained and the expected arrangement of future industrial/ commercial land uses.

Other relevant legislation to this area includes the *Environmental Protection (Kwinana) (Atmospheric Wastes) Regulations 1992* and the Environmental Protection (Kwinana) (Atmospheric Wastes) Policy Approval Order 1999, the purposes of which is to establish limits and controls for atmospheric pollution. Neither of these are intended to direct or provide for land use control and are therefore not relevant to the subject proposal.

Bushfire Risk Management

This proposal is supported by a Bushfire Risk Management Plan (including evacuation plan) prepared by a relevantly qualified (Level 3) bushfire planning practitioner. This Plan addresses considerations relevant to the proposed use of this site which falls partly within a designated 'bushfire prone' area, as well as providing guidance for management practice across the whole site given the inherent risks within this locality. While facilities have been located central to the site and away from existing bushland areas, the future development of this site will also involve the substantial mitigation of bushfire risk through the maintenance of low fuel areas across the property (including the clearing of weeds and regrowth within paddock areas).

Utilities

The proposed clubrooms, caretaker's residence and tearoom/ café are to be fully serviced via connection to mains power, the development of an on-site potable water supply supported by groundwater extraction (existing DWER license), and the installation of an aerobic treatment unit (ATU) system for on-site wastewater disposal. As detailed below, it is clearly demonstrable that on-site water and wastewater servicing is appropriate and that site conditions suitably support this. Once planning approval has been obtained, final details will be resolved with the City of Kwinana prior to licensing of these systems.

The site is located within an identified sewerage sensitive area but generally meets the requirements of the Draft Government Sewerage Policy:

- The site is isolated from infrastructure associated with a reticulated sewerage service, as advised by the service provider (Water Corporation);
- The site contains a sufficient area to provide for appropriate setbacks, stormwater management, preservation of remnant vegetation and a wastewater disposal area;
- The wastewater disposal area will be located in excess of 100 metres from wetland areas to the east of the site, and a minimum of 30 metres from the on-site bore providing water supply;
- The wastewater disposal area will appropriately sized upon the receipt of detailed advice from suppliers (provisionally an area of 750m^2 has been identified), and will be subject to the approval of the local government; and,
- The wastewater disposal area will be provided with a minimum of 1.2 metres separation from groundwater.

On-site water and wastewater services are necessary due to advice from the Water Corporation that connection to reticulated networks is not available within 3 kilometres of the site (and costs to connect would be in the order of $3 million to $4 million. Soil and groundwater supply testing has taken place to confirm the suitability of proposed on-site water and wastewater services.

The wastewater disposal area will be located in an area surveyed at 3.75m AHD. The Department of Water & Environmental Regulation's published groundwater datum indicates a minimum level of 2.00m AHD approximately 1km to the east, and a historical maximum groundwater level of 3.00m AHD approximately 2km to the north. On-site testing during bore development in April 2018 noted a static groundwater level at 3.00m below ground (approx. 0.75m AHD) and the top soil strata comprising the first 1.5m below ground level, indicating that the typical groundwater level separation is approximately 1.5m. No additional fill is considered necessary in order to achieve a minimum separation distance of 1.2 metres from maximum seasonal groundwater levels.

Two storage tanks will be installed to maintain potable supply from the groundwater bore developed on site. This will be supported by appropriate pumping, filtration and softening apparatus to maintain the water to the requirements of the Department of Health and the City of Kwinana.

Access

Vehicular access to the site is gained via the existing crossover to Gilmore Avenue.

Peel RDA initially discussed access arrangements with the City of Kwinana in late 2011, prior to being granted the right to occupy the site, and the City provided direction on this being the preferred crossover location. The City advised that left in/out access only could be accommodated as right-hand turning would necessitate a significant revision of the (then) plans to duplicate Gilmore Avenue. After the duplication works occurred improvements were made to the crossover and (later) the main site access track.

In discussions prior to lodging this application the City advised that the existing crossover and road traffic environment is generally considered adequate to support this proposal. It is not generally considered that improvements could be made to the road environment that would enable any significant improvement and be relative to the cost of the proposed development.

Car Parking

A large car parking area will be located on the recently constructed limestone hardstand area. Peel RDA considers that maintaining this hardstand area without a bitumen seal is both adequate for use and in keeping with the rural amenity and historic nature of the site. The site is sufficiently separated from other land uses, as well as dining areas associated with the proposed tearoom/ café. As conditioned in the previous planning approval Peel RDA will apply dust suppression measures to the car parking area, in consultation with the City of Kwinana, as required.

This parking area has been designed to accommodate a total of 63 parking bays and 6m aisle widths, comprised of a mix of designations that will provide appropriately for expected user groups:

- 53 standard parking bays – provided over-width (2.75m) for ease of access;
- 8 universal access (ACROD) parking bays;
- 2 long vehicle loading bays (ie. for vans and mini-buses, 2x bay length and 3m width at each end of central parking bank).

It is understood that the City of Kwinana's car parking requirements require the following:

- Clubroom/ amenities building, classified as a club or place of public assembly, would require 1 bay per 4.5m of assembly area – equating to 27 bays; and,
- Tearoom/ café building, classified as an eating house, would require 1 bay per 4 seats within eating area – equating to 25 bays for a capacity of up to 100 patrons (noting that final capacity may be limited by public building licensing requirements).

An additional grassed area will be maintained adjoining for overflow parking on required occasions (such as an event or open day) and for vehicles with trailers. Additional areas are also provided for drop offs, servicing vehicles and property vehicles.

Attachments

The following attachments are provided in support of this application:

- MRS Form 1 – Application for Planning Approval
- Planning Approval for preliminary works (WAPC Ref: 26-50224-1)
- Mead Farm – Overall Site Master Plan
- Mead Farm – Property Management Plan
- Mead Farm – Bushfire Risk Management Plan
- Mead Farm – Land Capability Assessment & Agronomic Advice
- Mead Farm – Groundwater Testing Results
- Mead Farm – Dieback Assessment
- Riding Facilities – Detailed Site Plan
- Riding Facilities – Clubrooms Elevations
- Riding Facilities – Clubrooms Floorplans
- Riding Facilities – Shed & Arena Elevation Photographs
- Café/ Tearooms – Architectural Drawings
- Café/ Tearooms – Conservation Management Plan
- Café/ Tearooms – Heritage Impact Statement

We would welcome to opportunity to meet with you or to provide further information to you upon request.

Many thanks,

Will Hosken (Planning & Project Consultant)

E: wehosken@bigpond.com

M: 0400 377 732

On behalf of:

Kristin Hosken (Peel RDA Mead Farm Coordinator) (cc)

E: hosken07@bigpond.com

M: 0423 172 344

15.3 Tender - 640KWN18 - Supply Delivery and Application of Hot Bituminous Concrete

DECLARATION OF INTEREST:

There were no declarations of interest declared.

SUMMARY:

The City of Kwinana invited Tenders from suitably qualified and experienced contractors for the Supply Delivery and Application of Hot Bituminous Concrete.

The Request for Tender was advertised in "The Weekend West" newspaper on Wednesday, 15 August 2018. The Tender was also advertised and issued through the City's e-tendering portal Tenderlink www.tenderlink.com/kwinana .

The Tender deadline was 2:00 pm, Thursday, 30 August 2018 with three (3) submissions received from the following:

- Downer EDI Works (Downer),
- Fulton Hogan Industries (Fulton Hogan), and
- Roads 2000 Pty Ltd (Roads 2000).

OFFICER RECOMMENDATION:

That Council:

1. award the contract for the Supply Delivery and Application of Hot Bituminous Concrete to Downer EDI Works, in accordance with the special and general conditions of contract, specifications and their submission including the schedule of rates.

2. validates the above contract for a period of 3 years, subject to price increases based on the quarterly Consumer Price Index (CPI) (All Groups) (Perth) published immediately prior to the relevant Review Date and the quarterly CPI (All Groups) (Perth) published immediately prior to the contract start date or anniversary of the previous year.

DISCUSSION:

The evaluation panel comprised of:

a. A Contracts Officer who evaluated the Tenderers' submissions in accordance with the compliance criteria provided in the Request for Tender documentation; and

b. The Manager Engineering Services, Project Coordinator and Design Engineer, evaluated the tenderers' submissions in accordance with the qualitative criteria included in the Request for Tender documentation.

The evaluation panel considered all the submissions and the consolidated score recommended the appointment of Downer for the Supply Delivery and Application of Hot Bituminous Concrete (the evaluation recommendation report is Confidential Attachment A).

15.3 TENDER - 640KWN18 - SUPPLY DELIVERY AND APPLICATION OF HOT BITUMINOUS CONCRETE

LEGAL/POLICY IMPLICATIONS:

Local Government (Functions and General) Regulations 1996

Procurement Policy – 2016

Tender Management Policy - 2015

FINANCIAL/BUDGET IMPLICATIONS:

Budget Item Name:	Multi Project Budgets
Budgeted Amount:	$600,000.00 per annum excluding GST
Estimated Total Expenditure:	$573,333.75 per annum excluding GST Estimated $1,720,001.25 excluding GST three (3) year contractual term
Proposed Cost:	As determined by the works program in accordance with the schedule of rates.

*NOTE: All figures are exclusive of GST

The Estimated Total Expenditure Sum is based on an indicative cost estimate for a number of forthcoming projects and does not account for:

- the annual CPI increases;
- any unplanned or additional works to be undertaken by the City; or
- any potential cost blowouts within the projects used as a basis to determine price.

In addition, since the Contract is a Schedule of Rates based framework agreement there is no fixed cost.

As such, for the factors outlined above, Contracts Services thought it prudent to request that the award of this Contract be conducted via Council, as there is the potential that the Chief Executive Officer's delegated authority to accept Tenders with a value less than the total sum of $1,875,000 for a multiple year contract including extensions to award, afforded via Council resolution 513, dated 14 June 2017, may be exceeded by the total actual accumulative spend under this Contract.

ASSET MANAGEMENT IMPLICATIONS:

Procurement of asphalt is required to renew existing road assets.

ENVIRONMENTAL IMPLICATIONS:

There are no environmental implications that have been identified as a result of this request.

15.3 TENDER - 640KWN18 - SUPPLY DELIVERY AND APPLICATION OF HOT BITUMINOUS CONCRETE

STRATEGIC/SOCIAL IMPLICATIONS:

This proposal will support the achievement of the following outcome and objective detailed in the Corporate Business Plan.

Plan	Outcome	Objective
Strategic Community Plan 2017-2027	A connected transport network	4.6. Provide a safe and efficient integrated network of roads, footpaths and cycle routes supported by a good public transport system.

COMMUNITY ENGAGEMENT:

There are no Community engagement implications as a result of this report.

PUBLIC HEALTH IMPLICATIONS

There are no implications on any determinants of health as a result of this report.

RISK IMPLICATIONS:

The risk implications in relation to this proposal are as follows:

Risk Event	Failure to maintain Road Resurfacing and Road Rehabilitation Program.
Risk Theme	Construction of Projects
Risk Effect/Impact	Project Overrun
Risk Assessment Context	Inadequate Project/Change Management
Consequence	Moderate
Likelihood	Likely
Rating (before treatment)	High
Risk Treatment in place	Reduce – Mitigate Risk
Response to risk treatment required/in place	Fortnightly Project Tracking
Rating (after treatment)	Low

Risk Event	Awarding contract to supplier where quotes exceeded $150,000 and the City did not go out to tender.
Risk Theme	Failure to fulfil statutory regulations or compliance requirement.

15.3 TENDER - 640KWN18 - SUPPLY DELIVERY AND APPLICATION OF HOT BITUMINOUS CONCRETE

Risk Effect/Impact	Compliance
Risk Assessment Context	Operational
Consequence	Moderate
Likelihood	Unlikely
Rating (before treatment)	Moderate
Risk Treatment in place	Reduce - mitigate risk
Response to risk treatment required/in place	Conduct formal tender process
Rating (after treatment)	Low

COUNCIL DECISION

314

MOVED CR M KEARNEY **SECONDED CR W COOPER**

That Council:

1. **award the contract for the Supply Delivery and Application of Hot Bituminous Concrete to Downer EDI Works, in accordance with the special and general conditions of contract, specifications and their submission including the schedule of rates.**

2. **validates the above contract for a period of 3 years, subject to price increases based on the quarterly Consumer Price Index (CPI) (All Groups) (Perth) published immediately prior to the relevant Review Date and the quarterly CPI (All Groups) (Perth) published immediately prior to the contract start date or anniversary of the previous year.**

CARRIED
8/0

15.4 Proposed Road Closure – Portion of unsealed road located between Kwinana Freeway and Thomas Road, Casuarina

DECLARATION OF INTEREST:

There were no declarations of interest declared.

SUMMARY:

The Council received a request from Aigle Royal Properties Pty Ltd (ARP) to initiate the formal process to permanently close a portion of unsealed road located between Kwinana Freeway and Thomas Road, Casuarina, shown by a broad yellow line on the attached plan, being Attachment A.

In accordance with Section 58(3) of the *Land Administration Act 1997 (WA)*, a local government must not resolve to make a request to the Minister for Lands to close a road until a period of 35 days has elapsed from the publication in a newspaper circulating in its district. Further, the local government must consider any objections made to it within that period concerning the proposals set out in the notice.

At the Ordinary Council Meeting held on 22 August 2018, the Council resolved to give local public notice of the proposed road closure as shown in Attachment A. It was also noted that the portion of road proposed to be closed had a heritage status and that ARP would be required to address heritage matters as part of any future development application over the land. Further, it was noted that some services e.g. power, water and gas were located within the site and details of these services would be included in a subsequent report to Council (i.e. this report).

A public notice of the proposed closure was included in the 29 August 2018 edition of the Sound Telegraph, being a newspaper circulating in the district of Kwinana. The 35 day submission period has lapsed and no objections to the proposed road closure were received.

An online 'Dial Before You Dig' enquiry was carried out on 17 October 2018 and that enquiry revealed the following asset owners with services in the vicinity of the proposed road closure:

- Atco Gas Australia;
- NBN Co;
- Optus and/or Uecomm;
- Telstra;
- Water Corporation; and
- Western Power.

Atco Gas Australia
Atco Gas's response indicates that gas infrastructure is present in the vicinity of the proposed road closure and / or the surrounding areas.

NBN Co
No response was received from NBN Co to the Dial Before You 'Dig' enquiry. An online enquiry was made to NBN Co by a City Officer on 23 October 2018, but other than an acknowledgement of receipt, no further response has been received from NBN Co indicating the presence of NBN Co assets in or around the area.

15.4 PROPOSED ROAD CLOSURE – PORTION OF UNSEALED ROAD LOCATED BETWEEN KWINANA FREEWAY AND THOMAS ROAD, CASUARINA

Optus and/or Uecomm
Optus responded by stating that their records indicated that there is underground fibre optic telecommunications assets in the vicinity of the area, that cross part of the proposed road closure.

Telstra
Telstra responded by stating that fibre optic and/or major network is present in the plot area.

Water Corporation
Water Corporation advised that the area of the proposed road closure contains a critical pipeline.

Western Power
Western Power's overhead and underground legends contain a warning to look out for overhead power lines when working in the vicinity of the area.

As part of the Council's road closure process, subject to Council's endorsement, City Officers will write to the Department of Planning, Lands and Heritage and refer them to the relevant service providers. The Department of Planning, Lands and Heritage will then consult directly with the service providers and assess and determine whether the issues (if any) relating to those assets will be affected by the proposed closure, and whether or not relocation of assets will be required. Moreover, ARP, whose purpose in requesting the road closure in order to incorporate the land as part of a future development of a bulk goods commercial precinct, should liaise with the service providers before commencing any works on the development site.

OFFICER RECOMMENDATION:

That Council in accordance with Section 58(1) of the *Land Administration Act 1997 (WA)*, formally request that the Minister for Lands grants the request to close that portion of unsealed road shown in Attachment A.

DISCUSSION:

The original Armadale/Rockingham Road was realigned many years ago by the southern extension of the Kwinana Freeway beyond Thomas Road. As a result, the unsealed portion of road is no longer capable of serving its original purpose as a connecting road between Thomas Road and Johnson Road and, aside from the possible use as a service corridor, the unsealed portion of road now serves only two parcels of land: with one parcel proposed to be developed as a bulk goods commercial precinct by ARP, and the other parcel having a long frontage on to Thomas Road.

15.4 PROPOSED ROAD CLOSURE – PORTION OF UNSEALED ROAD LOCATED BETWEEN KWINANA FREEWAY AND THOMAS ROAD, CASUARINA

LEGAL/POLICY IMPLICATIONS:

Land Administration Act 1997 (WA)

58. Closing roads

(1) When a local government wishes a road in its district to be closed permanently, the local government may, subject to subsection (3), request the Minister to close the road.

(2) When a local government resolves to make a request under subsection (1), the local government must in accordance with the regulations prepare and deliver the request to the Minister.

(3) A local government must not resolve to make a request under subsection (1) until a period of 35 days has elapsed from the publication in a newspaper circulating in its district of notice of motion for that resolution, and the local government has considered any objections made to it within that period concerning the proposals set out in that notice.

(4) On receiving a request delivered to him or her under subsection (2), the Minister may, if he or she is satisfied that the relevant local government has complied with the requirements of subsections (2) and (3) —

(a) by order grant the request; or

(b) direct the relevant local government to reconsider the request, having regard to such matters as he or she thinks fit to mention in that direction; or

(c) refuse the request.

(5) If the Minister grants a request under subsection (4) —

(a) the road concerned is closed on and from the day on which the relevant order is registered; and

(b) any rights suspended under section 55(3)(a) cease to be so suspended.

(6) When a road is closed under this section, the land comprising the former road —

(a) becomes unallocated Crown land; or

(b) if a lease continues to subsist in that land by virtue of section 57(2), remains Crown land.

FINANCIAL/BUDGET IMPLICATIONS:

The Council has received payment of the administration fee in the amount of $1,615.00 from ARP to meet the cost of administration of this road closure process.

ASSET MANAGEMENT IMPLICATIONS:

There are no asset management implications identified as a result of this report.

ENVIRONMENTAL IMPLICATIONS:

There are no environmental implications identified as a result of this report.

15.4 PROPOSED ROAD CLOSURE – PORTION OF UNSEALED ROAD LOCATED BETWEEN KWINANA FREEWAY AND THOMAS ROAD, CASUARINA

STRATEGIC/SOCIAL IMPLICATIONS:

The proposed road closure will support the achievement of the following outcomes and objective detailed in the Council's Corporate Business Plan.

Plan	Outcome	Objective
Corporate Business Plan	Regulatory and legal	6.6 To implement the long- term strategic land use planning for the social, economic and environmental well-being of the Council.

COMMUNITY ENGAGEMENT:

Community engagement has occurred by way of public advertising in the Sound Telegraph, being a newspaper circulating in the district of Kwinana. No submissions objecting to the proposed road closure were received.

PUBLIC HEALTH IMPLICATIONS

There are no public health implications as a result of this report

RISK IMPLICATIONS:

The risk implications in relation to this proposal are as follows:

Risk Event	The road closure process cannot proceed unless the Council resolve to formally request the Minister for Planning, Lands and Heritage to grant the request to close the portion of unsealed road shown outlined by a broad yellow line in Attachment "A" in accordance with section 58(1) of the *Land Administration Act 1997 (WA)*.
Risk Theme	Ineffective management of land administration and inadequate engagement practices
Risk Effect/Impact	Service Delivery
Risk Assessment Context	Operational
Consequence	Minor
Likelihood	Unlikely
Rating (before treatment)	Low
Risk Treatment in place	Avoid
Response to risk treatment required/in place	This report is in relation to formally advising the Department of Lands, Planning and Heritage to close a portion of unsealed road, located between Kwinana Freeway and Thomas Road, Casuarina.
Rating (after treatment)	Low

15.4 PROPOSED ROAD CLOSURE – PORTION OF UNSEALED ROAD LOCATED BETWEEN KWINANA FREEWAY AND THOMAS ROAD, CASUARINA

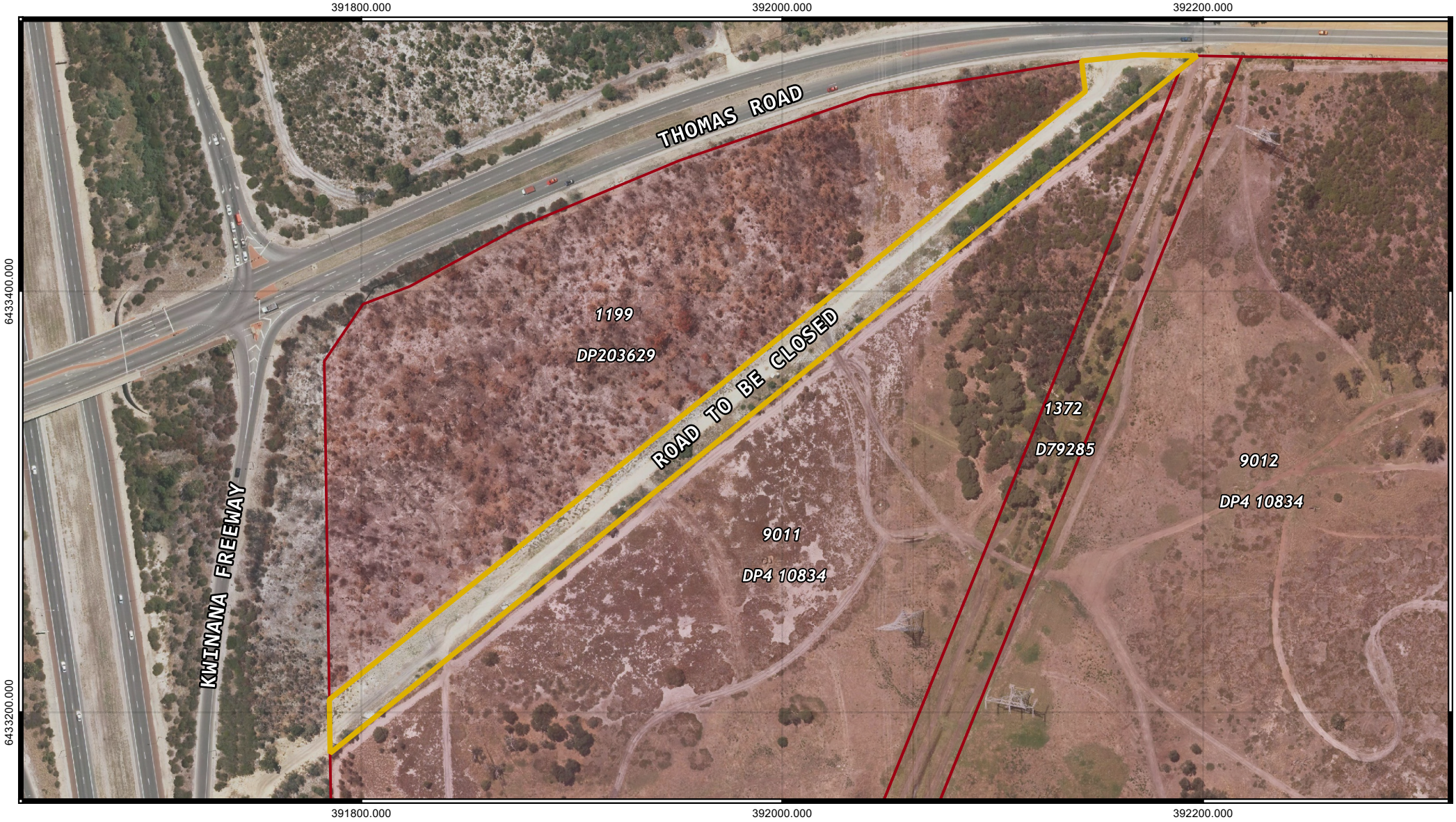
COUNCIL DECISION

315

MOVED CR S LEE **SECONDED CR S MILLS**

That Council in accordance with Section 58(1) of the *Land Administration Act 1997 (WA)*, formally request that the Minister for Lands grants the request to close that portion of unsealed road shown in Attachment A.

CARRIED
8/0



Attachment A:

PLAN SHOWING ROAD TO BE CLOSED
CITY OF KWINANA

Scale = 1:2,500

50 0 50 100 150 200 m

N

15.5 Proposed Casuarina North Local Structure Plan – Lot 1199 Thomas Road, Lot 3 on Diagram 8613, Lot 9011 and Part Lots 9012 and 9013 on Plan 410834, Casuarina - Consideration of submissions and recommendation to the Western Australian Planning Commission

DECLARATION OF INTEREST:

There were no declarations of interest declared.

SUMMARY:

A proposed local structure plan (LSP) for a portion of the Casuarina North Precinct has been lodged with the City of Kwinana (the City), in accordance with Schedule 2, Part 4, Clause 16(3) of the *Planning and Development Regulations 2015* (P&D Regulations). The LSP is referred to as the Casuarina North LSP (CNLSP). The plan is shown on Attachment A while the full CNLSP report shown on Attachment G.

The CNLSP covers approximately 25.76 hectares (ha) of land situated immediately east of Kwinana Freeway, south of Thomas Road and north of the Mushroom Exchange (the mushroom farm). The CNLSP proposes the land abutting Thomas Road be Service Commercial (13.95ha) and the land situated immediately north of the mushroom farm be Special Use (6.5ha).

The proponent has also submitted a Concept Plan for the balance of the Casuarina North Precinct (Attachment B) as required under the City's Local Planning Policy 6 – Guidelines for Structure Planning in the Casuarina Cell (LPP6) (Attachment C).

The purpose of the CNLSP is to provide the planning framework for a bulky goods retail and showroom precinct. It is estimated that the precinct may have a floor space of approximately 12.78ha. Stormwater drainage basins, a living stream and two high voltage power easements are also identified in the CNLSP as outlined in Attachment A.

The balance of the Casuarina North precinct as shown in the Casuarina North Concept Plan (Concept Plan) is intended primarily for residential purposes and district open space (3ha).

The City advertised the proposed CNLSP, between 10 September and 28 September 2018, in accordance with Schedule 2, Part 4, Clause 18 of the P&D Regulations. Thirteen submissions were received, including: six submissions from State government agencies; five submissions from landowners/developers; and a submission from the owners of the mushroom farm. The submissions, and the City Officers comments on the submissions, are detailed in the Schedule of Submissions (Attachment D). A summary of the matters raised is detailed later in this report.

To ensure that subdivision and development within the Casuarina North Precinct proceed in an orderly and proper manner the proposed CNLSP and Concept Plan have been assessed by City Officers in the context of the following strategies and policies:

- South Metropolitan Peel Sub-regional Planning Framework (WAPC, 2018)
- Jandakot Structure Plan (WAPC, 2007)
- Liveable Neighbourhoods (WAPC, 2009)

15.5 PROPOSED CASUARINA NORTH LOCAL STRUCTURE PLAN – LOT 1199 THOMAS ROAD, LOT 3 ON DIAGRAM 8613, LOT 9011 AND PART LOTS 9012 AND 9013 ON PLAN 410834, CASUARINA - CONSIDERATION OF SUBMISSIONS AND RECOMMENDATION TO THE WESTERN AUSTRALIAN PLANNING COMMISSION

- Eastern Residential Intensification Concept (City of Kwinana, 2005)
- Local Commercial and Activity Centres Strategy (City of Kwinana, 2013)
- Draft Community Infrastructure Plan (City of Kwinana, 2015)
- Local Planning Policy 6 – Guidelines for Structure Planning in the Casuarina Cell (City of Kwinana, 2018) (LPP6)

The area the subject of the CNLSP has been identified in these documents for many years as forming part of a service commercial/mixed business area.

Local Planning Policy No. 6 (LPP6) provides guidance on planning matters that require consideration during the preparation of LSPs and concept plans within the Casuarina Cell, to ensure that subdivision and/or development proceed in an orderly and proper manner across the Casuarina Cell. The main strategic planning issues relevant to the Casuarina North Precinct that have been considered by the City during the assessment of the proposed CNLSP and Concept Plan are:

- optimisation of land use in the vicinity of Kwinana Freeway and Thomas Road;
- land use compatibility with potential odour emissions from the mushroom farm;
- vehicle circulation and traffic management;
- provision of district open space; and
- provision of a local shopping centre.

A number of detailed planning issues that will require consideration during later stages of the planning process (subdivision and development) including:

- vehicle and pedestrian circulation;
- high voltage transmission easements;
- realignment of the Peel Sub P Drain; and
- urban water management issues.

In short, the CNLSP and Concept Plan respond effectively to the requirements of LPP6 and other strategic planning documents highlighted above.

The main issues arising from the City's assessment and the submissions affecting the CNLSP are:

- Traffic access/egress to the CNLSP from Thomas Road. The City's Engineering Department and Main Roads WA are not supportive of the proposed 'Right In' access from Thomas Road. It is recommended that the reference to 'Right In' access from Thomas Road (at the western end) in the Traffic Impact Assessment Report (Transcore, 2018) should be removed from the CNLSP document (Transport Impact Assessment).

- The City's Engineering Department also recommend that the CNLSP account for the longer term need to provide for a north-south connector road to run from the CNLSP area south to Orton Road. The absence of such a road link would mean that traffic associated with the mushroom farm and service commercial traffic anticipated both north and south of the mushroom farm would travel through future residential areas within the Casuarina Cell. This road link is shown indicatively on Attachment H.

- Concern about the lack of a retail floor space cap within the proposed Special Use, particularly from the owners of the Cockburn Shopping Centre who objected to the introduction of shop uses as 'incidental to' the predominant uses for this area. There was concern that this may provide a gateway to further retail floor space across the CNLSP (Service Commercial Zone and Special Use) which may become uncontrolled and affect other centres. In this respect, City Officers are satisfied that the land use definitions and permissibility's under LPS2 provide control over the 'shop' uses in the area of the CNLSP. Shop uses are non-permitted uses (X uses) in the Service Commercial Zone and in the Special Use, must be dependent upon, and incidental and subservient to the predominant use of the land.

- Concern about odour issues emanating from the mushroom farm with a submission arguing for an odour separation and buffer area around the mushroom farm. In this respect, City Officers take the view that the proposed land use associated with the proposed Service Commercial Zone and Special Use under CNLSP are not 'sensitive' land uses that would otherwise require measures to address potential odour impact. Such matters will require further consideration as part of future structure planning for residential land uses within the Casuarina Cell.

While not impacting directly on the CNLSP, there were other matters raised associated with the concept plan and future structure planning of Casuarina North and Central precincts which include:-

- The location of a local centre which is required in LPP6 to service the northern part of the Casuarina Cell and which may be either in the Casuarina North or Casuarina Central precincts. The location of this centre will be determined and identified as part of future local structure plans for these precincts. The concept plan does not address the local centre. In this regard, City Officers take the view that the concept plan should be amended via an annotation on the plan that refers to the intent of LPP6 that a local centre is to be identified at the intersection of Landgren Road and Orton Road for inclusion either in the North Casuarina Precinct or the Central Casuarina Precinct. Its final location will be determined as part of structure planning for these Precincts.

- District open space is to be identified in a local structure plan for the balance of the Casuarina North.

- Road access to future developments in the Casuarina Central precinct and the implications of road connections and staging of development in the Casuarina North Precinct.

These matters require resolution as part of subsequent structure planning by landowners and as part of statutory approvals outside the current CNLSP. City Officers will seek to liaise with various landowners to guide and seek resolution to these matters.

15.5 PROPOSED CASUARINA NORTH LOCAL STRUCTURE PLAN – LOT 1199 THOMAS ROAD, LOT 3 ON DIAGRAM 8613, LOT 9011 AND PART LOTS 9012 AND 9013 ON PLAN 410834, CASUARINA - CONSIDERATION OF SUBMISSIONS AND RECOMMENDATION TO THE WESTERN AUSTRALIAN PLANNING COMMISSION

OFFICER RECOMMENDATION:

That Council:

1. Recommend to the Western Australian Planning Commission (WAPC) that the proposed Casuarina North Local Structure Plan (CNLSP) (Attachment G), be approved subject to the following requirements:

    - A Local Water Management Strategy be prepared in consultation with and to the satisfaction of the Department of Water and Environmental Regulation and the Water Corporation.

    - An amendment to the CNLSP (Attachment G) to ensure the future provision of a north – south connector road to run southwards alongside or potentially within the alignment of the High Voltage Transmission Line to Orton Road (Attachment H). The purpose of this road link is to ensure that traffic associated with the Mushroom Exchange and Service Commercial Zones to the north and potentially south of Orton Road have access/egress to Thomas Road without needing to move though future residential land uses further to the east within the Casuarina Cell.

    - An amendment to the CNLSP via an annotation on the plan that states the intent of Local Planning Policy No 6 that a local centre (a commercial and activity centre with 800m² retail foorspace) is to be identified at the intersection of Landgren Road and Orton Road for inclusion either in the North Casuarina Precinct or the Central Casuarina Precinct. Its final location will be determined as part of structure planning for these Precincts.

    - Amendments to the CNLSP to delineate bush fire hazard separation areas, particularly for the western periphery and areas adjacent to proposed drainage areas and the living stream.

    - Removal of reference to ‘Right In’ access from Thomas Road (at the western end) in the Traffic Impact Assessment Report (Transcore, 2018).

    - Correct inconsistencies between the versions of the CNLSP shown in the Traffic Impact Assessment and the proposed Commercial Plan prior to the approval of the CNLSP.

    - Amend the CNLSP to include a requirement that development applications within the CNLSP demonstrate to the City that the land use proposed is not considered ‘sensitive’ under State Planning Policy 2.5 Rural Planning (SPP2.5). In the event that the use is considered sensitive, then the requirements of the City’s Local Planning Policy No 6 will apply.

- Inclusion of statements in the CNLSP (Attachment G) requiring the preparation of the following plans to the satisfaction of the City as part of the subdivision and/or development application process:

  i. Urban Water Management Plan
  An Urban Water Management Strategy should be prepared in consultation the Department of Water and Environmental Regulation and the Water Corporation.

  ii. Landscape Feature and Tree Retention Plan
  A Landscape Feature and Tree Retention Plan should be prepared in accordance with Local Planning Policy No 1, to ensure that the retention of significant trees is optimised as part of the civil design and earthworks.

  The Landscape Feature and Tree Retention Plan should be developed in consultation with the City at the detailed design stage.

  iii. A Traffic and Pedestrian Management Plan (TPMP) shall be prepared and approved by the City which identifies reciprocal rights of access to facilitate co-ordinated and efficient vehicle access between the Service Commercial and Special Use areas; and provide for safe pedestrian/cycle connectivity between the Service Commercial and Special Use areas.

2. Endorse the Schedule of Submissions (Attachment D) pursuant to Schedule 2, Part 4, Clause 20(2), of the *Planning and Development Regulations 2015*.

3. Forward this Ordinary Council Meeting Report and Council's resolution to the WAPC pursuant to Schedule 2, Part 4, Clause 20 of the *Planning and Development Regulations 2015*.

4. Note that there are a number of other planning matters which have been raised as part of the City's consideration of the submissions received during the advertising of the CNLSP which will require further consideration and resolution as part of the planning for the remainder of the Casuarina North Precinct and Casuarina Central Precinct. This includes matters such as the location of the district playing fields, local centre and access to development staging within the Casuarina Cell. These matters will require resolution as part of subsequent structure plan preparation by landowners and as part of statutory approvals outside the current CNLSP. City Officers will liaise with various landowners to guide and seek resolution to these matters.

BACKGROUND:

The area the subject of the CNLSP was identified by the WAPC as suitable for mixed use in the Jandakot Structure Plan (JSP) (WAPC, 2007). The site was identified for Mixed Business in the draft Eastern Residential Intensification Concept (ERIC) which was prepared by the City in 2005 to guide district planning for the eastern side of the City.

15.5 PROPOSED CASUARINA NORTH LOCAL STRUCTURE PLAN – LOT 1199 THOMAS ROAD, LOT 3 ON DIAGRAM 8613, LOT 9011 AND PART LOTS 9012 AND 9013 ON PLAN 410834, CASUARINA - CONSIDERATION OF SUBMISSIONS AND RECOMMENDATION TO THE WESTERN AUSTRALIAN PLANNING COMMISSION

The Casuarina Cell was subsequently rezoned from Rural to Urban Deferred in the Metropolitan Region Scheme (MRS) in November 2007 (MRS Amendment 1117/30). The Urban Deferred zoning was lifted by the WAPC on 18 October 2013 (MRS Amendment 1257/27). A concept plan (Attachment E) for the Casuarina Cell (based on ERIC) was prepared to support the lifting of urban deferment. The City's Local Planning Scheme No. 2 (LPS2) was amended concurrently with the lifting of urban deferment to rezone the Casuarina Cell from Rural to Development, pursuant to section 126(3) of the P&D Act.

Since the rezoning of the land to Urban and Development zones, the Casuarina Cell has been the subject of the following planning strategies and policies which have continued to identify the CNLSP area for commercial and mixed business purposes:

- South Metropolitan Peel Sub-regional Planning Framework (WAPC, 2018);
- Local Commercial and Activity Centre Strategy (September, 2014); and
- Local Planning Policy 6 – Guidelines for Structure Planning in the Casuarina Cell (City of Kwinana, 2018)

The following supporting documentation has been prepared to inform the proposed CNLSP:

- Environmental Assessment (PGV, 2017)
- Significant Tree Survey (PGV, 2018);
- Local Water Management Plan (JDA, 2017);
- Traffic Assessment (Transcore, 2018);
- Engineering Services Report (Cossill & Webley, 2017);
- Bushfire Hazard Level and Bushfire Attack Level Assessment (Emerge, 2017); and
- Landscape Master Plan (Emerge).

<u>Local Planning Scheme Amendment 156</u>

In August 2018, Council resolved to adopt Amendment 156 to LPS2 to insert the land use definition of 'bulky goods showroom' from the Model Scheme Provisions into LPS2.

This use lends itself to 'other retail' uses that are very large format shops (a combination of the land uses shop, showrooms and warehouse). Of particular note is Part B of the definition (below) that relates to sites that require a large area for the display of goods or require vehicular access to the premises due to the presumably high volume necessitating this type of collection.

The definition to be inserted in LPS2 reads as follows:

Bulky Goods Showroom - means premises –
(a) used to sell by retail any of the goods and accessories of the following types that are principally used for domestic purposes –
    (i) automotive parts and accessories;
    (ii) camping, outdoor and recreation goods;
    (iii) electric light fittings;
    (iv) animal supplies including equestrian and pet goods;
    (v) floor and window coverings;

(vi) furniture, bedding, furnishings, fabrics, manchester and homewares;
(vii) household appliances, electrical goods and home entertainment goods;
(viii) party supplies;
(ix) office equipment and supplies;
(x) babies' and children's goods, including play equipment and accessories;
(xi) sporting, cycling, leisure, fitness goods and accessories;
(xii) swimming pools. or

(b) used to sell goods and accessories by retail if –
(i) a large area is required for the handling, display or storage of the goods; or
(ii) vehicular access is required to the premises for the purpose of collection of purchased goods.

Description of Local Planning Policy 6 – Guidelines for Structure Planning in the Casuarina Cell

LPP6 was adopted by Council in 2018 to provide a framework for local structure planning in the Casuarina Cell so that subdivision development can proceed in an orderly and proper manner. LPP6 was informed by the land use planning documents listed above to ensure that local planning is consistent with regional and district strategic planning principles.

Three local structure planning precincts are identified in LPP6, referred to as the North, Central and South precincts. LPP6 states that the City may consider an LSP for a portion of a precinct, such as the proposed CNLSP, subject to the proposed LSP satisfying a number of criteria. City Officers are satisfied that the CNLSP meets the criteria for an LSP for a portion of a precinct as set out in LPP6, as follows:

a) The CNLSP can be considered in isolation to the wider planning considerations within the precinct in which it is located as its approval would not prejudice the optimum planning and design outcome of the North Precinct.

b) The CNLSP applies to greater than a single lot and occupies an area of at least 30% of the precinct; and

c) The CNLSP includes a concept plan for the remainder of the precinct which addresses the matters raised in the policy. The concept plan has been prepared and submitted with the LSP documents and includes:

- details in relation to the outcomes of the consultation,
- total site area of the precinct,
- gross subdivisible area,
- distributor roads,
- POS schedule; and
- POS distribution.

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LPP6 states that an LSP in the Casuarina North Precinct should deal with the following district and local planning matters:

a) Bulky Goods and Showroom uses should be located adjacent to Thomas Road and the Kwinana Freeway to make best use of the access and exposure provided by these roads. Supermarkets and small format shops are not permitted in this area. The balance of the precinct should be used for residential purposes.

b) Primary access from Thomas Road should allow a four way intersection as approved in the Anketell South Local Structure Plan (2014). This access should become the primary north–south route through the broader Casuarina Cell and should link to existing Landgren Road in the adjacent Central Precinct.

c) The City may support the use of the land within the power line easements for car parking associated with the adjacent commercial and recreation uses.

d) LPP6 requires that evidence obtained from onsite noise studies, odour studies and modelling will be required when sensitive land uses are proposed in the vicinity of the mushroom farm to demonstrate that the proposed land uses will not be exposed to unacceptable odour and noise emissions, to the satisfaction of the City. The City will only support land uses in locations where it can be confident there will not be long-term odour and noise conflicts.

e) Development of a District Sporting Ground located on land to be acquired by the Development Contribution Plan in accordance with the adopted Community Infrastructure Plan (or most recent version).

f) The identification of a site for a Local Centre (commercial and activity centre) (800m2 retail floor space) should be provided at the intersection of Landgren Road and Orton Road, either in the North Precinct or the Central Precinct.

City's Officers assessment of the CNLSP and the Concept Plan, against the guidelines for the Casuarina North precinct set out in LPP6, is described in the assessment sections of this report. In summary, the proponent has met the requirements of items a), b) and c) above in relation to the CNLSP and have given consideration to d) and e). As discussed previously, the CNLSP concept plan will require amendment to address point f) above.

DESCRIPTION OF THE CASUARINA NORTH LOCAL STRUCTURE PLAN

The CNLSP covers approximately 25.76 ha of land situated immediately east of Kwinana Freeway, south of Thomas Road and north of the mushroom farm.

The CNLSP proposes the land abutting Thomas Road as Service Commercial (13.95ha) and the land situated immediately north of the mushroom farm as Special Use (6.5ha).

The purpose of the CNLSP is to provide the planning framework for a bulky goods retail and showroom precinct. Accompanying the CNLSP is a concept plan for the remainder of the Casuarina North precinct. The purpose of providing the concept plan is to demonstrate that the balance of the precinct is able to be developed and address key requirements set out by Council under LPP6.

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Both the CNLSP and concept plan area shown on Attachments A and B respectively.

Land uses within the Service Commercial zone are those currently permitted under LPS2 with current similar zones being those service commercial areas abutting Rockingham Road in Naval Base. Permitted uses include showrooms, offices, service industry. The Special Use area being introduced under the CNLSP identifies the following uses as permitted (P) within the 'Special Use' :

- Bulky goods showroom
- Car park
- Consulting rooms
- Eating house
- Liquor store
- Motor repair station
- Petrol filling station
- Service station
- Warehouse

The following uses are incidentally permitted (IP) within the 'Special Use':

- Shop
- Fish shop

It is estimated that the precinct may have a floor space of approximately 12.78ha.

Stormwater drainage basins, a living stream and two high voltage power easements are also identified in the CNLSP.

DESCRIPTION OF THE CASUARINA NORTH CONCEPT PLAN

The design of the indicative concept plan as required under LPP 6 has taken into consideration pre-existing site constraints and other influencing factors, including:

- the location of a Main Roads WA controlled strategic four way intersection;
- a north-south road structure designed to tie in with the existing alignment of Landgren Road to the south in the adjacent Central Precinct; and
- location of District Open Space on the Orton Road and Landgren Road intersection.

ASSESSMENT OF THE CASUARINA NORTH LOCAL STRUCTURE PLAN:

The proposed CNLSP has been assessed by City Officers against LPP6 and other planning strategies and policies that have informed planning in the area. The City's Officers assessment of the CNLSP and consideration of issues raised in submissions is discussed below:

15.5 PROPOSED CASUARINA NORTH LOCAL STRUCTURE PLAN – LOT 1199 THOMAS ROAD, LOT 3 ON DIAGRAM 8613, LOT 9011 AND PART LOTS 9012 AND 9013 ON PLAN 410834, CASUARINA - CONSIDERATION OF SUBMISSIONS AND RECOMMENDATION TO THE WESTERN AUSTRALIAN PLANNING COMMISSION

a) Optimisation of land use in the vicinity of Kwinana Freeway and Thomas Road

As discussed, the proposed CNLSP identifies land as Service Commercial Zone and Special Use.

The proposed CNLSP is consistent with LPP6 which states that Bulky Goods and Showroom uses should be located adjacent to Thomas Road and the Kwinana Freeway to make best use of the access and exposure provided by these roads.

The CNLSP is also consistent with the ERIC, Jandakot Structure Plan and Local Commercial and Activity Centre which identify a commercial/mixed business area situated south of Thomas Road and adjacent to the Kwinana Freeway.

The CNLSP is also consistent with the objectives of Liveable Neighbourhoods because it provides an accessible location for commercial uses and employment.

Two submissions raised concern that a 'Shop' land use is listed in LPS2 as being permissible as an ‘incidental use’ within the Special Use precinct and may provide an unintended gateway for the inclusion of significant retail floor space as part of the future development of the site.

In this respect, it is important to note that a shop use is a prohibited use (x use) within the Service Commercial Zone. This zone occupies much of the CNLSP (13.95ha) as opposed to Special Use (6.5ha). The Service Commercial Zone will also be the zone to apply across much of the remainder of the broader service commercial/mixed business precinct as identified in district planning reports such as the ERIC and Jandakot Structure Plans.

The predominant use proposed for the Special Use site is not a shop use but other uses identified above. In the case of a shop use, City Officers have considered this matter having regard to recent case law. The Supreme Court considered the term ‘incidental to’ in *City of Swan v Taylor* [2005] WASCA 888 [67] and determined the expression requires identification of a predominant use and determination of whether the proposed use is consequent on such use or naturally attaching, appertaining or relating to such use. There must be some relationship or connection between the two uses for one to be incidental to the other.

Under the City’s LPS2, an “IP” use, is a use which will not be approved pursuant to the Scheme unless the Council can be satisfied that the proposed use will be dependent upon and incidental and subservient to the predominant use of the land as may be determined by Council.

Any development application which proposed a ‘shop’ use within the Special Use would need to satisfy the Council that the use is incidental, dependent upon and subservient to the predominant land use on the land.

b) Traffic Management

The South Metropolitan Peel Sub-regional Planning Framework (Framework) recognises the need to upgrade a number of east - west links (including Thomas Road) to connect the future outer harbour to the broader metropolitan transport network and freight logistics centres. For this reason, Thomas Road is identified as a proposed regional road in the Framework and a Secondary Strategic Freight Route in the Perth Freight Transport Network Plan - Transport @ 3.5 million (DoT, 2016).

The total trip generation of the proposed CNLSP is estimated to be approximately 15,000 vehicles per day which will be distributed to Thomas Road and the surrounding road network through the proposed roundabout at Thomas Road (east) and the new left in/left out intersection at Thomas Road (west). A roundabout is also proposed on the proposed main spine road to manage the circulation of traffic flows.

City Officers recommend that the CNLSP be approved pending Main Roads providing formal agreement that left in/left out access to Thomas Road at the western road and a full movement roundabout on Thomas Road are acceptable solutions.

The City's engineering team has also recognised that the proposed CNLSP needs to account for the longer term need to provide for a north-south connector road to run from the proposed CNLSP area south to Orton Road. A road link was identified conceptually in the draft ERIC planning for the locality and assumed that the service commercial/mixed business precinct will be located south of the mushroom farm in the Casuarina Central Precinct.

The absence of such a road link would mean that service commercial traffic in this precinct and traffic (trucks and other vehicles) associated with the mushroom farm would need to run through future residential areas within the Casuarina Cell. This is an unacceptable long-term traffic and amenity outcome for the locality.

Further, City Officers have also considered the need to co-ordinate traffic and pedestrian movement within the area of the CNLSP. City Officers recommend that a Traffic and Pedestrian Management Plan (TPMP) be prepared as part of the subdivision approval. The TPMP should:

- provide reciprocal rights of access to facilitate co-ordinated and efficient vehicle access between the Service Commercial and Special Use areas; and

- provide for safe pedestrian/cycle connectivity between the Service Commercial and Special Use areas.

c) Urban Water Management

The following water management plans and strategies have been prepared for the CNLSP area. These strategies include:

- Jandakot Drainage and Water Management Plan No. 3 (JDWMP) - Peel Main Drain Catchment (Department of Water, 2009); and

- Local Water Management Strategy (LWMS) (JDA, 2017)

These plans address water management within the CNLSP area, providing a greater level of detail at successive stages of the planning process consistent with the principles of water sensitive urban design described in the Better Urban Water Management (BUWM) (WAPC, 2008) document and Stormwater Management Manual (DoW, 2007).

The CNLSP proposes realigning the Sub P Drain to maximise drainage storage within the high voltage transmission corridor. The JDWMP (DoW, 2009), and advice from the Department of Water and Environmental Regulation (DWER) and Water Corporation, indicate that the realigned drain must be redesigned as a Living Stream (Better Urban Water Management, 2008). The realigned drain must also maintain the cross sectional area of the existing drain, and maintain the hydraulic capacity of the existing drain such that flow rates and levels are unchanged, minimising impact on upstream and downstream areas.

However, the proponent advises that several sections of the realignment are proposed to be piped, including:

- a section commencing at the Thomas Road culverts, with a 120m east-west length proposed to be piped along Thomas to the High Voltage Transmission easement. The proponent argues that the alternative is an open channel which would be very deep (>2m) because Thomas Road rises to the west;

- a central section of the north-south alignment because Western Power does not allow open drainage within 30 m of the base of the high voltage towers.

The DWER advised in its submission that the Local Water Management Strategy submitted with the CNLSP is unsatisfactory and that the CNLSP should not be finalised prior to the endorsement of a satisfactory LWMS by the DWER in accordance with BUWM (WAPC, 2008).

The DWER has requested the following information to be included in the LWMS submitted with the CNLSP:

- a table detailing areas to be irrigated, irrigation rates taking into consideration hydro-zoning and total amount required;

- diagrams and cross-sections of the proposed bio-filtration areas (roadside and median strip swales) and basins including invert levels for all events, subsoils and their discharge points, inlets and outlets, and the Maximum Groundwater Level (MGL);

- a comparison with the methodology used within the recently released Australian rainfall and runoff (Ball et al. 2016) to determine flows and levels, and incorporate into table 10 and update where necessary;

- further details to demonstrate the proposed treatment and management of subsoil drainage. Subsoil drainage is to be free flowing and be treated via vegetated bio-filters before discharging into the living stream; and

- additional details concerning the monitoring program.

City Officers recommend that the CNLSP not be approved until a Local Water Management Strategy is prepared to the satisfaction of DWER and the Water Corporation.

d) Land uses compatible with potential odour emissions from the mushroom farm

The mushroom farm owners submission requests additional protection of the mushroom farm operation to ensure its long term viability into the future.

The mushroom farm owner states that a 500m buffer between the mushroom facility boundaries and any new sensitive development (also potentially including some forms of commercial/industrial development) is required, and, that an additional 500m be applied to create a conceptual buffer zone. Within the conceptual buffer zone, sensitive land uses would be required to acknowledge the existing mushroom facility and its operations before approval could be granted.

The submission also states that it is arguable that some of the land uses that could be accommodated in the LSP area are, more sensitive nature than others and, if established in proximity to the mushroom facility, could give rise to complaints about its operations. It is noted in the submission that the preliminary commercial development concept plan (Attachment F) for the area indicates “restaurants” are being considered for a site some 350 metres from the northern boundary of the mushroom facility site.

City Officers acknowledge that the mushroom farm has been operating for many years and provides significant local employment. However, the State Government rezoned the property and surrounding land to Urban zone under the MRS and concurrently to Development zone under the City’s LPS2 which facilitates urban development within the vicinity of the mushroom farm.

Consistent with State Planning Policy 2.5 – Rural Planning (clause 5.12.3), the City endorsed a Site Environmental Management Plan (EMP) (October 2015) for the mushroom farm to minimise potential land use conflicts and ensure that future development in the Casuarina Urban zone will not impinge on the continued operation of the facility. The EMP commits the operator of the mushroom farm to providing an annual report summarising the key issues of concern identified at the facility and any proposed improvements to be made in the spirit of continuous improvement. Although the majority of emissions are being managed and contained within the property boundary of the mushroom farm, it is acknowledged that low level emissions may impact areas beyond the property boundary.

Part 4 of the City's LPP6 states that:

"Evidence obtained from onsite noise studies, odour studies and modelling will be required when sensitive land uses are proposed in the vicinity of the mushroom farm to demonstrate that the proposed land uses will not be exposed to unacceptable odour and noise emissions, to the satisfaction of the City". This requirement of LPP6 is likely to apply to future residential land uses in the vicinity of the mushroom farm which are sensitive uses.

The mushroom farm is a rural use (approved by Council as Intensive Agriculture under LPS2) and hence falls under the SPP 2.5 .

In SPP 2.5, the definition of a sensitive land use is "Land uses that are residential or institutional in nature, where people live or regularly spend extended periods of time. These include dwellings, short stay accommodation, schools, hospitals, and childcare centres, and generally excludes commercial or industrial premises".

An older definition of sensitive land uses can be found in the EPA's Guidance for the Assessment of Environmental Factors No. 3 – Separation Distance between Industrial and Sensitive Land Uses (June 2005) (Guidance Statement No. 3). The EPA's guidance document applies to industrial land uses rather than rural land uses (such as a mushroom farm) but is worth noting. A sensitive land use is defined in Guidance Statement No. 3 as a "land use sensitive to emissions from industry and infrastructure" and includes shopping centres. Guidance Statement No. 3 also states "some commercial, institutional and industrial land uses which require high levels of amenity or are sensitive to particular emissions may also be considered sensitive land uses. Examples include some retail outlets …..and some types of storage and manufacturing".

City Officers are of the view that the land uses that will be permitted, or can be considered, within the proposed CNLSP are not likely to be sensitive. Further, there is flexibility to ensure that development in closer proximity to the mushroom farm can be designed such that loading facilities and service areas can be located adjacent to the mushroom farm or that built form can assist to mitigate any impacts. In order to provide some additional development control however, it is recommended that Council request that the CNLSP be amended to include a requirement that development applications within the CNLSP demonstrate to the City that the land use proposed is not considered 'sensitive' under SPP 2.5. In the event that the use is considered sensitive, then the requirements of the City's LPP6 apply.

e) Bushfire Management

State Planning Policy 3.7 – Planning in Bushfire Prone Areas (SPP 3.7) states that local structure plans should be accompanied by a Bushfire Management Plan (BMP) which includes a Bushfire Hazard Level assessment or Bushfire Attack Level (BAL) Contour Map for those areas identified as bushfire prone.

The CNLSP area is identified as a Bushfire Prone Area in the Map of Bushfire Prone Areas (2015) and as such a BMP was required. In this respect, a BMP was prepared to support the CNLSP.

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The Department of Fire and Emergency Services (DFES) has requested that the City consider annotating the CNLSP with the identification of hazard separation areas, particularly for the western periphery and areas adjacent to the proposed drainage area and living stream. This will ensure this information is considered at subsequent stages of planning (subdivision and development applications).

City Officers recommend that the CNLSP be amended to include these requirements as stated by DFES.

f) Environmental Considerations

- Multiple Use Wetland

The Department of Biodiversity, Conservation and Attractions (DBCA) advised in its submission that a portion of the Multiple Use Wetland (MUW) UFI 6629 in the north-eastern part of the subject area has been assessed as having “high conservation value”. This wetland is within Lot 9012 and aerial imagery shows the entire lot is reasonably well vegetated in comparison with much of the surrounding area. DBCA supports the protection of wetland and bushland vegetation within Lot 9012.

The proponent’s environmental consultant states that the wetland has very limited ecological value due to the highly degraded nature of the wetland.

The City’s Environment Manager notes that a multiple use wetland is defined by DBCA as a wetland with few remaining important attributes and functions which conflicts with the advice being provided by DBCA in relation to the wetland contained within the CNLSP.

The City’s Environment Manager notes the views of the DBCA but is of the view that there are higher conservation value areas of bushland within the Casuarina urban cell warranting conservation. The CNLSP identifies the multiple use wetland as being developed for service commercial purposes and it is not considered practical nor appropriate to conserve the wetland in the long term in this locality.

- Retention of Significant Trees

The proponent has prepared a Significant Tree Survey within the CNLSP area in accordance with the City’s Local Planning Policy No. 1 - Landscape Feature and Tree Retention Policy (LPP1). The survey identified 38 trees with a diameter at breast height of 500mm or greater.

The City’s Environment Team has considered the survey and visited the site. City Officers are of the view that there appear to be a number of significant trees on site worthy of retention and should be considered as part of future subdivision applications on the site. There is an opportunity to retain these trees within proposed drain reserves and living streams.

City Officers recommend that the WAPC impose a condition on future subdivision applications requiring the preparation of a Landscape Feature and Tree Retention Plan in accordance with LPP1, to ensure that the retention of significant trees is optimised as part of the civil design and earthworks.

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CONSIDERATION OF THE CASUARINA NORTH CONCEPT PLAN:

As discussed, the proponent has also submitted a Concept Plan for the balance of the Casuarina North precinct as required under LPP6. An LSP is still required to be prepared for the Concept Plan area prior to subdivision and development proceeding.

City's Officer's assessment of the Concept Plan and consideration of issues raised in submissions is discussed below:

a) Road layout and traffic management

A number of submissions raised concerns that more detailed information is required in relation to traffic modelling to:

- ensure that the road hierarchy depicted on the CNLSP is correct and will accommodate the future traffic which will pass through the Casuarina North precinct;
- understand the importance of Bombay Boulevard and protect its ongoing use; and
- confirm staging arrangements and commitments to the construction of key roads to ensure connections are maintained for the use of future residents within the Central Precinct through to Thomas Road.

The purpose of the Concept Plan is not to resolve detailed planning issues but to identify the broad structure planning issues that need to be resolved during subsequent stages of the planning process and enable these issues to be discussed in a transparent manner prior to future structure planning.

Issues in the area the subject of the Concept Plan will be resolved at later stages of the planning process, including local structure planning, subdivision and development.

City Officers also consider that a number of these issues can be resolved through consultation and agreement between landowners/developers with guidance of City Officers ahead of more detailed structure planning for the City.

City Officers recommend that the CNLSP be amended to require as part of any future subdivision or development applications, the preparation of a Traffic and Pedestrian Management Plan (TPMP) be prepared in consultation with City Officers prior to the WAPC adopting the CNLSP. The TPMP should:

- provide reciprocal rights of access to facilitate co-ordinated and efficient vehicle access between the Service Commercial and Special Use areas; and
- provide for safe pedestrian/cycle connectivity between the Service commercial and Special Use areas.

b) Provision of District Open Space

LPP6 states that the Casuarina North Precinct should include a 3ha district open space located on land to be acquired by Development Contribution Plan 3 and in accordance with the City's draft Community Infrastructure Plan.

A district sporting ground is identified in the Concept Plan submitted with the CNLSP.

A number of submissions from landowners in the Casuarina urban cell object to the location of the district open space for a number of reasons, including the follows matters:

- The proposed location of the district open space in the Concept Plan has no context in the applicable planning framework;
- The proposed location would represent a missed opportunity in terms of co-location on the south side of Orton Road abutting the primary school site; and
- The primary school should be situated at least 500m further south so that it is central allowing children to cycle or walk a shorter distance to primary school.

The purpose of the Concept Plan is not to resolve detailed planning issues but to identify the structure planning issues that need to be considered during subsequent stages of the planning processes and enable these issues to be discussed in a transparent manner prior to future structure planning.

City Officers intend to meet with key landowners/developers within the Casuarina North Precinct and Casuarina Central Precinct to discuss and seek resolution of this matter as part of forthcoming structure planning.

c) Provision of a Local Centre

LPP6 states that a local centre comprising (commercial and activity centre) (800m^2 retail floor space) should be provided at the intersection of Landgren Road and Orton Road, either in the North Precinct or the Central Precinct.

A site for a local centre has not been identified in the Concept Plan for the North Precinct and will need to be provided in future local structure plans for either the North or Central Precincts in accordance with LPP6.

City Officers recommend that the concept plan be amended via an annotation on the plan that refers to the intent of LPP6 that a local centre is to be identified at the intersection of Landgren Road and Orton Road for inclusion either in the North Casuarina Precinct or the Central Casuarina Precinct. Its final location will be determined as part of structure planning for these Precincts.

As discussed above, City Officers intend to meet with landowners/developers in the short term to discuss and seek to resolve this matter as part of forthcoming structure planning.

15.5 PROPOSED CASUARINA NORTH LOCAL STRUCTURE PLAN – LOT 1199 THOMAS ROAD, LOT 3 ON DIAGRAM 8613, LOT 9011 AND PART LOTS 9012 AND 9013 ON PLAN 410834, CASUARINA - CONSIDERATION OF SUBMISSIONS AND RECOMMENDATION TO THE WESTERN AUSTRALIAN PLANNING COMMISSION

SUMMARY OF ISSUES RAISED IN SUBMISSIONS:

Thirteen submissions were received during the submission period, including: six submissions from State government agencies; five submissions from landowners/developers; and a submission from the owners of the mushroom farm.

The submissions and City Officer comments in response to the submissions are provided in the Schedule of Submissions (Attachment H). The main issues raised in the submissions and the City's response to the issues are summarised in Table 1 below. Some of these matters have already been discussed as part of the Report.

Table 1: City Officers response to the main issues raised in the submissions

Main Issues Raised in the Submissions		**City Officer Comments**
1.	Traffic access/egress from the structure plan from Thomas Road	Main Roads and the City are not supportive of the proposed 'Right In' access from Thomas Road. It is recommended that the reference to 'Right In' access from Thomas Road (at the western end) in the Traffic Impact Assessment Report (Transcore, 2018) should be removed from the CNLSP.
2.	The DWER cannot support the CNLSP until it is satisfied with the LWMS. The proposed structure plan should not be finalised prior to the endorsement of a satisfactory LWMS by the DWER in accordance with BUWM (WAPC, 2008).	Noted and supported. City Officers recommend that prior to adoption by the WAPC that the proponent should prepare a LWMS in consultation with DWER in accordance with BUWM (WAPC, 2008).
3.	There are concerns in relation to the potential size and format of shop retail that may be facilitated by the proposed CNLSP. There is concern that the retail floor space may be too great or become uncontrolled affecting other centres, undermining Activity Centre strategies.	It is important to note that a shop is a prohibited use in the Service Commercial Zone which is the predominant zone within the CNLSP. The Special Use area lists a shop as an "IP" use. Under the City's LPS2 an "IP" use is a land use which will not be approved pursuant to the Scheme unless the use is incidental, dependent upon and subservient to the predominant land use on the land. In the opinion of City Officers, the CNLSP as proposed will not provide for an unintended gateway for the inclusion of large amounts of retail floor space as part of the future development of the site.
4.	Concern about odour issues emanating from the mushroom farm with a submission arguing for an odour separation and buffer area around the mushroom farm even given the proposed uses.	City Officers take the view that the proposed land use associated with the proposed Service Commercial Zone and Special Use Zone under CNLSP are not 'sensitive' land uses that would otherwise require measures to address potential odour impact. Such matters will require further consideration as part of future structure planning for residential land uses within the Casuarina Cell.

15.5 PROPOSED CASUARINA NORTH LOCAL STRUCTURE PLAN – LOT 1199 THOMAS ROAD, LOT 3 ON DIAGRAM 8613, LOT 9011 AND PART LOTS 9012 AND 9013 ON PLAN 410834, CASUARINA - CONSIDERATION OF SUBMISSIONS AND RECOMMENDATION TO THE WESTERN AUSTRALIAN PLANNING COMMISSION

Main Issues Raised in the Submissions		**City Officer Comments**
5.	A portion of the Multiple Use wetland (MUW) UFI 6629 in the north-eastern part of the subject area has been assessed as having "high conservation value". This wetland is within Lot 9012 and aerial imagery shows the entire lot is reasonably well vegetated in comparison with much of the surrounding area. DBCA supports the protection of wetland and bushland vegetation within Lot 9012, inclusive of the significant trees identified in Figure 2 of the significant tree survey (PGV 2018).	A multiple use wetland is defined by DBCA as a wetland with few remaining important attributes and functions which conflicts with the advice being provided by DBCA in relation to the wetland contained within the CNLSP. City Officers are of the view there are other areas of higher environmental significance within the Casuarina urban cell warranting conservation. The CNLSP identifies the multiple use wetland as being developed for service commercial purposes and it is not considered practical to conserve the wetland in the long term.
6.	Future subdivision should be designed to ensure the protection of vegetation worthy of retention within the LSP area.	City Officers recommend that a condition be placed on future subdivision applications requiring the preparation of a Landscape Feature and Tree Retention Plan in accordance with LPP1. The City's Environment team has considered the survey and visited the site. City Officers are of the view that there appear to be a number of significant trees on site worthy of retention and should be considered as part of future subdivision applications on the site. There is an opportunity to retain these trees within proposed drain reserves and living streams. City Officers recommend that the Landscape Feature and Tree Retention Plan is developed in consultation with the City at the detailed design stage.
7.	Further consideration of subdivision and development design at subsequent stages should optimise bushfire hazard separation through a combination of public road reserves, public open space, internal access roads/driveways and private managed landscape areas. Areas of bushfire hazard separation should be annotated on the structure plan (for the western periphery and areas adjacent to the proposed drainage area and living stream, to ensure consideration of subsequent planning stage(s)).	City Officers recommend that the CNLSP be amended to include the identification of bushfire hazard separation areas, particularly for the western periphery of the CNLSP and areas adjacent to the proposed drainage area and living stream to ensure this information is considered at subsequent stages of the planning process.

15.5 PROPOSED CASUARINA NORTH LOCAL STRUCTURE PLAN – LOT 1199 THOMAS ROAD, LOT 3 ON DIAGRAM 8613, LOT 9011 AND PART LOTS 9012 AND 9013 ON PLAN 410834, CASUARINA - CONSIDERATION OF SUBMISSIONS AND RECOMMENDATION TO THE WESTERN AUSTRALIAN PLANNING COMMISSION

Main Issues Raised in the Submissions		**City Officer Comments**
8.	The resolution of strategic planning considerations requires greater attention prior to the proponent of the CNLSP progressing with commercial development. Provision of District Open Space in the location shown on the concept plan does not respond appropriately to the applicable planning framework, fails to take advantage of co-location opportunities and has disadvantages in terms of connectivity to surrounding neighbourhoods. Further, the technical data presented in the CNLSP and Concept Plan fail to provide sufficient detail to inform structure planning elsewhere in the Casuarina Cell and to make an informed submission.	The submitter has raised a considerable number of issues which mainly relate to land either situated outside of the proposed CNLSP, or to the balance of the Casuarina North precinct, or the Casuarina Central precinct. City Officers acknowledge that these issues must be resolved as part of the planning process. However, City Officers are satisfied that the Concept Plan provides sufficient detail to demonstrate that the approval of the CNLSP will not prejudice future planning of the precinct. City Officers will seek to guide and work with landowners/developers in the short term to resolve outstanding matters as part of forthcoming structure plans for the Casuarina North and Central Precincts.

City Officers have made a number of recommendations in response to the issues raised in the submissions as outlined below:

- Amending the LWMS in consultation with DWER prior to the WAPC adopting the CNLSP; and

- Including statements in the CNLSP requiring preparation of an Urban Water Management Plan and Landscape Feature and Tree Retention Plan

A number of detailed local planning issues were raised in the submissions that will be dealt with during later stages of the planning process (subdivision and development) as outlined in the Schedule of Submissions. These include:

A local centre is to be identified in an amended concept plan via an annotation on the plan that refers to the intent of LPP6 that a local centre is to be identified at the intersection of Landgren Road and Orton Road for inclusion either in the North Casuarina Precinct or the Central Casuarina Precinct. Its final location will be determined as part of structure planning for these Precincts.

- District open space is to be identified in a local structure plan for the balance of the Casuarina North. This matter is to be resolved through consultation and agreement between landowners/developers (with the involvement of the City) ahead of more detailed structure planning.

15.5 PROPOSED CASUARINA NORTH LOCAL STRUCTURE PLAN – LOT 1199 THOMAS ROAD, LOT 3 ON DIAGRAM 8613, LOT 9011 AND PART LOTS 9012 AND 9013 ON PLAN 410834, CASUARINA - CONSIDERATION OF SUBMISSIONS AND RECOMMENDATION TO THE WESTERN AUSTRALIAN PLANNING COMMISSION

LEGAL/POLICY IMPLICATIONS:

For the purpose of Councillors considering a financial or impartiality interest only, the proponent/owner is Aigle Royal Properties Pty Ltd.

Acts and Regulations

- *Environmental Protection Act 1986*
- *Environmental Protection and Biodiversity Conservation Act 1999*
- *Planning and Development (Local Planning Schemes) Regulations 2015*

Schemes

- Metropolitan Region Scheme
- City of Kwinana Local Planning Scheme No. 2 (1992)

State Planning Policies

- South Metropolitan Peel Sub-regional Planning Framework (WAPC, 2018)
- Jandakot Structure Plan (WAPC, 2007)
- State Planning Policy 2.3 – Jandakot Groundwater Protection (WAPC, 2017)
- State Planning Policy 2.5 – Rural Planning
- State Planning Policy 3.7 – Planning in Bushfire Prone Areas (WAPC, 2015)
- State Planning Policy 5.4 - Road and Rail Transport Noise and Freight Considerations in Land Use Planning (WAPC, 2009)
- Liveable Neighbourhoods (WAPC, 2009)
- Development Control Policy 5.1 – Regional Roads (vehicle access) (Draft)

Local Planning Policies and relevant planning strategies / documents

- Draft Eastern Residential Intensification Concept (2005)
- Local Commercial and Activity Centres Strategy (City of Kwinana, 2014)
- Strategic Community Plan 2017-2027 (City of Kwinana, January 2017)
- Development Contribution Plan 3 (POS) (City of Kwinana, October 2017)
- Development Contribution Plan 10 (Community facilities)
- Local Planning Policy 1 - Landscape Feature and Tree Retention (City of Kwinana, 2017)
- Local Planning Policy 6 – Guidelines for Structure Planning in the Casuarina Cell (City of Kwinana, 2018)

FINANCIAL / BUDGET IMPLICATIONS:

The cost of preparing and advertising the CNLSP has been borne by the applicant.

ASSET MANAGEMENT IMPLICATIONS:

The City will be financially responsible for maintaining public open space, roads, verge trees and footpaths within the CNLSP area once the area has been developed and maintained for the required period.

15.5 PROPOSED CASUARINA NORTH LOCAL STRUCTURE PLAN – LOT 1199 THOMAS ROAD, LOT 3 ON DIAGRAM 8613, LOT 9011 AND PART LOTS 9012 AND 9013 ON PLAN 410834, CASUARINA - CONSIDERATION OF SUBMISSIONS AND RECOMMENDATION TO THE WESTERN AUSTRALIAN PLANNING COMMISSION

ENVIRONMENTAL IMPLICATIONS:

MRS Amendment 1117/33 to rezone Casuarina (including Casuarina North precinct) from 'Rural' to 'Urban Deferred' was considered by the Environmental Protection Authority (EPA) under the *Environmental Protection Act 1986* (EP Act). The EPA determined that Amendment 1117/33 did not require formal environmental assessment under the EP Act and provided advice and recommendations.

In particular, the EPA advised that it had not assessed the following issues in its assessment of Amendment 1117/33 on the basis that these matters could be adequately resolved during subsequent stages of the planning process:

- Drainage
- Peel Harvey catchment
- Wetlands
- Remnant vegetation
- Fauna
- Contamination
- Air emissions
- Noise and vibration

The EPA's decision acknowledges that parts of Casuarina have been cleared and can be developed without impacting on significant environmental values. If significant areas of vegetation and wetland are proposed to be developed as part of the planning process (structure planning and subdivision), then future subdivision and development can be referred to the EPA.

STRATEGIC/SOCIAL IMPLICATIONS:

This proposal will support the achievement of the following outcome and objective detailed in the *Strategic Community Plan 2017-2027*.

Plan	Outcome	Objective
Strategic Community Plan 2017-2027	A well planned City	4.4 Create diverse places and spaces where people can enjoy a variety of lifestyles with high levels of amenity.

COMMUNITY ENGAGEMENT:

The City advertised the proposed CNLSP for 19 days between 10 September and 28 September 2018 in accordance with *Schedule 2, Part 4, Clause 18* of the *P&D Regulations.*

15.5 PROPOSED CASUARINA NORTH LOCAL STRUCTURE PLAN – LOT 1199 THOMAS ROAD, LOT 3 ON DIAGRAM 8613, LOT 9011 AND PART LOTS 9012 AND 9013 ON PLAN 410834, CASUARINA - CONSIDERATION OF SUBMISSIONS AND RECOMMENDATION TO THE WESTERN AUSTRALIAN PLANNING COMMISSION

Public advertising was carried out in the following manner:

- Nearby landowners and State government agencies were notified of the proposal in writing and invited to comment;
- The proponent erected two signs on site along Thomas Road;
- A notice was placed in a local newspaper once over the course of the two week advertising period; and
- Copies of the proposed CNLSP and relevant documents were made available for inspection at the City's Administration Office and placed on the City's website.

The following State government agencies were notified of the proposal in writing and invited to comment:

- Department of Transport
- Main Roads WA
- Department of Fire and Emergency Services
- Department of Water and Environmental Regulation
- Department Biodiversity, Conservation and Attractions
- Water Corporation
- Western Power

Submissions were received from six State government agencies; five landowners/developers; and the owners of the mushroom farm.

The submissions and City Officer comments are summarised in the Schedule of Submissions in accordance with *Schedule 2, Part 4, Clause 20(2)* of the *P&D Regulations*.

PUBLIC HEALTH IMPLICATIONS:

The City will require that future development applications within the CNLSP area are accompanied with odour and noise studies. LPP6 requires that evidence obtained from onsite noise studies, odour studies and modelling will be required when sensitive land uses are proposed in the vicinity of the mushroom farm to demonstrate that the proposed land uses will not be exposed to unacceptable odour and noise emissions, to the satisfaction of the City. The City will only support land uses in locations where it can be confident there will not be long-term odour and noise conflicts.

RISK IMPLICATIONS:

The risk implications in relation to this proposal are as follows:

Risk Event	That the best planning outcomes are not achieved.
Risk Theme	Poor planning outcomes and failure to fulfil statutory regulations.

15.5 PROPOSED CASUARINA NORTH LOCAL STRUCTURE PLAN – LOT 1199 THOMAS ROAD, LOT 3 ON DIAGRAM 8613, LOT 9011 AND PART LOTS 9012 AND 9013 ON PLAN 410834, CASUARINA - CONSIDERATION OF SUBMISSIONS AND RECOMMENDATION TO THE WESTERN AUSTRALIAN PLANNING COMMISSION

Risk Effect/Impact	Future amenity and community planning.
Risk Assessment Context	Strategic
Consequence	Moderate
Likelihood	Possible
Rating (before treatment)	Moderate
Risk Treatment in place	Full consideration by City Officers against Council and WAPC policy.
Response to risk treatment required/in place	The City is to give due regard to the amended CNLSP when providing advice to the WAPC in relation to subdivision applications and making decisions in relation to development applications.
Rating (after treatment)	Low

AMENDMENT TO THE SUBSTANTIVE MOTION
MOVED CR D WOOD

That the following point v to be added within point 1, dot point eight:

i. At the bottom of Lot 3 the applicant, should have a vegetation buffer of 50m to reduce noise and odours from the mushroom farm.

LAPSED FOR A WANT OF A SECONDER

COUNCIL DECISION
316
MOVED CR C ADAMS **SECONDED CR M KEARNEY**

That Council:

1. Recommend to the Western Australian Planning Commission (WAPC) that the proposed Casuarina North Local Structure Plan (CNLSP) (Attachment G), be approved subject to the following requirements:

- **A Local Water Management Strategy be prepared in consultation with and to the satisfaction of the Department of Water and Environmental Regulation and the Water Corporation.**

- **An amendment to the CNLSP (Attachment G) to ensure the future provision of a north – south connector road to run southwards alongside or potentially within the alignment of the High Voltage Transmission Line to Orton Road (Attachment H). The purpose of this road link is to ensure that traffic associated with the Mushroom Exchange and Service Commercial Zones to the north and potentially south of Orton Road have access/egress to Thomas Road without needing to move though future residential land uses further to the east within the Casuarina Cell.**

- **An amendment to the CNLSP via an annotation on the plan that states the intent of Local Planning Policy No 6 that a local centre (a commercial and activity centre with 800m² retail foorspace) is to be identified at the intersection of Landgren Road and Orton Road for inclusion either in the North Casuarina Precinct or the Central Casuarina Precinct. Its final location will be determined as part of structure planning for these Precincts.**

- **Amendments to the CNLSP to delineate bush fire hazard separation areas, particularly for the western periphery and areas adjacent to proposed drainage areas and the living stream.**

- **Removal of reference to 'Right In' access from Thomas Road (at the western end) in the Traffic Impact Assessment Report (Transcore, 2018).**

- **Correct inconsistencies between the versions of the CNLSP shown in the Traffic Impact Assessment and the proposed Commercial Plan prior to the approval of the CNLSP.**

- **Amend the CNLSP to include a requirement that development applications within the CNLSP demonstrate to the City that the land use proposed is not considered 'sensitive' under State Planning Policy 2.5 Rural Planning (SPP2.5). In the event that the use is considered sensitive, then the requirements of the City's Local Planning Policy No 6 will apply.**

- **Inclusion of statements in the CNLSP (Attachment G) requiring the preparation of the following plans to the satisfaction of the City as part of the subdivision and/or development application process:**

  ii. Urban Water Management Plan
  An Urban Water Management Strategy should be prepared in consultation the Department of Water and Environmental Regulation and the Water Corporation.

  iii. Landscape Feature and Tree Retention Plan
  A Landscape Feature and Tree Retention Plan should be prepared in accordance with Local Planning Policy No 1, to ensure that the retention of significant trees is optimised as part of the civil design and earthworks.

  The Landscape Feature and Tree Retention Plan should be developed in consultation with the City at the detailed design stage.

  iv. A Traffic and Pedestrian Management Plan (TPMP) shall be prepared and approved by the City which identifies reciprocal rights of access to facilitate co-ordinated and efficient vehicle access between the Service Commercial and Special Use areas; and provide for safe pedestrian/cycle connectivity between the Service Commercial and Special Use areas.

v. That a notification, pursuant to Section 165 of the Planning and Development Act 2005 is to be placed on the certificates of title of the proposed lots advising of the existence of potential odour and noise hazards. Notice of this notification is to be included on the diagram or plan of survey. The notification is to state as follows: "This lot is in close proximity to the Mushroom Exchange and may be adversely affected by virtue of odour and noise emissions from that facility."

2. **Endorse the Schedule of Submissions (Attachment D) pursuant to Schedule 2, Part 4, Clause 20(2), of the *Planning and Development Regulations 2015*.**

3. Forward this Ordinary Council Meeting Report and Council's resolution to the WAPC pursuant to Schedule 2, Part 4, Clause 20 of the *Planning and Development Regulations 2015*.

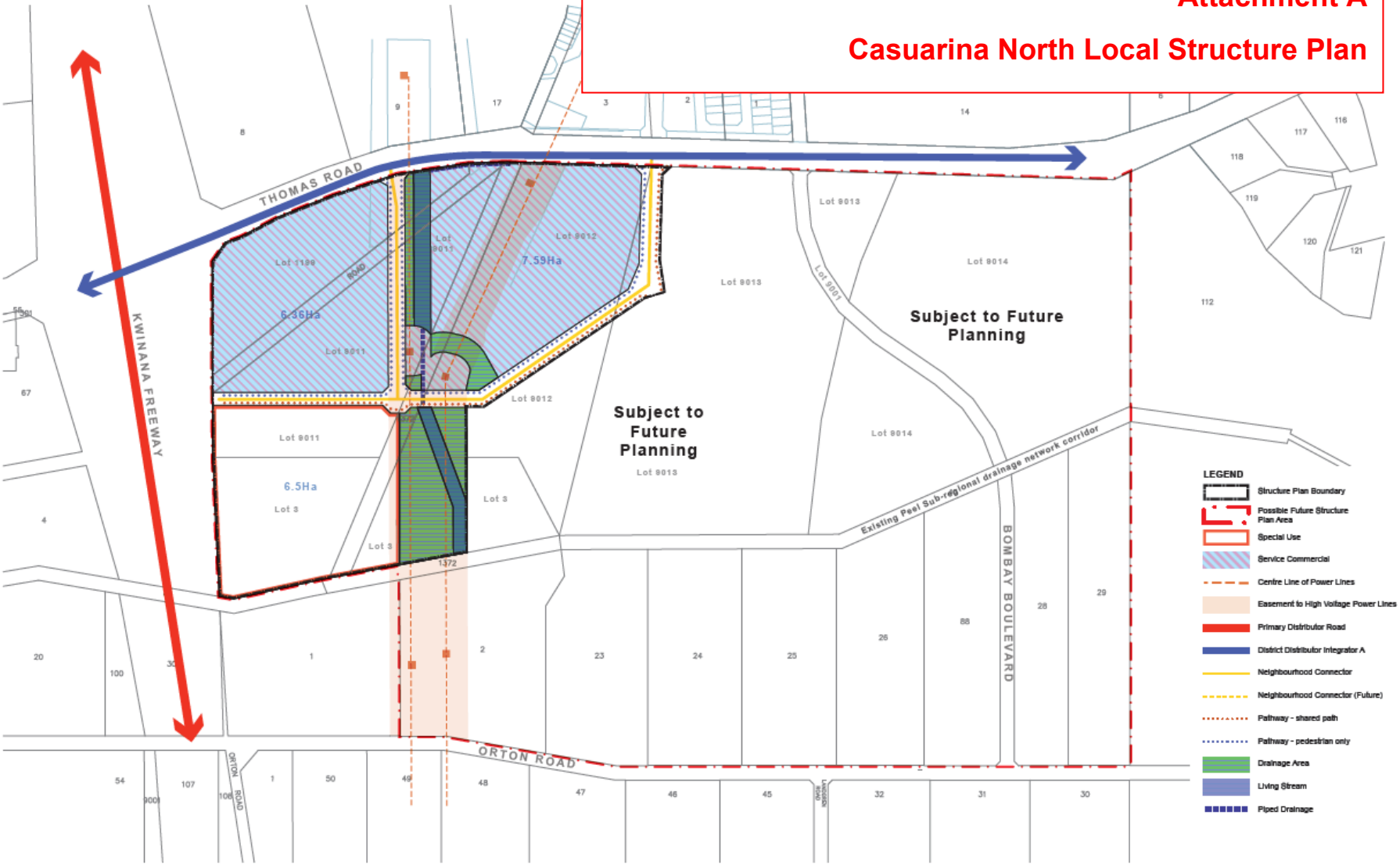
Note that there are a number of other planning matters which have been raised as part of the City's consideration of the submissions received during the advertising of the CNLSP which will require further consideration and resolution as part of the planning for the remainder of the Casuarina North Precinct and Casuarina Central Precinct. This includes matters such as the location of the district playing fields, local centre and access to development staging within the Casuarina Cell. These matters will require resolution as part of subsequent structure plan preparation by landowners and as part of statutory approvals outside the current CNLSP. City Officers will liaise with various landowners to guide and seek resolution to these matters.

CARRIED
7/1

NOTE - That the officer recommendation has been amended within point one, dot point eight, to include point additional point iv.

Attachment A

Casuarina North Local Structure Plan



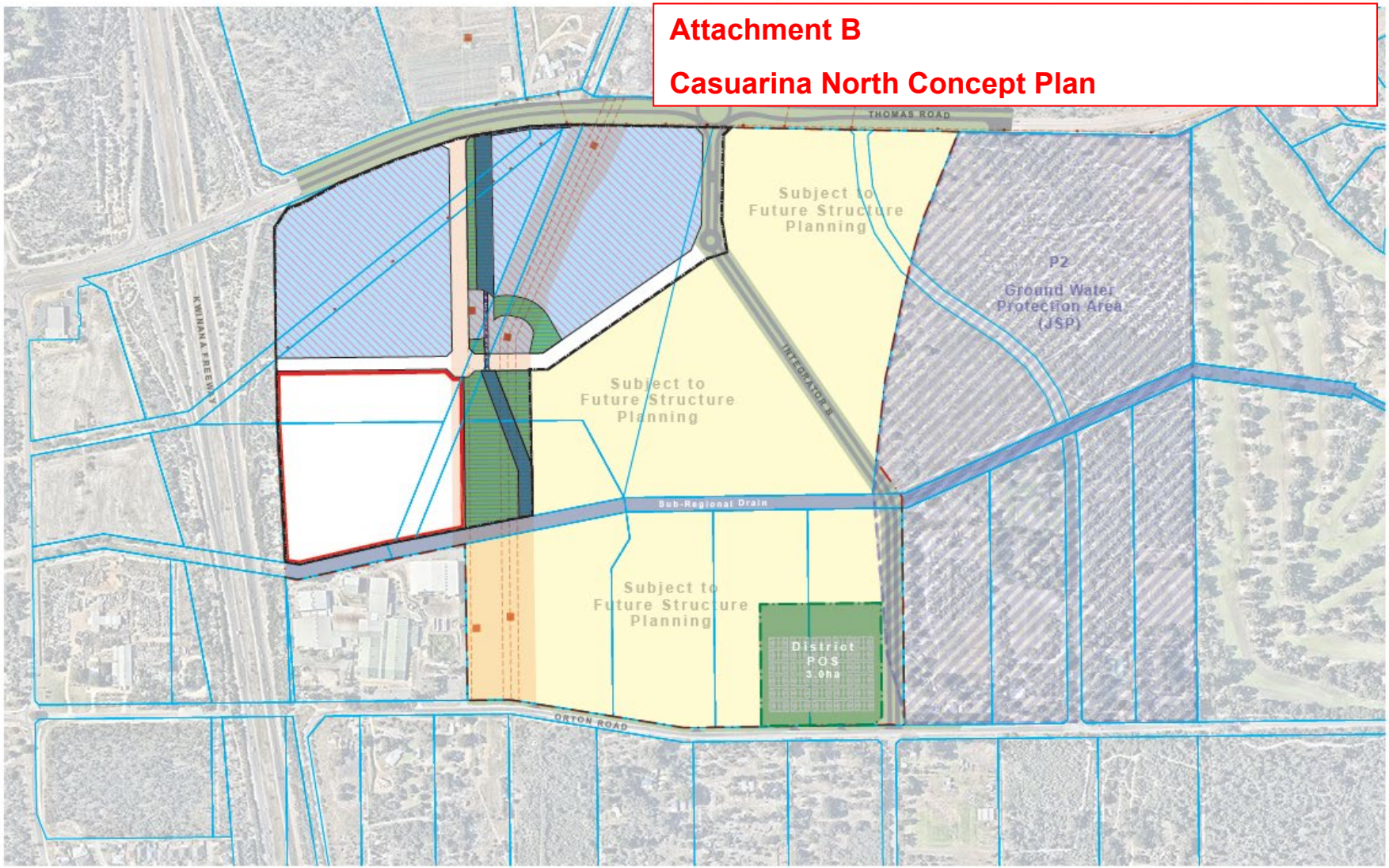
Plan 1: Local Structure Plan

Lots 9011, 9012, 9013, 1199 & 3 Thomas Road, Casuarina

element.
the art and science of place

Attachment B

Casuarina North Concept Plan



Concept Plan

Lots 9011, 9012, 9013, 1199 & 3 Thomas Road, Casuarina

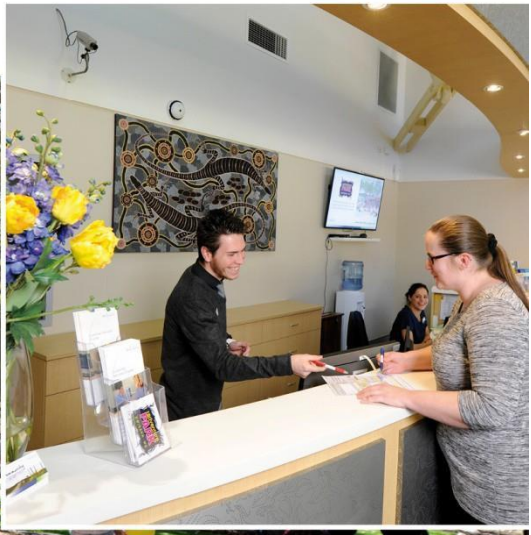
element.
the art and science of place

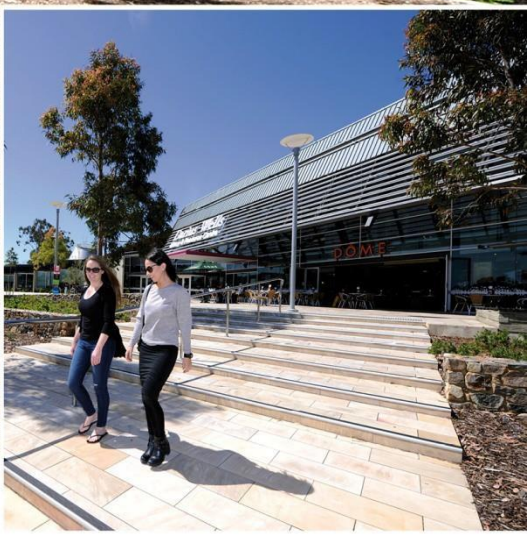
© NOTE: Initiatives shown on this plan are conceptual only and subject to detailed investigations including landowner consultation.

City of Kwinana

Local Planning Policy 6

Guidelines for Structure Planning In the Casuarina Cell





Local Planning Policy No. 6
Guidelines for Structure Planning in the Casuarina Cell

Adopted:	23 May 2018
Last Reviewed:	
Legal Authority:	*Planning and Development (Local Planning Schemes) Regulations 2015* Schedule 2 – Part 2 – Division 2

1. POLICY OBJECTIVE

To provide guidance on the district planning matters that should be considered during the preparation of Local Structure Plans (LSPs) within the Casuarina Urban Development zone (Casuarina Cell), to ensure that subdivision and/or development proceeds in an orderly and proper manner across the whole Cell.

2. POLICY APPLICATION

This policy has been informed by the *South Metropolitan Peel Sub-regional Planning Framework* (2018), *Jandakot Structure Plan* (2007) and *Eastern Residential Intensification Concept* (2005) in order to ensure integrated decision-making. This ensures that these regional planning documents are considered when preparing LSPs within the Casuarina Cell.

To ensure that subdivision and/or development proceed in an orderly and proper manner, LSPs prepared within the Casuarina Cell (pursuant to *Planning and Development Regulations 2015*) may only be supported by the City of Kwinana (the City) where they are prepared for one, or more, of the entire precincts as depicted in Figure 1 (Attachment A).

The City may consider a LSP for a portion of a precinct where the proponent has:

- Demonstrated that the LSP addresses and meets the objectives of LPP6 and the precinct guidelines in which it is located, such as the provision of significant local and district land uses and facilities as identified in the policy;

- Demonstrated that the LSP can be considered in isolation to the wider planning considerations within the precinct in which it is located, and, its approval would not prejudice the optimum planning and design outcome of the precinct as considered by Council;

- Demonstrated that the LSP applies to greater than a single lot and occupies an area of at least 30% of a precinct; and

- Prepared a concept plan for the remainder of the precinct which addresses the matters raised in the policy and has been the subject of consultation with other landowners in the precinct. The concept plan shall be submitted with the LSP documents and shall include but not limited to, details in relation to the outcomes of the consultation, total site area of the precinct, gross subdivisible area, distributor roads, POS schedule and POS distribution.

This policy should be read in conjunction with relevant State Government, Commonwealth Government and City legislation and policies, including but not limited to:

- *City of Kwinana Local Planning Scheme No. 2* (1992)
- *Community Infrastructure Plan* (as adopted by the City of Kwinana)
- *Development Contribution Plan 3* (POS) (City of Kwinana, 3 October 2017)
- *Development Contribution Plan 10* (Community facilities) (as adopted by the City of Kwinana)
- *Environmental Protection and Biodiversity Conservation Act 1999* (Cth)
- *Environmental Protection Act 1986* (WA)
- *Eastern Residential Intensification Concept (2006)*
- *Guidelines for Structure Plans* (WAPC, 2012)
- *Guidelines for Planning in Bushfire Prone Areas* (WAPC,2015)
- *Jandakot Structure Plan* (WAPC, 2007)
- *Liveable Neighbourhoods* (WAPC, 2009)
- *Local Commercial and Activity Centres Strategy* (City of Kwinana, 2013)
- *Planning and Development Regulations 2015* (WA Government)
- *South Metropolitan Peel Sub-regional Planning Framework* (2018)
- *State Planning Policy 1 – State Planning Framework* (WAPC, 2017)
- *State Planning Policy 2.3 – Jandakot Groundwater Protection* (WAPC, 2017)
- *State Planning Policy 3.7 – Planning in Bushfire Prone Areas* (WAPC, 2015)
- *State Planning Policy 4.2 – Activity Centres for Perth and Peel* (WAPC,2010)
- *State Planning Policy 5.4 - Road and Rail Transport Noise and Freight Considerations in Land Use Planning* (WAPC, 2009)
- *Strategic Community Plan 2017-2027* (City of Kwinana, January 2017)

3. DEFINITIONS

The terms used in this policy are defined below or as defined in adopted or amended versions of the *Local Planning Scheme No.2* (LPS2)*, Community Infrastructure Plan* or relevant *Developer Contribution Plan(s)*:

Developer Contribution Plan
The subject land is included in *Developer Contribution Plan 3* for public open space and *Developer Contribution Plan 10* for community facilities.

The principles and considerations that apply to development contributions are set out in *State Planning Policy 3.6 - Development Contributions for Infrastructure*.

District Community Centre
A large scale multi-purpose community centre that caters for the higher order social and community needs generated from surrounding local catchments. A District Community Centre provides a diverse range of universal activities and programs, including performance space.

A District Community Centre can also provide the base for the delivery of community services, such as child health clinics and can also accommodate office space for community organisations involved in the delivery of services or programs at the district level and visiting government services.

A District Community Centre can also provide the facilities for adult day care and other specialised functions and may resource and provide outreach programs, activities and services to Local Community Centres.

District Youth Centre
A multi-purpose community facility catering for young people (12 - 24 year olds) by providing a range of facilities, programs, services and activities that target their needs and interests.

Local Community Centre
A multi-purpose community building which provides a range of social, learning, personal development, health and lifestyle activities. A *Local Community Centre* incorporates a main hall area, activity area(s), meeting rooms, kitchen, wet activity areas, offices and storage areas.

Local Centre
An important local community focal point that helps to provide for the main daily to weekly household shopping and community needs.

District Sporting Ground
A multi-purpose sporting hub that is designed to have flexible capacity to cater for a diverse and changing range of field sports over time, while also integrating opportunities and infrastructure for passive recreation and physical activity.

Local Sporting Ground
A multi-purpose sports and recreation facility incorporating a grass active playing space with training level lighting that can accommodate a wide variety of sports. A Local Sporting Ground is typically shared by a minimum of two clubs and includes one to two multi-purpose hard courts and other facilities such as cricket practice nets. A Local Sporting Ground also provides for informal physical activity and passive recreation, such as jogging, walking, fitness programs and dog exercise and includes play equipment, seating, picnic table, BBQ, drinking fountain, toilets and shade at a minimum.

A facility building is situated alongside the playing field to provide toilets and some shade.

Local Park
A well designed open space with equipment and natural play opportunities for 0-12 year olds including active and passive elements.

4. GENERAL GUIDELINES

In addition to the requirements of the Western Australian Planning Commission (WAPC) and the City, there are a number of specific district planning matters that must be addressed as part of all LSPs prepared for the Casuarina Cell, as described below:

Bushfire Protection
This policy should be read in conjunction with *State Planning Policy 3.7 - Planning in Bushfire Prone Areas* (WAPC, 2015).

LSPs must take into account bushfire protection requirements. The City will not support LSPs where vulnerable and high risk land uses are proposed in a manner in which the associated risk cannot be sufficiently mitigated.

Compatible land uses in the vicinity of the mushroom farm
Evidence obtained from onsite noise studies, odour studies and modelling will be required when sensitive land uses are proposed in the vicinity of the mushroom farm on Lot 1 (45) Orton Road, Casuarina to demonstrate that the proposed land uses will not be exposed to unacceptable odour and noise emissions, to the satisfaction of the City.

The City will only support land uses in locations where it can be confident there will not be long-term odour and noise conflicts.

Interface treatment between Development and Rural zones
In locations where the boundary of a proposed LSP, within the *Development* zone, abuts the *Rural Water Resource* zone (J*andakot Groundwater Protection Area*) the following potential land use compatibility matters should be taken into account and appropriately mitigated:

- The potential impact of future land uses within the *Development* zone on the visual amenity (light emissions, fencing and landscaping) and character of the *Rural* zone; and

- The potential impact of land use activities (noise, dust and odour) within the *Rural* zone on future sensitive land uses within the *Development* zone.

Local Water Management
Stormwater drainage should be contained within each precinct, unless supported by a *Local Water Management Strategy* and an implementation process that enables drainage to be managed elsewhere. Peel sub-drains should be upgraded to an appropriate urban standard with *Living Stream* treatment in accordance with the *Development Contribution Plan*.

Residential Densities
Residential densities should accord with *Liveable Neighbourhood* principles with higher densities located near the activity centre or areas of higher amenity, such as public open space (POS).

5. LOCAL STRUCTURE PLANNING GUIDELINES

In addition to the requirements of the WAPC and the City, there are a number of specific district and significant local planning matters that must be addressed as part of structure planning for each precinct identified in Figure 1 (Attachment A), as described below:

a) NORTH PRECINCT

The North Precinct should include the following:

i. *Bulky Goods* and *Showroom* uses should be located adjacent to Thomas Road and the Kwinana Freeway to make best use of the access and exposure provided by these roads. Supermarkets and small format shops are not permitted in this area. The balance of the precinct should be used for residential purposes.

ii. Primary access from Thomas Road should allow a four way intersection as approved in the *Anketell South Local Structure Plan* (2014). This access should become the primary north–south route through the broader Casuarina Cell and should link to existing Landgren Road in the adjacent Central Precinct.

iii. The City may support the use of the land within the power line easements for car parking associated with the adjacent commercial and recreation uses.

iv. Development of a *District Sporting Ground* located on land to be acquired by the *Development Contribution Plan* in accordance with the adopted *Community Infrastructure Plan* (or most recent version).

v. A maximum of 80% of the total POS requirement in the North Precinct shall be provided within the precinct with the shortfall (maximum 20%) being provided as a cost contribution through the DCP.

vi. The identification of a site for a *Local Centre* (commercial and activity centre) (800m^2 retail floor space) should be provided at the intersection of Landgren Road and Orton Road, either in the North Precinct or the Central Precinct.

vii. As part of the submittal of a LSP, the applicant shall consider and address the key land uses proposed in the Jandakot Structure Plan and Eastern Residential Intensification Concept for this Precinct area.

b) CENTRAL PRECINCT

The Central Precinct should include the following:

i. A *Primary School* site located near the intersection of Landgren Road and Orton Road.

ii. POS co-located with the Primary School to the satisfaction of the City and the Department of Education.

iii. A maximum of 80% of the total POS requirement in the Central Precinct shall be provided within the precinct with the shortfall (maximum 20%) being provided as a cost contribution through the DCP.

iv. Landgren Road as the main north-south road link through the Casuarina Cell.

v. The identification of a site for a *Local Centre* (commercial and activity centre) (800m^2 retail floor space) provided at the intersection of Landgren Road and Orton Road, either in the Central Precinct or the North Precinct.

vi. Commercial uses and floor areas should be consistent with the City's *Local Commercial and Activity Centres Strategy* (2013).

vii. As part of the submittal of a LSP, the applicant shall consider and address the key land uses proposed in the Jandakot Structure Plan and Eastern Residential Intensification Concept for this Precinct area.

c) SOUTH PRECINCT

The South Precinct should include the following:

i. A site for a *High School* provided in accordance with the design principles set out in *Liveable Neighbourhoods.*

ii. A *Local Sporting Groun*d (with a facility building and kiosk) to be co-located with the high school in accordance with the adopted *Community Infrastructure Plan* (or most recent version).

iii. Land for a *District Community Centre* (7,000m^2) to form part of the POS contribution for the Casuarina Cell.

iv. Land for a *District Youth Centre* (7,000m^2) to form part of the POS contribution for the Casuarina Cell. The *District Youth Centre* should be located adjacent to the *District Community Centre* within POS.

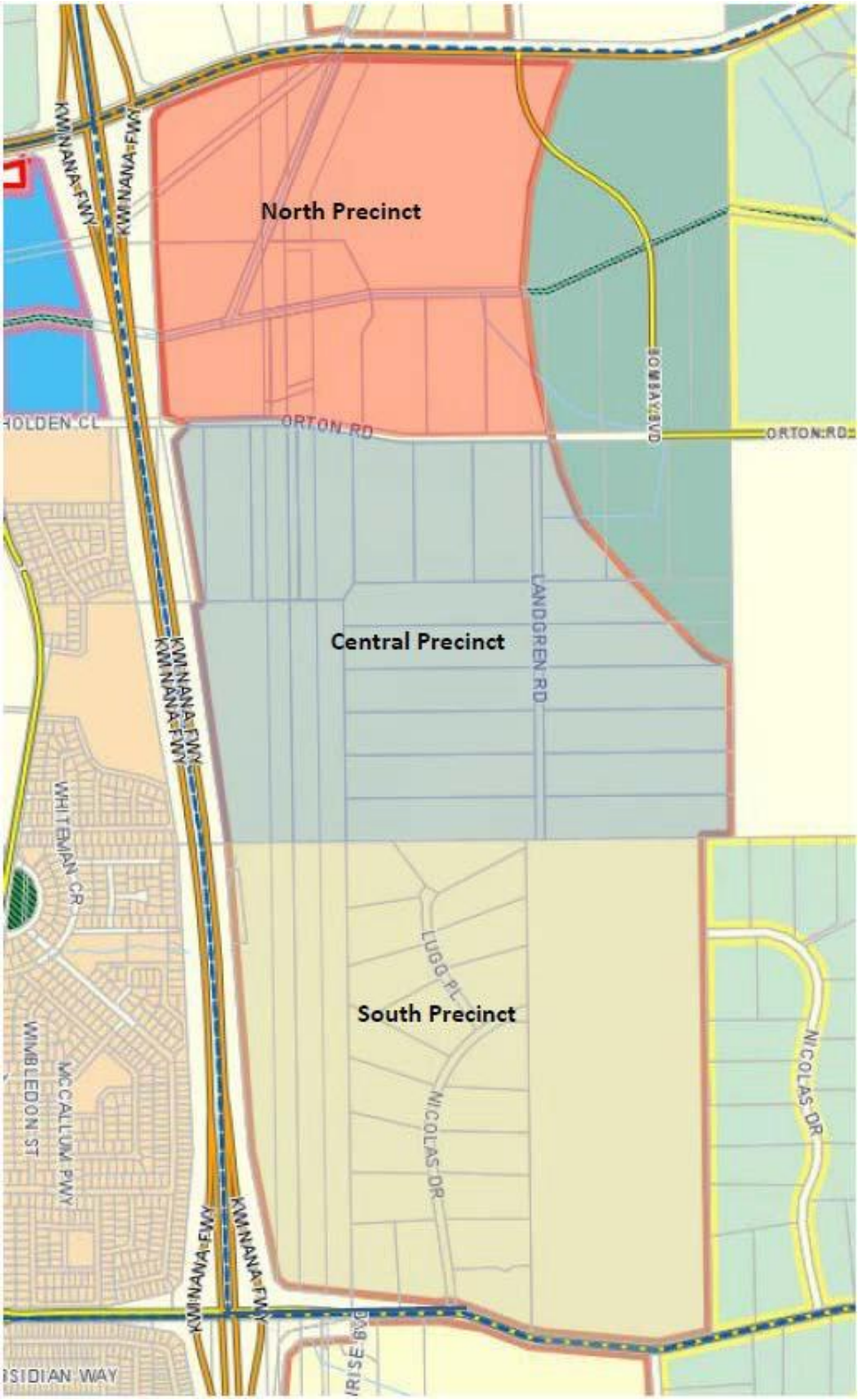
v. The identification of a site for a for a *Local Centre* (6,000m^2 retail floor space) be provided near the intersection of the north-south linkage (Landgren Road) and Mortimer Road.

vi. Landgren Road be extended to connect to and generally align with Nicholas Drive to provide a north-south linkage. The current intersection of Nicholas Drive and Mortimer Road may be used to align with local structure planning for the Wellard East Cell.

vii. The assessment of the environmental quality of the existing bushland within the Casuarina Cell and make recommendations for the preservation of areas of environmental value in accordance with the Western Australian *Environmental Protection Act 1986* and the Commonwealth *Environmental Protection and Biodiversity Conservation Act 1999*.

viii. The shortfall of POS in the North and Central Precincts may be used to purchase additional Restricted POS in the South Precinct through the DCP, for the purpose of maximising the preservation of environmentally significant native bushland.

Attachment A (Figure 1)



Attachment D

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	SUBMITTER AND ADDRESS	NATURE AND SUMMARY OF SUBMISSION	CITY OFFICERS COMMENT
1.	**Department of Water and Environmental Regulation** Contact: Brett Dunn Program Manager Urban Water Management Peel Region	Consistent with Better Urban Water Management (BUWM) (WAPC, 2008) and policy measures outlined in State Planning Policy 2.9 the proposed Structure Plan should be supported by an approved Local Water Management Strategy (LWMS) prior to final approval of the Structure Plan. The LWMS should demonstrate how the subject area will address water use and stormwater management. It should contain a level of information that demonstrates the site constraints and the level of risk to the water resources. The DWER reviewed the supporting document, Lots 9011, 9012, 9013, 1199 and 3 Thomas Road, Casuarina - Local Water Management Strategy (JDA, December 2017) and it was deemed unsatisfactory to the DWER. The DWER cannot support the structure plan until the Department is satisfied with the LWMS. Accordingly, the proposed structure plan should not be finalised prior to the endorsement of a satisfactory LWMS by the DWER and the City of Kwinana in accordance with BUWM (WAPC, 2008). <u>Section 5.2.1 Public Open Spaces</u> If groundwater is required to irrigate any POS or streetscape areas, this is to be identified within the LWMS including a table detailing areas to be irrigated, irrigation rates taking into consideration hydro-zoning and total amount required. A licence from DWER is required and a copy is to be included within the appendices. <u>Section 5.3.2 Local Stormwater Management</u> Please include diagrams and cross-sections of the proposed bio-filtration areas (roadside and median strip swales) and basins including invert levels for all events, subsoils and their discharge points, inlets and outlets, and the MGL. <u>Section 5.3.2.4 Surface Water Modelling</u> This section describes the use of the Australian Rainfall and Runoff 1987 to align with the modelling carried out for the Jandakot District Water Management Plan. As per Decision process for stormwater management (DWER, 2017), please also include a comparison with the methodology used within the recently released Australian rainfall and runoff (Ball et al. 2016) to determine flows and levels, and incorporate into table 10 and update where necessary. <u>Section 5.4.2 Managing Changes to Groundwater Levels</u> Further detail is required to demonstrate the proposed treatment and management of subsoil drainage. Subsoil drainage is to be free flowing and be treated via vegetated bio-filters before discharging into the living stream. This is to be demonstrated within a plan included invert levels which they are to be set as well as their outlets. <u>Section 6.5 Monitoring Programme and Contingency Planning</u> With regards to monitoring groundwater quality, also make a comparison of the data collected between the upstream and downstream bores. In regards to the monitoring frequency within Table 15, groundwater levels are to be monitored monthly and water quality quarterly. Please also include another table (or incorporate into table 15) detailing the post-development trigger values for all parameters. Also within table 15, it states that groundwater quality will be monitored at one monitoring location (WAM3), however detail contained within paragraph indicates four monitoring locations. Please amend the table. Table 16 details criteria for exceeding water quality criteria. The method used to develop the proposed trigger values are quite generous. By using 20% of the maximum recorded level, this can give a high	Noted City Officers recommend that a local water management strategy should be prepared in consultation with the DWER prior to the WAPC adopting the CNLSP to ensure that these issues are resolved. The CNLSP includes a requirement to prepare an Urban Water Management Plan (UWMP) in consultation with the City prior to the commencement of subdivision and development works. The City recommends that the DWER also be consulted during the preparation of the UWMP.

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		trigger value. For instance, previous monitoring of NOx had a mean level of 1.21 mg/L, median 0.07 mg/L, minimum 0.05 mg/L and a maximum of 17 mg/L. Using this outlier of 17mg/L to develop a trigger value would allow a large window before any contingency actions would be initiated. This is also the case with other parameters including total phosphorus. In these instances, the outliers should be excluded from the data set to determine the trigger values. Also within table 16, contingency actions should include re-application of soil amendment and increased plantings if water quality monitoring indicates increased nutrient concentrations within the living stream and groundwater.	
		<u>Figure 23 Post-development Monitoring Layout</u> It is recommended that groundwater monitoring bore GW3 (or an additional bore) is located downstream of POS/basin B1 area to capture “downstream” monitoring events.	
		<u>Appendix E Pre-development Groundwater Quality Monitoring Data (360 Environmental)</u> Total N data appears to be absent from the monitoring events captured within October 2014 and January 2015 from all bores. Please provide an explanation as to why this occurred. It is recommended that the LWMS is amended in accordance with the aforementioned comments and any advice from the City of Kwinana, and re-submitted to both agencies.	
2.	**Department of Biodiversity, Conservation and Attractions** Contact: Benson Todd Regional Manager	The subject area located in proximity to Bush Forever Site 270 Sandy Lake and Adjacent Bushland, Anketell. Bush Forever Site 270 is part of Jandakot Regional Park and approximately half of it is managed by the Parks and Wildlife Service for conservation purposes, the remaining area is in private freehold. DBCA notes that this area is zoned Urban in the Metropolitan Region Scheme and has been identified for short-medium term urban staging (2015-2031) in the Perth and Peel @ 3.5 Million land use planning and infrastructure frameworks released by the State Government in March 2018.	Noted
		<u>Matters of National Environmental Significance</u> The LSP documentation includes Precincts 1 & 2 Thomas Road, Casuarina Environmental Assessment (PGV 2017) and 1 & 2 Thomas Road, Casuarina Significant Tree Survey (PGV 2018). The proposed development would impact a number of trees considered to provide potential habitat for Black Cockatoos, and it proposes clearing of 4.4 hectares of banksia woodlands which may be considered to be part of the recently been listed “Banksia Woodlands of the Swan Coastal Plain” Threatened Ecological Community (TEC). DBCA notes that the proposed development has been referred to the Department of the Environment and Energy for assessment under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act). The action was assessed to be ‘Not a controlled action’ on 4 April 2016. A spring flora survey is included in the EPBC Act referral documentation (EPBC 2016/7659 Attachment 5), specifically targeting threatened and priority flora. A detailed search of potential Caladenia huegelii and Diuris purdiei habitat was undertaken on 17 October 2012 by Bennett Environmental Consulting Pty Ltd at the optimal flowering time for these species, however no threatened or priority flora were recorded.	Noted
		<u>Protection of native vegetation of high conservation value</u> A review of wetland mapping has been undertaken to guide the priorities for the conservation of wetlands in the Perth and Peel regions. A portion of the Multiple Use wetland (MUW) UFI 6629 in the north-eastern part of the subject area has been assessed as having “high conservation value”. This wetland is within Lot 9012 and aerial imagery shows the entire lot is reasonably well vegetated in comparison with much of the surrounding area. DBCA supports the protection of wetland and bushland vegetation within Lot 9012, inclusive of the significant trees identified in Figure 2 of the significant tree survey (PGV 2018).	Not supported A multiple use wetland is defined by DBCA as a wetland with few remaining important attributes and functions which conflicts with the advice being provided by DBCA in relation to the wetland contained within the CNLSP. City Officers are of the view there are more environmentally significant areas of bushland within the Casuarina urban cell warranting conservation. The CNLSP

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			identifies the multiple use wetland as being developed for service commercial purposes and it is not considered practical to conserve the wetland in the long term in a commercial land use area.
		Future subdivision should be designed to ensure the protection of vegetation worthy of retention within the LSP area.	Noted The City's Environment team are of the view there is limited vegetation of high quality in the CNLSP area. The applicant submitted a Significant Tree Survey as part of the CNLSP. City Officers have considered the survey and visited the site. City Officers are of the view that there appear to be a number of significant trees on site worthy of retention and should be considered as part of future subdivision applications on the site. There is an opportunity to retain these trees within proposed drain reserves and living streams. City's Officers recommend that a Landscape Feature and Tree Retention Plan is developed in consultation with the City at the detailed design stage. The City will recommend that the WAPC be requested to impose a condition on future subdivision applications requiring the preparation of a Landscape Feature and Tree Retention Plan in accordance with LPP1, to ensure that the retention of significant trees is optimised as part of the civil design and earthworks.
3.	**Western Power** Contact: Jared Morskate Senior Network Specialist Safety Environment Quality and Training	The structure plan area contains key Western Power strategic network corridors, consisting of high voltage 330 kV transmission lines. The corridors are currently protected by registered easements to the benefit of Western Power, restricting use and development over this land.	Noted
		The structure plan, future subdivision and development processes must protect the transmission line corridor and associated assets from encroachment, mitigating public safety or network reliability risks and ensuring there is no impediment to routine and emergency land access to the network.	Noted
		<u>Condition1</u> Prior to subdivision, Western Power will need to review, assess and provide prior written consent to any proposals below within the registered easement, in accordance with standard easement conditions: • Landscaping plans (including mature heights and location of species); • Ground level changes; • Permanent structures; • Drainage plans; • Conservation controls. In respect to condition 1, the proponent must submit detailed design plans for the land use and drainage proposed within the electricity infrastructure corridor to allow determination of its suitability in respect to public safety, routine and emergency land access and future network plans. Regarding public safety assessment, the requirements of the detailed study are summarised below and a required to form part of the servicing strategy: • Soil Resistivity Report outlining on-site measurement of the soil resistivity, using the Wenner method.	Support Western Power may request the WAPC to impose a condition on subdivision approvals requiring the proponent to submit detailed design plans for the land use and drainage proposed within the electricity infrastructure corridor to allow determination of its suitability in respect to public safety, routine and emergency land access and future network plans.

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		• An Earth Potential Rise study to determine touch, step and transfer potentials, including documentation of all calculations. • A Low Frequency Induction study to investigate the effects of induced voltages from the power line for step, touch and transfer potentials, during both construction and operation of the site. • An Electrostatic Induction study to investigate the potential of hazardous charging of metallic objects in the vicinity of the line, such as fences, gates and other services. • An Electromagnetic Field Study to determine the impacts of Electric and Magnetic Fields as per ARPANSA guidelines. The studies should identify any mitigation required and be submitted to Western Power for review, record-keeping and to confirm the appropriateness of the proposed land use prior to subdivision. Please be advised that Western Power can provide data to assist in the preparation of the report, which will attract a fee. Costs will be estimated and funds must be received prior to assessment commencing. Generally assessments will take between three to five weeks, from receipt of funds.	
		Western Power requires the following additional provisions to be included on the Structure Plan for consideration at the subdivision and development stages: • Provision of Section 70A Notifications on all proposed lots adjoining the existing Western Power registered easement prior to subdivision clearance advising prospective purchasers that they are in close proximity to power infrastructure which will be maintained, upgraded and expanded on a regular basis. • All development shall be designed and constructed to protect Western Power infrastructure and interests from potential land use conflict. • No development (including fill, fencing, storage or parking) will be permitted within Western Power registered easements without the prior written approval of Western Power or the relevant power line operator.	Noted These matters will be considered during the consideration of subdivision and development applications. Appropriate conditions may be imposed on subdivision approvals by the Western Australian Planning Commission; and development applications will be assessed to ensure that Western Power infrastructure and interests are not compromised.
4.	**Department of Transport** Comment: Yohan Nugraha Transport Designer Integrated Transport Planning	No Comment	Noted

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5.	**Water Corporation** Contact: Kevin Purcher Senior Planner Development Services	Some information in the structure plan and in particular the Local Water Management Strategy (LWMS) needs to be changed or added to before it should be accepted. The following should be considered in formulating a new report. <u>Drainage</u> The subject area falls within the Peel Drainage Catchment in the Mundijong Drainage District, a rural drainage system. Some Peel Sub Drains traverse the subject site in. Rural drains are not designed to give flood protection at all times and some inundation of land can be expected. The Water Corporation maintains its existing drains to ensure they are capable of clearing water from adjacent rural properties within three days of a storm event, where contours and internal drainage make this physically possible. Future governance and maintenance of this drain will need to be determined if this area is to be urbanised (please see more detailed comments below). Developments within this catchment are required to contain the flows from a one in one hundred year storm event on site. Discharge to the Water Corporation drains must be compensated to pre-development levels. The developer of this land should be advised to liaise with the Water Corporation at the preliminary planning stage to determine detailed planning requirements as this area could be prone to future flooding. At the time of development the developer may be required to provide calculations from a consulting engineer to demonstrate, to the satisfaction of the Water Corporation, that the runoff from the development has been restricted to pre development levels. Please note the following more detailed comments regarding the LWMS. <u>Section 3 and Figure 2</u> - The southern boundary of the LWMS should include the Peel Sub P and the Peel Sub P1 Drains. Existing buildings to the south of these drains constrain the potential of converting them into Living Streams in the future leaving only a piped option. In accordance with the "Jandakot DWMP - Peel MD catchment", sub drains and any associated drain reserves will be transferred to the Local Authority (in this case the City of Kwinana). On this basis all of the sub drains within and adjacent to the development should be included in the LWMS and issues such as ultimate profiles and the process and the timeline for the transfer from the Water Corporation to the City of Kwinana (prior to completion of the subdivision) should be discussed more fully in section 5.3.1. Also the resolution of land matters associated with the existing drain reserve(s) will need to be negotiated and agreed with the Water Corporations Procurement and Property Business Unit and this should also be discussed. <u>Section 4.8.1.1 and Figure 16 and Figure 22</u> - Groundwater levels should be consistent with those shown in the Jandakot DWMP. As there is a variation this needs to be discussed and agreed with Department of Water Environmental Regulations. <u>Section 5.3.1 (Paragraph 1) and Figure 19</u> – Please add a comment that the final decision on the ultimate profile for the Peel Sub P Drain (and Peel Sub P1) lies with the City of Kwinana. Figure 19 should indicate 1 in 6 side slopes in accordance with Section 5.3.1 (Paragraph 4) <u>Section 5.3.1 (Paragraph 5)</u> - Consideration may need to be given by City of Kwinana to using RCP culverts adjacent to the HV towers in lieu of box culverts to mitigate potential siltation issues. <u>Under section 5.3.2 Modelling and Results (Page 26, Paragraphs 4 & 5)</u> -Reference is made to basins A and C which should read Basins 1 to 5 as per Table 11. It is also noted (paragraph 8) that there is a minor increase (30mm) in the 1% AEP levels at PPCB1 and 10% AEP at PPCB2 (post development Sub P living stream compared to predevelopment) which is acceptable to the Water Corporation.	Support The CNLSP includes a requirement to prepare an Urban Water Management Plan (UWMP) in consultation with the City prior to the commencement of subdivision and development works. The City recommends that the Water Corporation also be consulted during the preparation of the UWMP.

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		Water The proposed strategy to service the area with reticulated water outlined in the structure plan report should be further refined taking into account the following: Reticulated water of a sufficient capacity to serve the proposal is currently not available. The proposed development in this area will require headworks size water mains to be constructed. The headworks mains may be required to be constructed as part of the subdivision process of this or other proposed developments in the surrounding area. A route for the headworks mains will also be required, up to 20 metres wide. The route should be in the form of a road reserve. The Water Corporation's long-term water planning for this area indicates that a DN500 headworks water main will be required to be extended Orton Road to service this and other land in the area. This headworks sized water main that is not scheduled on the Water Corporation's 5-year Capital Investment Program will not normally be able to be 'prefunded' therefore the extension of the water distribution system may require the developer to fund the water distribution mains.	
		Wastewater The proposed strategy to service the area with wastewater outlined in the structure plan report should be further refined taking into account the following. There is no permanent pump station for the catchment the subject area falls within. For a wastewater connection the development will require headworks infrastructure including a Wastewater Pump Station to be constructed. The location of this pump station has not been finalized and will need to be determined before development takes place. The headworks infrastructure may be required to be constructed as part of the subdivision process of this or other proposed developments in the surrounding area. A temporary pump station may be an option to serve the area. Consideration must be made to the location of any proposed pump station. A pump station will require appropriate land to be provided for the works and the odour buffer that will surround the works. The extent of the buffer should be determined at the planning/design stage to ensure that only compatible land use is within the buffer. A route for the headworks mains will also be required, up to 20 metres wide. The route should be in the form of a road reserve. This headworks that are not scheduled on the Water Corporation's 5-year Capital Investment Program will not normally be able to be 'prefunded' therefore the works may require the developer to fully fund.	
		General Comments The principle followed by the Water Corporation for the funding of subdivision or development is one of user pays. The developer is expected to provide all water and sewerage reticulation if required. A contribution for Water and Sewerage headworks may also be required. In addition the developer may be required to fund new works or the upgrading of existing works and protection of all works. Any temporary works needed are required to be fully funded by the developer. The Water Corporation may also require land being ceded free of cost for works.	Noted
6.	**Department of Fire and Emergency Services** Contact: Sandeep Shankar Senior Land Use Planning Officer	The BAL contour plan depicts areas BAL 40 and BAL FZ affecting some peripheral boundaries of the LSP. Further consideration of subdivision and development design at subsequent stages should optimise hazard separation through combination of public road reserves, public open space, internal access roads/driveways and private managed landscape areas. Areas of hazard separation should be annotated on the structure plan (for western periphery and areas adjacent to proposed drainage area and living stream, to ensure consideration of subsequent planning stage(s).	Support Prior to the WAPC adopting the CNLSP, City Officers recommend that the CNLSP be annotated with the identification of hazard separation areas, particularly for the western periphery and areas adjacent to the proposed drainage area and living stream to ensure this information is considered at subsequent stages of the planning process.

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		At the structure plan stage, consideration should be given to the intensification of land use and how this relates to identified bushfire hazards at this location. DFES is satisfied that the BMP has adequately identified the bushfire risk and considered compliance with the bushfire protection criteria. However modifications to the BMP will be required at subsequent planning stages to ensure measures within the BMP can be achieved. DFES requests the City of Kwinana consider annotating the LSP with the identification of hazard separation areas (see Asset protection zones in Figure 7 of BMP), particularly for western periphery and areas adjacent to proposed drainage area and living stream. This will ensure this information is considered at subsequent planning stages (subdivision & development applications).	
7.	**Taylor Burrell** **(on behalf of PRM Property Group)** Contact: Luke Montgomery Senior Associate	PRM own and are contracted to own approximately 40 hectares located within the Casuarina Central Precinct. PRM's land holdings represent approximately 36.5% of land contained within the Central Precinct. Despite the flexibility accommodated within LPP 6, which allows only a portion of the Central Precinct to be the subject of a Structure Plan (SP), PRM as manager for PRM is currently preparing an all-encompassing SP for the entire Central Precinct. In accordance with LPP 6, this SP will consist of predominately Residential land uses; non-residential / mixed business land uses located west of the power line easement; a Primary School; and Public Open Space (POS) and conservation areas. Road links will connect from the Central to the Northern Precinct.	Noted

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		This submission has been prepared in the context of being able to provide informed comment on the details contained within the SP proposal as they relate to the Northern Precinct generally and potential implications for the Central Precinct, to ensure the best planning outcome is achieved, which accommodates a coordinated development outcome. Unfortunately, the level of detail contained within the SP is insufficient in some areas in order to provide informed comment with regard to possible implications for future residents within the Central Precinct and the Casuarina Urban Cell generally. Consequently, much of this submission is based on identifying where these limitations exist as it is simply not possible to provide informed comment based on the information in hand. The main areas of concern relate to road planning, which is of particular importance for future residents within the Central Precinct as a heavy reliance will be placed on movement from the Central Precinct through the Northern Precinct to Thomas Road. In addition, it is important that ongoing access is provided to Thomas Road as this is a vital link to Orton Road for future residents of the Central Precinct. There are several areas within the advertised structure plan documentation which provide an inadequate level of detail in which to allow appropriate analysis and; therefore, result in providing proper, informed comment. The main areas from a spatial planning point of view, include: Concept Plan – LPP 6 suggests in the absence of a SP not covering an entire Precinct, then a Concept Plan shall be provided to depict suitable context for what is a likely development outcome for the balance of the Precinct. To allow informed decision making, this should ideally include context / relationship to the adjoining Precinct i.e. Central Precinct. The 'Concept Plan' has insufficient detail to constitute a true concept plan. For comparison's sake, refer to level of detail contained on the concept plan contained within Appendix I of the SP report. The 'Concept Plan' shows very broadly residential land use; District Open Space; and an 'Integrator B' road. The Concept Plan or report does not detail potential dwelling / lot yield for the entire Northern Precinct including future residential areas, which is important for, amongst other reasons, traffic and road planning for the precinct; and also, POS distribution. This high-level detail is insufficient to provide comment on the potential integration with the Central Precinct on matters such as drainage; traffic generation and road planning. To allow informed comment on the relationship between the two Precincts and to understand any land use conflicts, it is recommended a greater level of detail is provided on the Concept Plan covering the entire Northern Precinct.	Noted The CNLSP was advertised for comment pursuant to the P&D Regulations. LPP6 requires that a concept plan be prepared for the balance of the northern precinct. City Officers are satisfied that the concept plan provides sufficient detail and meets the requirements of LPP6, and, does not prejudice future planning of the Casuarina urban cell. The purpose of the concept plan is not to resolve detailed planning issues but to identify the structure planning issues that need to be resolved during subsequent stages of the planning processes and enable these issues to be discussed in a transparent manner prior to future structure planning. The issues raised by the submitter will be resolved at later stages of the planning process, particularly the local structure planning stage. City Officers intend to work with landowners at an early stage to attempt to reach resolution to a number of these important structure planning issues. One of these matters will be road links between Thomas Road and the central parts of the cell. The concept plan does identify a proposed road linkage between Thomas Road and Orton Road. The City will require the final alignment to be provided in the local structure plan for the balance of the northern precinct.
		There are clear inconsistencies between the detail provided on the SP when compared to the Service Commercial precinct Concept Plan contained within Appendix I and the detail contained within the Traffic Impact Assessment prepared by Transcore. This is a concern because each of these plans and documents are incongruous meaning the potential for incorrect planning and design outcomes to result. For example, the road hierarchy may not be appropriate based on the potential traffic which may be generated. This matter is discussed in further detail below. In addition to the above, there appears to be inconsistencies with the land use designations between the detail on the Service Commercial precinct Concept Plan contained within Appendix I and the SP e.g. the north eastern corner of the intersection of the two Neighbourhood Connectors.	Support City Officers recommend that the inconsistencies between the versions of the CNLSP shown in Traffic Impact Assessment and the proposed commercial plan be corrected prior to the CNLSP being adopted by the WAPC.
		The proposed SP is predominately based on a Service Commercial land use designation for the purposes of bulky goods retail; however, there is no economic / retail assessment in support of the SP in order to understand service catchment; inform traffic implications; and ultimately determine if the extent of floor space possible is viable and sustainable in the long term. This is particularly important, given the City of Kwinana has instructed our Office to provide non-residential / mixed business uses over approximately 7.5ha within the Central Precinct. There is a clear relationship between the SP areas and the service offerings which will be provided over land which is designated for non-residential land uses, so an understanding of the Casuarina Precinct as a whole,	The area the subject of the CNLSP was identified by the WAPC as suitable for mixed use in the Jandakot Structure Plan (JSP) (WAPC, 2007). The site was identified for Mixed Business in the draft Eastern Residential Intensification Concept (ERIC) which was prepared by the City in 2005 to guide district planning for the eastern side of the City and in the Local Commercial and Activity Centres Strategy.

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		even if this is high level, would prove beneficial. It is noted that there are similar land use designations located north of Thomas Road, in close proximity to the SP area.	
		Traffic and Transport It is noted that the LSP on page 43 refers to Bombay Boulevard being located within 'private land'. However, this is only partially correct as part of Bombay Boulevard is within 'private land' and the part south of the existing drain is within road reserve under public ownership. As will be detailed below development staging is recommended to be addressed in greater detail as Bombay Boulevard provides an integral connection for the land to the south and east of the Northern Precinct, at least, in the short to medium term. Certainty is required within the SP so that appropriate design and decision making can be made for the Central Precinct to be suitably connected through to Thomas Road. Further analysis of the road planning between Orton Road and Thomas Road is recommended as the information currently contained within the SP documentation does not sufficiently detail predicted traffic volumes for the area the 'subject of further planning' within the Northern Precinct and traffic to be generated within the Central Precinct and beyond. Further discussion is provided on this below. In this regard, a paralleling road network is necessary between Orton Road and Thomas Road which allows connections through to the Central Precinct and appropriately distributes traffic. Exploring this matter further should also consider the ongoing use of Bombay Boulevard, which provides an important connection for the existing rural population to the east and also for the purposes of an alternative connection in the event of an emergency e.g. bushfire. We understand the City's technical officers are currently exploring options with regard to road planning for the Northern Precinct including the ongoing use of Bombay Boulevard. We can assist this process as detail comes to hand with regard to design; yield; population; land use distribution; traffic modelling and road planning for the Central Precinct, which can be used to inform decision making for the overall road network in both Precincts. The Concept Plan shows one higher-order road connection to the Central Precinct which is an extension of Landgren Road, which ultimately connects with Thomas Road. 2. The SP and Concept Plan do not depict connections between the core Service Commercial and the Mixed Business area planned south of Orton Road within the Central Precinct. 3. In addition to point 2 above, comment cannot be provided with regard to intersection spacing north and south of Orton Road as no road planning detail is depicted on the Concept Plan. This is important to ensure appropriate subdivision design can be undertaken as early as possible to create certainty given there are several lots under different ownership north and south of Orton Road. The detail contained within the Transport Impact Assessment (TIA) prepared by Transcore is limited, this could possibly be as a result of the limited detail contained within the SP, being only for a portion of the Northern Precinct and the limited detail contained on the Concept Plan. Nevertheless, the absence of detail and consideration of the broader locality has the potential to influence road planning within the Northern Precinct and potentially create traffic issues in the long-term. There is obviously the potential for flow-on impacts for the Central Precinct and there is a need to consider the overall traffic implications for the entire Casuarina Urban Cell. There are inconsistencies with how the main north south road, which connects with a roundabout to Thomas Road is depicted. This road is depicted on the SP as a Neighbourhood Connector; however, is referenced in the TIA and on the Concept Plan as an Integrator B. This has the potential to create an incorrect road hierarchy resulting in a road design which is insufficient to accommodate the traffic to be generated within the Northern and Central Precincts, which will ultimately link to Thomas Road. In addition to the above, the SP does not depict a continuation of the western north-south Neighbourhood Connector which is contemplated on the Service Commercial precinct Concept Plan and within the TIA. As understood on the advice of the City of Kwinana's technical officers, there is the preference for a connection between the non-residential / mixed business area to be contained along the western edge within the Central Precinct, and the Service Commercial precinct contained within the Northern Precinct. It is recommended that further consideration is given to realising this connection(s) as it is important to both SP areas and the associated road hierarchy.	Noted The submitter has raised a considerable number of issues which mainly relate to land either situated outside of the proposed CNLSP, or to the balance of the Casuarina North precinct, or the Casuarina Central precinct. City Officers acknowledge that these issues must be resolved as part of the planning process. The purpose of the concept plan is not to resolve detailed planning issues but to identify the broad structure planning issues that need to be considered during subsequent stages of the planning process and enable these issues to be discussed in a transparent manner prior to future structure planning. The issues raised by the submitter will be resolved at later stages of the planning process, including local structure planning, subdivision and development. The local structure plan for the balance of the northern precinct will be advertised for comment once it has been lodged with the City.

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		The Traffic Impact Assessment appears to only detail / assess the traffic to be generated from within the SP area itself, with little due regard to traffic to be generated from the remainder of the Northern Precinct; the Central Precinct; and beyond. This is evidenced by no reference to residential dwelling yields; no reference to the school; and no reference to other non-residential uses which are expected within the balance of the Northern Precinct and within the Central Precinct. Consequently, there is no way in which to assess the correctness of the road hierarchy and if the SP can accommodate the road layout which will be required for the traffic to be generated from the Northern Precinct as a whole; the Central Precinct; and beyond. Ultimately, the majority of the traffic generated from the Central Precinct will move through the Northern Precinct to Thomas Road. Specifically, the TIA suggests approximately 9,000 vehicles per day forecast (8,300 - 8,800vpd) on the new north-south spine road. However, future residential development generated form the Northern Precinct and the future development of the Central Precinct, the traffic volumes expected to be created would suggest a four-lane divided road would be required south of the proposed roundabout on Thomas Road. 'Road' 2 is identified as a Neighbourhood Connector in the SP, which is not suited for the forecast traffic demand (max 7,000vpd). Other comments in response to the TIA and its link to the SP include: • The road reservations shown in Table 1 do not appear to be based on Liveable Neighbourhoods' recommendation or alternatively provide further explanation as to reasons for these departures. • Given the large floor area for commercial activity, there is no reference to Heavy Goods Vehicles access, which ideally should be segregated from the residential access.	
		<u>Service Infrastructure</u> The SP references the requirement for the construction of a Wastewater Pump Station (WWPS) 'L' to be located north of Orton Road. It should be noted that the location planned for the WWPS is within land under different ownership to that of the proponent of the SP. In this regard, PRM has an executed legal agreement with the relevant landowner to progress the WWPS for the purposes of servicing the Central Precinct.	Noted
		<u>Hydrology</u> Drainage design being undertaken for the Central Precinct intends to discharge to the Peel Sub P1A Drain via the existing culverts beneath Orton Road in accordance with rates specified in the Department of Water Jandakot Drainage and Water Management Plan Arterial Drainage Strategy. Future design for the area identified as 'subject to future planning' will need to take this into consideration.	Noted A Local Water Management Strategy should be reviewed to the satisfactionof Watercorp and the Department of Water and Environmental Regulation prior to the WAPC adopting the CNLSP to ensure that this issue is resolved. The CNLSP includes a requirement to prepare an Urban Water Management Plan (UWMP) in consultation with the City prior to the commencement of subdivision and development works. The City recommends that the Department of Water and Environmental Regulation also be consulted during the preparation of the UWMP.
		<u>Staging</u> Development staging is important given the main road linkages between the Central and Northern Precinct through to Thomas Road. The SP detail is vague with regard to when the construction of these key linkages will occur and in particular the ongoing use of Bombay Boulevard. It is vital that Bombay Boulevard remains open to provide a connection between Thomas Road and Orton Road. To assist with a staging strategy for the Central Precinct a greater level of detail and commitment to the staging for the Northern Precinct is recommended.	Noted City Officers are not able to prescribe certainty regarding stages of development. It is acknowledged that staging will affect orderly planning and it would be beneficial to provide a degree of certainty to landowners situated along and to the south of Orton Road. As discussed, City Officers intend to work with landowners/developers to seek to resolve outcomes on a range of planning matters including staging as part of forthcoming structure planning for the Casuarina north and central precincts.

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8.	**CLE Town Planning and Design (on behalf of the owners of Lots 2, 24 and 25 Orton Road)** Contact: Jane Bennett Director CLE Town Planning and Design	This submission is made by CLE Town Planning + Design on behalf of the owners of Lots 2, 24 and 25 Orton Road, Casuarina (our Clients). On behalf of our Clients, CLE objects to the proposed LSP, and particularly the 'Preliminary Concept Structure Plan' (Appendix G). This contains a proposal for District Open Space (DOS) that is inconsistent with previous planning initiatives. The proposed LSP needs to consider the location of the DOS in a more holistic manner, as required by the City's Local Planning Policy No. 6, and provide comprehensive justification for any location chosen. In its current form, the proposed LSP would allow its landowners to progress a first stage of commercial development without strategic land use considerations being resolved.	Noted The concept plan is not intended to be statutory document. The primary purpose of the concept plan (as set out in LPP6) is to identify the structure planning issues that need to be resolved at subsequent stages of the planning processes, and allow these issues can be discussed early in the planning process in a transparent manner. It is the intent of City Officers to liaise with landowners/developers within the Casuarina North and Central Precincts at an early stage to identify outstanding planning concerns and seek resolution at the structure planning stage. One of these will be the District Open Space location as well as the location of the local centre. This will also include key road links and land uses.
		The balance of the Northern Precinct, including our Client's land, is identified as being 'Subject to Future Planning', and Appendix G of the LSP report contains a 'Preliminary Concept Structure Plan' ('the concept plan') showing an indicative structure for that area. This includes a 3 hectare parcel of DOS on Orton Road, on our Client's land. We understand that the concept plan and the DOS proposed therein have been provided pursuant to the requirements of City's Local Planning Policy No. 6 – Guidelines for Structure Planning in the Casuarina Cell (LPP 6).	Noted. This statement is correct.
		<u>The concept plan does not respond to the existing planning framework</u> Supporting text for the concept plan indicates that the DOS has been located to facilitate co-location with a "potential primary school and local centre that are likely to be situated on the Orton Road and Landgren Road intersection". We support the principle of co-location for such facilities, but the notion that a primary school or Local Centre are likely to eventuate on land abutting the suggested DOS site is without basis in the planning framework, including the Jandakot Structure Plan (2007) and the Eastern Residential Intensification Concept ('the ERIC', 2005). The Jandakot Structure Plan identifies the following in the local area (below): • A primary school site approximately 200 metres south of Orton Road and the proposed DOS, which does not facilitate co-location. • A Local Centre site on land that appears to be near, but not abutting, the proposed DOS. This Local Centre has not been shown on the concept plan despite being mentioned as a co-location opportunity. • A north-south, district-level road, the intersection of which with Orton Road is the rationale for the aforementioned Local Centre. This road has been shifted eastward on the concept plan, with the DOS absorbing the equivalent Local Centre location. The ERIC (refer Attachment 2) shows a district-level road and Local Centre in a more easterly location than on the Jandakot Structure Plan and a DOS further north, abutting the LSP area. This sits partly over a State-owned district drainage corridor (the Peel Sub-drain), which represents an efficient use of urban land. Justification for this departure from the ERIC in the proposed LSP has not been provided. With reference to the Jandakot Structure Plan and the ERIC, it is clear that there is no strategic planning basis for the DOS to be located as proposed in the concept plan.	Noted City Officers are aware that there have been a series of draft structure plans prepared for the Casuarina area over many years and that each of these structure plans shows an alternative land use configuration in the vicinity of Orton Road. The City is also aware that the concept plan lodged with the CNLSP is inconsistent with these structure plans. The purpose of LPP6 is to set out the City's land use requirements within each of the Casuarina precincts (North, Central and South). LPP6 acknowledges the land uses identified in previous draft structure plans but allows the configuration of the land uses to be refined to reflect contemporary planning standards and development requirements. LPP6 requires the primary school and playing field within the Central Precinct to be co-located near the Orton Road and Landgren Road intersection. City Officer's acknowledge that there are multiple design options to co-locate the local playing field, primary school and local shopping centre. The concept plan lodged with the CNLSP proposes that the district sporting ground be situated near the Orton Road and Landgren Road intersection so that it is co-located with the primary school and local playing field. However, the concept plan is non-binding and the final location of the District Open Space and configuration of the primary school and playing fields can still be negotiated between all the stakeholders involved as part of future structure planning processes.

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		<u>The concept plan is prejudicial to future structure planning</u> The City's LPP 6 indicates that structure planning should occur on a precinct-wide basis unless all specified criteria are met. The proposed LSP is for only a portion of a precinct (the Northern Precinct) despite not meeting all of the criteria, and would simply allow the landowners to proceed with development in the absence of comprehensive planning. The following points review the compliance of the proposed LSP with the criteria, which are that the proponent has to have: • "Demonstrated that the LSP addresses and meets the objectives of LPP 6 and the precinct guidelines in which it is located, such as the provision of significant local and district land uses and facilities as identified in the policy". CLE comment: The relevant objective is the provision of "a District Sporting Ground located on land to be acquired by the Development Contribution Plan…" Land for such a facility is shown only on the concept plan, which is an indicative document that provides no technical justification for the suggested site and does nothing to secure it. It creates a public expectation about the location of the DOS, but does not provide any practical surety for the City about its delivery beyond that provided by TPS 2 and LPP 6. As such, the proposed LSP not resolve "the provision of significant…district land uses".	Noted The purpose of the concept plan is not to resolve detailed planning issues but to identify the structure planning issues that need to be resolved during subsequent stages of the planning processes and enable these issues to be discussed in a transparent manner prior to future structure planning. The concept plan is non-binding and the final location of the DOS and configuration of the primary school and playing fields can still negotiated between all the stakeholders involved as part of future structure planning processes.
		• "Demonstrated that the LSP can be considered in isolation to the wider planning considerations within the precinct in which it is located, and, its approval would not prejudice the optimum planning and design outcome of the precinct as considered by Council." CLE comment: Approval of the proposed LSP would clearly be prejudicial to the planning of the Northern Precinct as a whole. Despite the requirements of LPP 6, the LSP fails to propose a properly justified site for the DOS; instead, it suggests a site on the fringe of the Northern Precinct in a location that is inconsistent with the aforementioned strategic planning framework. Approval of the proposed LSP would unreasonably and unjustifiably restrict future options for the location of the DOS, which is inconsistent with the intent of LPP 6.	Noted The purpose of the concept plan is to identify the structure planning issues that need to be resolved in the remainder of the northern precinct during subsequent stages of the planning processes, and enable these issues to be discussed in a transparent manner prior to future structure planning. The concept plan is non-binding and the final location of the DOS and configuration of the primary school and playing fields can still negotiated between all the stakeholders involved as part of future structure planning processes.
		• "Demonstrated that the LSP applies to greater than a single lot and occupies an area of at least 30% of a precinct; and" [emphasis added] CLE comment: We note that the LSP applies to more than one lot, and occupies more than 30% of the Northern Precinct.	Noted
		• Prepared a concept plan for the remainder of the precinct which addresses the matters raised in the policy and has been the subject of consultation with other landowners in the precinct. The concept plan shall be submitted with the LSP documents and shall include but not limited to, details in relation to the outcomes of the consultation, total site area of the precinct, gross subdivisible area, distributor roads, POS schedule and POS distribution. CLE comment: The LSP contains a concept plan, but this does not respond to the matters listed in LPP 6. No technical justification for the suggested DOS site has been provided and the planning related justification relating to co-location is unsubstantiated and incomplete.	Noted The purpose of the concept plan is to identify the structure planning issues that need to be resolved in the remainder of the northern precinct during subsequent stages of the planning processes, and enable these issues to be discussed in a transparent manner prior to future structure planning. The concept plan is non-binding and the final location of the DOS and configuration of the primary school and playing fields can still negotiated between all the stakeholders involved as part of future structure planning processes.
		<u>There are better locations for the District Open Space</u> The DOS location proposed in the concept plan has no context in the applicable planning framework and would represent a missed opportunity in terms of co-location. Liveable Neighbourhoods specifically encourages co-location of schools with DOS of the size proposed in the concept plan, and to take this opportunity in this area, the DOS would need to be located on the south side of Orton Road abutting the aforementioned primary school site identified in the Jandakot Structure Plan.	Noted The concept plan is non-binding and the final location of the DOS and configuration of the primary school and playing fields can still negotiated between all the stakeholders involved as part of future structure planning processes. The local structure plan for the balance of the northern precinct will be advertised for comment once it has been lodged with the City.

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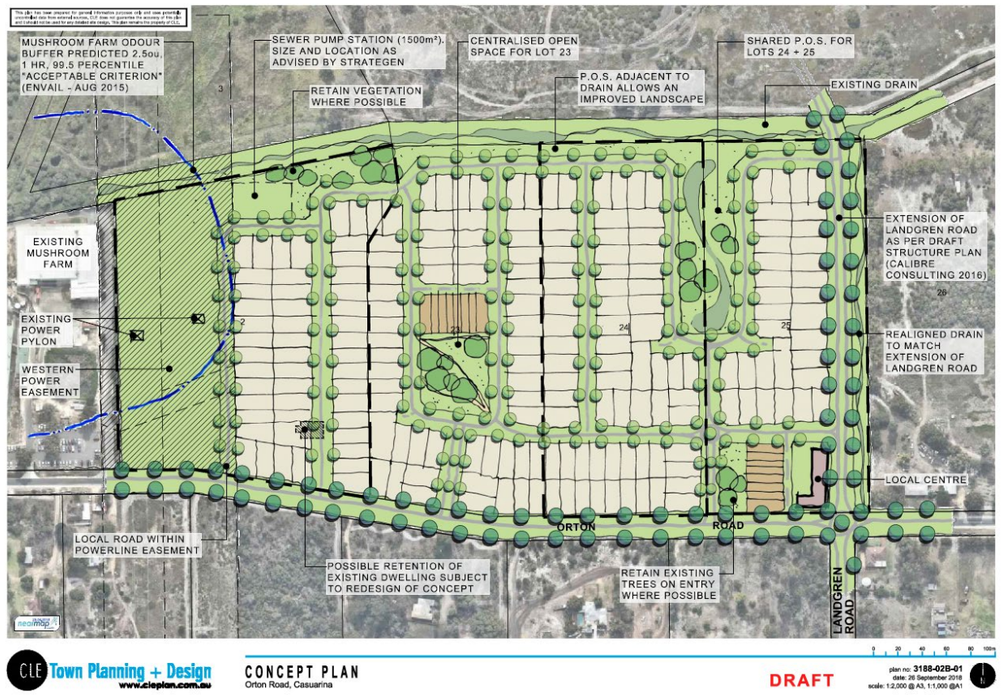
		Alternatively, the location shown in the ERIC has advantages in terms of accessibility and efficient use of urban land relative to the concept plan. The ERIC proposed a location for the DOS that is accessible from all four sides and better located for the urban precinct north of Thomas Road. It also provides visual amenity for the commercial land planned alongside the Kwinana Freeway and sits adjacent to the Peel Sub-drain, which is unsuitable for urban development but, as indicated in the ERIC, can be absorbed into the DOS.	Noted The district playing fields shown in ERIC are much larger that currently proposed and are in a location that would prevent the facility from being co-located with the primary school.
		The location shown in the concept plan is tucked at the edge of the planned urban precinct, which limits accessibility and does not take advantage of co-location opportunities with the primary school shown in the Jandakot Structure Plan. Its location is in fact to the detriment of connectivity with the primary school site, as it would necessitate children and parents crossing Orton Road. This road currently attracts a significant number of daily truck movements and is not a safe pedestrian environment. Traffic counts obtained by the City indicate that 15-17% (69-100 vehicles per day) of Orton Road traffic comprised heavy vehicles in 2016. The traffic counts were recorded approximately 140 metres west of Bombay Boulevard and the recorded figures reflect Orton Road's role as an access route for the mushroom farm near Kwinana Freeway and the wholesale nursery on Langdren Road.	Noted The concept plan is non-binding and the final location of the DOS and configuration of the primary school and playing fields can still negotiated between all the stakeholders involved as part of future structure planning processes.
		The DOS location also abuts a 'Priority 2' Underground Water Pollution Control Area, and a better outcome in terms of groundwater quality would be delivered through serviced residential or commercial development, which entail lower demand for fertiliser than would DOS. Clarification of the location of the future Primary School to the south should also consider its location relative to the existing Casuarina Prison and the amount and type of traffic that is generated from this facility.	Not supported The Department of Water and Environmental Regulation and Watercorp have not raised concern about the proposed location of the district playing fields identified in the concept plan.
		A concept plan for our Client's landholdings that responds to the strategic planning framework described in this correspondence is included for your reference (Attachment 3 below). 	Noted

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9.	**Peron Group** **(owner of Cockburn Gateway Shopping Centre)** Contact: Andrew Byars General Manager Property Investments	**Objection** Perron are the primary landowners of the nearby Cockburn Gateway Shopping City (Cockburn Gateway) which is located approximately 10km to the north of the LSP area and is identified as a 'Secondary Centre' under the Western Australian Planning Commission's State Planning Policy 4.2 Activity Centres for Perth and Peel (SPP 4.2). Perron have significant short to medium term expansion plans for Cockburn Gateway and are concerned that the LSP as currently proposed may facilitate development that will undermine the future enhanced delivery of services, amenities and functionality to the nearby local and regional communities that use Cockburn Gateway. Perron Group support the preparation of local structure plans as necessary planning instruments to guide the future development of areas, including Casuarina North. However, we do have significant concerns around the ultimate development scenario which could result on the subject land due to the approval of the LSP in its current form. On this basis, we wish to make an <u>objection</u> on the proposed LSP and ask that the City consider our comments and concerns provided below.	Noted
		<u>Special Use Zone and inclusion of 'Shop' land use</u> The proposed LSP includes a 'Special Use' zone over a significant area. As it currently stands the actual future development intent over this part of the LSP area is unclear. We do note however that a 'Shop' land use is listed as being permissible as an incidental use within the Special Use zone. We are concerned that as currently proposed, the LSP may provide an unintended gateway for the inclusion of large amounts of retail floor space as part of the future development of the site, particularly given the significant size of this area being 6ha. Perron requests that the City not support the development of retail 'shop' floor space in this area on an incidental or any other basis without a clear understanding and appreciation of what form this development will take and even more importantly whether the alignment of such a proposition is consistent with key strategic planning instruments for the area as outlined below. As indicated above, it is not clear within the proposed LSP as to what extent of the Special Use zoned area may be used for retail purposes and further clarification needs to be provided in respect to this issue. In the absence of more detailed information, we are of the view that the City should specifically limit the retail floor space allocation at this location to an appropriate level consistent with the pre-existing strategic planning instruments applicable to the area. Such allocation should be demonstrated to not detrimentally impact the function or operation of the current activity centres hierarchy or compromise the delivery of services, amenities and additional functionality in existing centres that would otherwise be able to be provided to the local and regional community.	Not supported The Supreme Court WA considered the term ‘incidental to’ in City of Swan v Taylor [2005] WASCA 888 [67] and determined the expression requires identification of a predominant use and determination of whether the proposed use is consequent on such use or naturally attaching, appertaining or relating to such use. There must be some relationship or connection between the two uses for one to be incidental to the other. Under the City’s LPS2 an “IP” use, is a use which will not be approved pursuant to the Scheme unless the Council can be satisfied that the proposed use will be dependent upon and incidental and subservient to the predominant use of the land as may be determined by Council. Any development application which proposes a ‘shop’ or ‘fish shop’ use would need to satisfy the Council that the use is incidental, dependent upon and subservient to the predominant land use on the land. In the opinion of City Officers the LSP as proposed will not provide for an unintended gateway for the inclusion of large amounts of retail floor space as part of the future development of the site.
		<u>Local Commercial and Activity Centres Strategy</u> It is noted that the City's Local Commercial and Activity Centres Strategy (LCACS) indicates only limited retail needs/potential for Casuarina, being local centres comprising only 500m^2 by 2026 and 800m^2 by 2031, with tenancy sizes other than a supermarket or similar not exceeding a maximum of 200m^2. As mentioned above, the proposed LSP may potentially allow a significant amount of retail floor space within the Special Use zone on an 'incidental' basis which would be inconsistent with the retail projections for Casuarina as identified within the City's LCACS. On this basis it is suggested that the City should limit the retail floor space allowance and tenancy size within the LSP to reflect it's LCACS, being 800m^2 and 200m^2 respectively. This would ensure that retail remains 'incidental' to the predominant mixed business usage of the area.	Not supported It is agreed that consistency with the Council’s adopted Local Commercial and Activity Centres Strategy (LCACS) is a very important part of the City’s strategy for its centres and the distribution of retail floor space. The City is confident however that the ‘incidental use’ nature of retail will not permit an unintended outcome of large amounts of retail floor space.

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		Eastern Residential Intensification Concept It is noted that the Eastern Residential Intensification Concept (ERIC) identifies the primary land use of 'Mixed Business' for the site. It is not clear why the 'Service Commercial' zoning is proposed in lieu of a Mixed Business zone, when such a zone could be applied under the City's Town Planning Scheme No. 2 (TPS2). Accordingly, we believe that there is an inconsistency being proposed by the LSP when compared to the bulky goods retail, showrooms and other land uses which were originally contemplated by ERIC for this site as part of its intended Mixed Business usage.	Not Supported The draft ERIC plan was prepared at a district scale with the intent that more detailed planning would occur as part of detailed structure planning. In this respect, the proponent is proposing Service Commercial Zone and a Special Use Zone for the locality. In this respect, City Officers do not consider that Service Commercial Zone uses are inappropriate when in comparison with Mixed Business Zone and may in fact provide a more appropriate fit for larger bulky goods, show room uses. Importantly, the LPS2 is clear that, 'shop' uses will not be permitted in these zones with the exception of the Special Use Zone where it is incidental to the predominant use.
		Jandakot Structure Plan We note that the Jandakot Structure Plan also identifies the subject site as 'Mixed Use' where it abuts the Kwinana Freeway. As per the above, we believe that there is an inconsistency in respect to the intended land uses provided for by the LSP and those contemplated by the Jandakot Structure Plan for this site.	Not Supported The Jandakot Structure Plan, in a similar way to the ERIC planning, was high level and tends to be conceptual in nature. The Jandakot Structure Plan identified the locality as one, given its high exposure at a key junction of the Kwinana Freeway and Thomas Road as one which lends itself to the potential for a range of non-residential land uses. The reference to Mixed Use suggests that a range of uses could occur, perhaps wider than those that may be contemplated under more specific Service Commercial and Mixed Business uses. It is not considered that the proposed zoning under the structure plan is inconsistent with the Jandakot Structure Plan.
		SPP 4.2 We acknowledge that SPP 4.2 states the following in relation to 'bulky goods retailing and mixed business' under Clause 5.6.1: The responsible authority should ensure that shop-retail uses are located in a pedestian friendly urban environment. In general, bulky goods retailing is unsuited to the walkable catchment or the core of activity centres given their size and car-parking requirements, low employment densities and need for freight vehicle access. It appears that the LSP area is primarily intended to be used for bulky goods retail and showroom type uses and no objection is raised to these uses within the LSP area. However, as noted above we are concerned that the 'Shop' land use as an 'incidental' use within the Special Use zoned area will present the opportunity to accommodate other significant unplanned and unjustified shop retail opportunities, not typical of or appropriate to a mixed use area. Unless appropriately restricted and managed, the scale and nature of potential shop retail development may not complement the primary function of bulky goods retailing and may detract from the current and future service offer in other centres in the hierarchy, particularly those in close proximity.	Noted It is critical that the planning process ensure that there is no "unplanned and unjustified shop retail opportunities" within the structure plan area. The intent of Council's adopted LCACS seeks to manage the distribution of retail uses across the City of Kwinana to ensure the best long term planning outcomes for the community.
		As currently proposed, the LSP has the potential to undermine Cockburn Gateway as an established 'Secondary Centre' under SPP 4.2. This would be in direct conflict with one of the provisions of SPP 4.2, which states: 5.1 Activity Centre Hierarchy (2) The responsible authority should not support activity centre structure plans or development proposals that are likely to undermine established and planned activity centre hierarchy. Activity centre structure plans and developments should be consistent with the centre's classification in the hierarchy. The responsible authority should consider the main role and function and typical characteristics for each centre type outlined in Table 3.	Noted For the reasons detailed previously, it is not considered that the proposed LSP would undermine Cockburn Centre nor the Kwinana City Centre as 'Secondary Centres' under the Activity Centre Hierarchy.

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		The consequence of such undermining would be a probable loss of current and future services, amenity and functionality at Cockburn Gateway and other centres, including those within the City, to the detriment of the local and regional community. The City should not support an LSP where it may undermine the activity centre hierarchy set out in SPP 4.2.	
10.	**URPS** **(on behalf of Costa Mushroom Production Facility)** Contact: Grazio Maiorana Director URPS	The LSP area is only separated from the long established Costa mushroom production facility at 45 Orton Road, Casuarina by an approximately 25 metres wide drainage channel. Both the area of the LSP and the site of the mushroom production facility are located within the area covered by the City of Kwinana *Local Planning Policy 6 – Guidelines for Structure Planning In the Casuarina Cell.* Notwithstanding recognition of the "mushroom farm" in the General Guidelines contained in Local Planning Policy 6, the future of the mushroom production facility and the 240 jobs it provides to locals, many of whom who are migrants with English as a second language, is still under threat from some development forms identified as being 'appropriate' in the North Precinct and Central Precinct in the surrounding Casuarina Cell area. As with previous submissions, the purpose of this submission is to reinforce to the City of Kwinana the need to provide greater protection to the mushroom production facility at Orton Road, Casuarina, to ensure the viable longevity of the facility into the future.	Noted
		This position is based on: • recognition of the longstanding establishment and ongoing operation of the mushroom production facility on the site (over 30 years) • the facility providing employment for some 240 locals, at a time when unemployment in the City is high. 70% of the workforce is made up of migrant females with English as their second language. Many of these employees also live within the surrounding region. • the replacement value of the Costa investment in facilities on the site (approximately $70 million). • the ongoing investment in the site, which includes spending $20 million on capital upgrades in 2009 to improve environmental expectations and operational efficiencies. • the total value of the product produced (approximately $55 million) to the local area and the State including approximately $13million in direct employee wages and salaries per annum. The facility produces up to 80 tonnes of product per week - this is approximately 70% of the total West Australian mushroom market production. • experience gained elsewhere where sensitive urban development (i.e. residential) has been allowed to encroach too close to existing commercial land uses, resulting in adverse impacts to both activities. • the cost and time of relocating the mushroom production operation further from residential development. This would require a significant amount of capital and have a detrimental economic and social impact on the 240 local employees and the local economy. • accord with various State and Local strategic directions and guidelines (i.e. State Planning Strategy 2050; City of Kwinana – Strategic Community Plan 2017 – 2027; Draft State Planning Policy 4.1 State Industrial Buffer (Amended); Draft Environmental Assessment Guideline for Separation distances between industrial and sensitive land uses (September 2015). • the need to recognise that even with so called "best practice" environmental management there will be odour and noise beyond the boundary as per modelling conducted and presented to Council. • the need to take a precautionary approach and good planning practice.	Noted It is acknowledged that the mushroom farm has been operating for many years and provides significant employment in the community. The State Government rezoned the property and surrounding land to *Urban* zone under the *Metropolitan Region Scheme* and concurrently to *Development* zone under the Local Planning Scheme. This facilitates urban development of land within the vicinity of the mushroom farm. An Environmental Management Plan (EMP) for the mushroom farm was endorsed by the City as a condition of Development Approval. The EMP commits the operator of the mushroom farm to providing an annual report summarising the key issues of concern identified at the facility and any proposed improvements to be made in the spirit of continuous improvement. Although the majority of emissions are being managed and contained within the property boundary of the mushroom farm, it is acknowledged that low level emissions may impact areas beyond the property boundary. LPP6 states that: "Evidence obtained from onsite noise studies, odour studies and modelling will be required when sensitive land uses are proposed in the vicinity of the mushroom farm on Lot 1 (45) Orton Road, Casuarina to demonstrate that the proposed land uses will not be exposed to unacceptable odour and noise emissions, to the satisfaction of the City. The City will only support land uses in locations where it can be confident there will not be long-term odour and noise conflicts." City Officers are of the view that the land uses that will be permitted, or can be considered, within the proposed CNLSP are not likely to be sensitive. Further, there is flexibility to ensure that development in closer proximity to the mushroom farm can be designed such that loading facilities and service areas can be located adjacent to the mushroom farm or that built form can assist to mitigate any

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Proposed Casuarina North Local Structure Plan and Concept Plan

			impacts. In order to provide some additional development control however, it is recommended that Council request that the CNLSP be amended to include a requirement that development applications within the CNLSP demonstrate to the City that the land use proposed is not considered 'sensitive' under SPP 2.5. In the event that the use is considered sensitive, then the requirements of the City's LPP6 apply.
		It is noted that, following Costa's 2017 submission to Council on this matter, the following General Guideline has been included in Local Planning Policy 6: *Compatible land uses in the vicinity of the mushroom farm:* *Evidence obtained from onsite noise studies,odour studies and modelling will be required when sensitive land uses are proposed in the vicinity of the mushroom farm on Lot 1 (45) Orton Road, Casuarina to demonstrate that the proposed land uses will not be exposed to unacceptable odour and noise emissions, to the satisfaction of the City.* *The City will only support land uses in locations where it can be confident there will not be long-term odour and noise conflicts.* While this approach provides some improvement to the planning policy applying to the Casuarina Cell area, it does not provide anything remotely like the full level of protection - a formal buffer zone as requested in Costa's 2017 submission contained in **Appendix A** and as discussed further in this current submission. Providing for new development in this locality should not come at a detriment to long-established businesses, risking losing significant long-term jobs, economic activity and business investment. Council is urged to take a precautionary approach to protecting the mushroom production facility, an approach it has repeatedly failed to take over at least the last five years. Costa believes that a 500 metres buffer between the mushroom facility boundaries and any new "sensitive" development (also potentially including some forms of commercial/industrial development) is required, and that an additional 500 metres be applied to create a conceptual buffer zone, within which sensitive land uses would be required to acknowledge the existing mushroom facility and its operations before approval could be granted. This would not only provide protection for new developments from off-site impacts from the mushroom facility operations, but also protection for the mushroom facility operations from any adverse impacts generated by new developments. The position that the mushroom facility, by way of "best practice", could be run without some offsite odour and noise impacts is considered disingenuous. Likewise, any stated or claimed position that new urban development can occur within a scientifically defined buffer and not be impacted by odour and noise.	The State Government has rezoned the mushroom farm and surrounding area to *Urban* zone under the *Metropolitan Region Scheme* and concurrently to *Development* zone under the Local Planning Scheme. This facilitates urban development of land within the vicinity of the mushroom farm. Consistent with State Planning Policy 2.5 – Rural Planning (clause 5.12.3), the City has endorsed a Site Environmental Management Plan (October 2015) for the mushroom farm, to minimise potential land use conflicts and ensure that future development in the Casuarina Urban zone will not impinge on the continued operation of the facility. Although the majority of emissions are being managed and contained within the property boundary of the mushroom farm, it is acknowledged that low level emissions may potentially impact areas beyond the boundary of the mushroom farm. City Officers are of the view that the land uses that will be permitted, or can be considered, within the proposed CNLSP are not likely to be sensitive. Further, there is flexibility to ensure that development in closer proximity to the mushroom farm can be designed such that loading facilities and service areas can be located adjacent to the mushroom farm or that built form can assist to mitigate any impacts. In order to provide some additional development control however, it is recommended that Council request that the CNLSP be amended to include a requirement that development applications within the CNLSP demonstrate to the City that the land use proposed is not considered 'sensitive' under SPP 2.5. In the event that the use is considered sensitive, then the requirements of the City's LPP6 apply.
		The northern portion of the LSP, which has a frontage to Thomas Road, is to have a "Service Commercial" zoning, with land use permissibility in accordance with the associated City of Kwinana Local Planning Scheme No.2. Discussion in the LSP indicates its intent is "primarily to provide for showrooms and bulky goods retail type uses." However, it is noted that a preliminary Proposed Commercial Development concept plan for the area indicates "restaurants" are being considered for a site some 350 metres from the northern boundary of the mushroom facility site. The southern portion of the LSP, which is only separated from the mushroom facility site by an approximately 25 metre wide drainage channel, is to have "Special Use" zoning. The LSP document indicates the following uses are permitted within the zone: • Bulky goods showroom • Car Park • Consulting rooms	Noted City Officers are of the view that the land uses that will be permitted, or can be considered, within the proposed CNLSP are not likely to be sensitive. Further, there is flexibility to ensure that development in closer proximity to the mushroom farm can be designed such that loading facilities and service areas can be located adjacent to the mushroom farm or that built form can assist to mitigate any impacts. In order to provide some additional development control however, it is recommended that Council request that the CNLSP be amended to include a requirement that development applications within the CNLSP demonstrate to the City that the land use proposed is not considered 'sensitive' under SPP 2.5. In the event that the use is considered sensitive, then the requirements of the City's LPP6 apply.

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		• Eating house • Liquor store • Motor repair station • Petrol filling station • Service station • Warehouse In addition, the following uses are indicated as being incidentally permitted within the zone: • Shop • Fish shop While it is noted that the General Guidelines in Local Planning Policy 6 requires some consideration of "compatible land uses in the vicinity of the mushroom farm", and that a preliminary Proposed Commercial Development concept plan for the area indicates a "showroom" and a "petrol station" are being considered for this land (some 40 metres and 200 metres respectively from the northern boundary of the mushroom facility site), there remains the potential for other commercial/retail activities of a more sensitive nature to be located in the area. Even if Council was to endorse initial "compatibility" requirements, this doesn't preclude the potential for complaints about the mushroom facility operations at a later date, with such complaints potentially leading to further restrictions on the operations and viability of the mushroom facility.	The matters raised by the submission will be considered as part of any future structure planning which may impact on the Casuarina area which may contain sensitive land uses.
		Section 3.6.2 of the LSP states "The LSP addresses the presence of the mushroom farm by not permitting sensitive land uses that may be incompatible." And that "The interface between the mushroom farm and sensitive land uses will however be addressed as part of future planning stages in the remainder of the northern precinct where residential uses are proposed/ incorporated." While it is pleasing to note the commitment given in the second sentence to addressing interface issues between future residential development and the mushroom facility (recognising residential and similar uses are often at the higher end of the sensitivity scale), the first sentence is considered to "gloss over" the potential for impacts for/from non-residential land uses located in proximity to the mushroom facility. It is noted these statements are immediately preceded by the definition of a "sensitive use" as defined by State Planning Policy (SPP) 4.1 State Industrial Buffer Policy which states that a sensitive use "includes residential dwellings, major recreational areas, hospitals, schools and other institutional uses involving accommodation." Further, it is noted that Draft State Planning Policy 4.1 Industrial Interface (November 2017) provides an amended definition which defines a sensitive land use as "Land uses that are residential or institutional in nature, where people live or regularly spend extended periods of time. These include dwellings, short-stay accommodation, schools, hospitals and childcare centres, and generally excludes commercial or industrial premises." While noting these definitions, the General Guidelines statement on compatible land uses in the vicinity of the mushroom farm, and the statement that the LSP addresses the presence of the mushroom farm by not permitting sensitive land uses that may be incompatible, it is arguable that some of the land uses that could be accommodated in the LSP area are, in fact, of a more sensitive nature than others, and if established in proximity to the mushroom facility could give rise to complaints about its operations. To overcome this very real concern it is recommended the LSP be amended to reflect the following policy position: Development will need to respond to the ongoing operations of the mushroom facility on Orton Road to ensure sensitive land uses (including those of a commercial or industrial nature) proposed in proximity to the facility do not adversely impact on the continued operation of the mushroom facility. Sensitive land uses will be required to locate at least 500 metres away from the nearest boundary of the mushroom facility and demonstrate that the sensitive development does not cause potentially adverse impact on the operations of the mushroom facility. In addition, any sensitive development beyond this 500 metres within an area up to an additional 500 metres, would require acknowledgement of the existing mushroom facility and its operations before approval could be granted for sensitive development within this area.	Not supported City Officers are of the view that the land uses that will be permitted, or can be considered, within the proposed CNLSP are not likely to be sensitive. Further, there is flexibility to ensure that development in closer proximity to the mushroom farm can be designed such that loading facilities and service areas can be located adjacent to the mushroom farm or that built form can assist to mitigate any impacts. In order to provide some additional development control however, it is recommended that Council request that the CNLSP be amended to include a requirement that development applications within the CNLSP demonstrate to the City that the land use proposed is not considered 'sensitive' under SPP 2.5. In the event that the use is considered sensitive, then the requirements of the City's LPP6 apply.

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		This would not only provide protection for new developments from off-site impacts from the mushroom facility operations, but also protection for the mushroom facility operations from any adverse impacts generated by new developments, including from those who despite being aware of the mushroom facility and its operations prior to taking up residence (be it commercial or sensitive use), would still choose to complain about its operation and alleged impact on their amenity.	
		While LPP6 and the proposed LSP together provide a level of support for Costa's mushroom facility, further strengthening of policy/direction is being sought. This would increase the level of certainty to Costa and enable consideration of possible further investment and expansion of the facility, with security and longevity of tenure. It is suggested this can be achieved by undertaking the policy directions discussed in Section 4 above, with the required buffer distance indicated on plans in the LSP. As a further matter, it is understood Council has previously not supported the use of notifying proximate land owners that development proposed on their land should take into account the ongoing operations of the mushroom facility. As part of taking a proactive precautionary approach, it is requested Council review its position on this matter. Such a notification approach is supported by wording in the State Planning Policy 4.1 State Industrial Buffer (Amended), which envisages Councils providing "mechanisms to ensure advice is provided to future landowners and residents informing them of the potential for off-site impact on amenity from nearby industrial uses or essential infrastructure (e.g. notification through memorials on property titles or signage)."	Noted The purpose of the concept plan is not to resolve detailed planning issues but to identify the structure planning issues that need to be resolved during subsequent stages of the planning processes and enable these issues to be discussed in a transparent manner prior to future structure planning. Mechanisms to ensure advice is provided to future landowners and residents informing them of the potential for off-site impact on amenity from nearby mushroom farm is a matter that can be considered at later stages of the planning process.
11.	**Royale Australian Golf Club Pty Ltd** **(owner of 110 Orton Road)** Contact: John Bestall	In our view effective planning requires the following issues to be resolved before the Casuarina Precinct can work effectively: <u>Access</u> • The top of Bombay Boulevard is owned by a private land owner (the Proponent) and can be closed at any time they wish; • The top of Bombay Boulevard should have been ceded but never occurred and this should be sorted before the LSP is considered; • Landgren Road should continue up to meet Thomas Road as part of the LSP; • The rough concept plan to show what may occur but carries no weight; • If the access is not linked to the LSP approval the area may have to sit and wait for many years and access to Central and Southern Casuarina Precinct is flawed; • The access to Thomas Road into this new section will not allow flow traffic to enter suburb South and may cause traffic congestion in tight area – a Major Traffic flow issue.	Noted The purpose of the concept plan is not to resolve detailed planning issues but to identify the structure planning issues that need to be resolved during subsequent stages of the planning processes and enable these issues to be discussed in a transparent manner prior to future structure planning. City Officers consider that the issues raised by the submitter should be resolved through consultation and agreement between landowners /developers (with the involvement of the City) ahead of more detailed structure planning for the City. The concept plan identifies a proposed road linkage between Thomas Road and Orton Road. The City will require the final alignment to be provided in the local structure plan for the balance of the northern precinct. City Officers consider that this issue should be resolved through consultation and agreement between landowners /developers (with the involvement of the City) ahead of more detailed structure planning for the City.
		<u>Flow and Development of the entire Precinct</u> • Effective planning should cover the entire Thomas Road to Mortimer Road area in a workable concept plan before any LSP approvals flow.	Noted

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		Main Land Owner Issue • Aigle, the entity that has purchased the majority of the land in the Northern Precinct, has prepared a Local Structure Plan to lodge and they will ensure that their land is 100% developable and all POS and DOS and Schools etc on everyone else's land; • PRM the entity that has purchased approximately 10 out of the 20 blocks in the central precinct are preparing a Local Structure Plan to lodge and they will ensure that their land is 100% developable and all POS and DOS and Schools etc on everyone else's land.	Noted
		Issues • Prison (Safety buffer and Visual Buffer); • Prison visitors not driving past POS DOS or Primary Schools; • Flow of the suburb; • Security of Children; • High School site; • Primary School site; • POS; • District open Space; • Busy Rd- Quiet roads; • Quiet bike paths to get to school; • Security regarding Prison and clientele; • Town centre; • Proper planning over entire precinct not just a small section.	All of these issues relate to land situated outside of the proposed CNLSP and a number of the issues relate to the Casuarina Central and Casuarina South precincts. The purpose of the concept plan is not to resolve detailed planning issues but to identify the broad structure planning issues that need to be resolved during subsequent stages of the planning process and enable these issues to be discussed in a transparent manner prior to future structure planning. The issues raised by the submitter will be resolved at later stages of the planning process, including local structure planning, subdivision and development. The local structure plan for the balance of the northern precinct will be advertised for comment once it has been lodged with the City. City Officers also consider that a number these issues should be resolved through consultation and agreement between landowners /developers (with the involvement of the City) ahead of more detailed structure planning.
		The Prison is 400 m away from the intersection of Orton Road and Landgren Road. The Policy that has been adopted by Council is fundamentally flawed and it allows Prison visitors to pass by Primary Schools and have views over POS with Primary School Children playing. Orton and Landgren should not be earmarked for a Primacy School or POS close by as per the adopted Policy The main access to the prison will be via Thomas Rd onto Landgren Road and along Orton Rd. Inmates held at Casuarina Prison will have visitors drive this route to reach the Prison. Inmate visitors at the corner looking to turn up Landgren Rd to visit the jail will have a full view of kids playing and the primary school is a major child security issue. It is possible that some of these visitors may have restraining orders that prohibit them being in a certain area of 100m to 500 m of a primary school. Having a Primary school close to the busy intersection of Orton and Landgren is dangerous for Kids. The council is indicating that a town centre of 800sq m should be on this corner Busy and a focal point for the residences The busy corner with 800 odd square metres of commercial should also reinforce that the POS and Primary School should be moved further south 500 m away from this security risk area The Council Policy Document should be amended to allow for the Primary School site and POS be further central to the entire precinct and be further south by 500m.	Noted This issue relates to land situated outside of the proposed CNLSP and relates to the balance of the Casuarina North and Casuarina Central precincts. The purpose of the concept plan is not to resolve detailed planning issues but to identify the broad structure planning issues that need to be considered during subsequent stages of the planning process and enable these issues to be discussed in a transparent manner prior to future structure planning. The issues raised by the submitter will be resolved at later stages of the planning process, including local structure planning, subdivision and development. The local structure plan for the balance of the northern precinct will be advertised for comment once it has been lodged with the City.
		Liveable Neighbourhoods Policy The Primary School should be central so the kids can ride safely a shorter distance to primary school Based on the liveable neighbourhoods the Primary School location should be at least 500 m further south.	Noted This issue will be resolved at later stages of the planning process, including local structure planning, subdivision and development. The local structure plan for the

SCHEDULE OF SUBMISSIONS
Proposed Casuarina North Local Structure Plan and Concept Plan

			Central Precinct will be advertised for comment once it has been lodged with the City.
		We never received the old policy and considered it final when presented. We believe the new policy (on which we were unable to comment) needs to be reviewed to create into a more effective and workable document. I have spoken to the land owner opposite us and he has advised of the same issue.	Noted The City's records show that a letter, dated 6 November 2017, inviting submissions on the draft Local Planning Policy No 6, was sent to the submitter and the owner opposite.
12.	**Laura Nibali** Lot 17 Thomas Road, Anketell	Support the proposed LSP area being urbanised (into commercial/mixed business/residential). However, the proposed entry road's intersection with Thomas Road is illustrated as a three way intersection treatment (right in, left in, left out). If this is approved by MRWA, then this same type of treatment should also be applied to Lot 17 Thomas Road's subdivision entry road off Thomas Road (left in, right in, left out).	Noted Thomas Road is reserved as a Regional Road in the Metropolitan Region Scheme. The WAPC's Development Control Policy 5.1 – Regional (vehicular access) (DC5.1) (Draft) addresses matters relating to the control of development adjacent to regional roads. The design requirements for junctions and driveways to Lot 17 will be determined by the WAPC with regard to standards recommended by both the AUSTROADS and Main Roads Western Australia in accordance with DC5.1
13.	**Vince Nibali** Lot 17 Thomas Road, Anketell	Support the proposed LSP area being urbanised (into commercial/mixed business/residential). However, the proposed entry road's intersection with Thomas Road is illustrated as a three way intersection treatment (right in, left in, left out). If this is approved by MRWA, then this same type of treatment should also be applied to Lot 17 Thomas Road's subdivision entry road off Thomas Road (left in, right in, left out).	Noted Thomas Road is reserved as a Regional Road in the Metropolitan Region Scheme. The WAPC's Development Control Policy 5.1 – Regional (vehicular access) (DC5.1) (Draft) addresses matters relating to the control of development adjacent to regional roads. The design requirements for junctions and driveways to Lot 17 will be determined by the WAPC with regard to standards recommended by both the AUSTROADS and Main Roads Western Australia in accordance with DC5.1

Attachment E
Casuarina Draft District Structure Plan

FREEWAY

DISTRICT POS

PS

LC

KWINANA

HS

NC

LEGEND

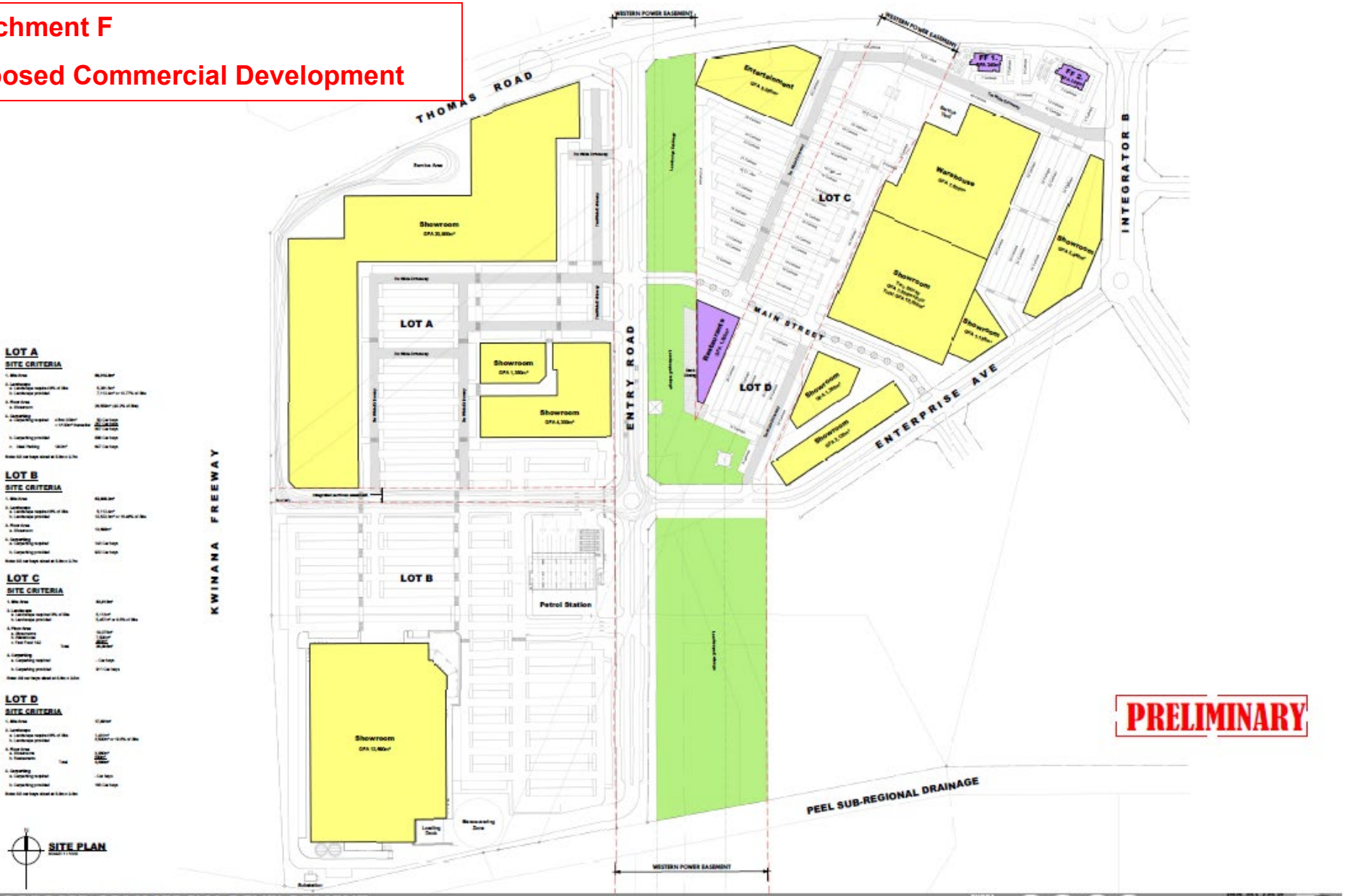
- special uses
- residential R10
- residential R20
- residential R25
- residential R30
- residential R40
- rural residential
- mixed business
- commercial
- public purposes
- HS high school
- PS primary school
- parks, recreation and drainage
- structure plan boundary

GREG ROWE & associates
FOCUSED ON ACHIEVEMENT

Casuarina Concept Plan

Attachment F

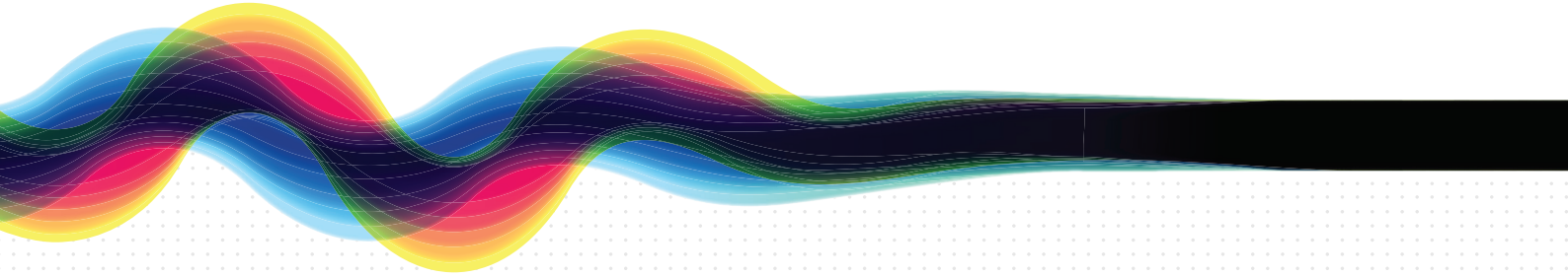
Proposed Commercial Development



Attachment G
Casuarina North LSP Text

Casuarina - East of Freeway
Local Structure Plan

August 2018 | 17-769



element.
the art and science of place

Document ID: PG Planning/PG 2017 - WorkflowMax/17-769 Casurina, Thomas Road/7 Final Documents/1 Lodged/Casuarina LSP.indd						
Issue	Date	Status	Prepared by		Approved by	
			Name	Initials	Name	Initials
1	18.06.18	Draft	Sam Jeleric	SJ	Murray Casselton	MC
2	27.06.18	Final	Sam Jeleric	SJ	Murray Casselton	MC
3	30.08.18	Revised Final	Sam Jeleric		Murray Casselton	

ENDORSEMENT PAGE

This Local Structure Plan is prepared under the provisions of the City of Kwinana Local Planning Scheme No. 2.

IT IS CERTIFIED THAT THIS STRUCTURE PLAN WAS APPROVED BY RESOLUTION OF THE WESTERN AUSTRALIAN PLANNING COMMISSION ON:

_____

Signed for and on behalf of the Western Australian Planning Commission:

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an officer of the Commission duly authorised by the Commission pursuant to section 16 of the Planning and Development Act 2005 for that purpose, in the presence of:

_____ Witness

_____ Date

_____ Date of Expiry

Table of Amendments

Amendment No.	Summary of the Amendment	Amendment Type	Date approved by WAPC

Executive Summary

Overview

This Local Structure Plan (LSP) has been prepared to guide the development of land totalling 25.76 hectares in area, and encompasses Lot 1199 (No. 740) Thomas Road, Casuarina, Lot 3 on Diagram 86318, Lots 9011 and Part Lot 9012 and 9013 on Plan 410834 (the Local Structure Plan area) within the City of Kwinana (the City).

The LSP area is located approximately 30.5 kilometres to the south of the Perth Central Business District, 3.5 kilometres east of the Kwinana Town Centre and 3.95 kilometres to the coastline. The subject site is located in the growth corridor on the eastern side of the Kwinana Freeway between Thomas Road to the north and Mortimer Road to the south.

The subject site is located approximately 100 metres from an existing local structure plan area on the northern side of Thomas Road, identified as the Anketell South Local Structure Plan and on the opposite side of the Kwinana Freeway from the 'Casuarina - West of Kwinana Freeway' Local Structure Plan.

This LSP has been prepared on behalf of the landowner 'Aigle Royal Properties Pty Ltd' and has been informed by investigations undertaken by the following consultant team:

- **element** – town planning and urban design
- PGV environmental – environment assessment and significant tree survey
- JDA Consulting Hydrologists – local water management
- Cossill & Webley consulting engineers– engineering and servicing
- Transcore – traffic assessment
- Emerge – bushfire management and landscape master plan

Purpose

The intent of this LSP is to provide a planning framework to guide and facilitate the development of the subject land for a range of showrooms and bulky goods retail land uses, as well as other land uses which may be typically permissible in a Service Commercial zoning.

Although this LSP does not cover the entirety of the Casuarina area east of the freeway, future separate planning processes are expected to fill in the gaps between Thomas Road through to Mortimer Road which will include predominantly residential land being made available.

The approach taken will allow for the staged development of the area in response to prevailing market conditions at the time.

Design Approach

The design of this LSP is a product of a multidisciplinary approach which was predicated on the need to respond to a number of site issues and constraints in order to deliver a balanced outcome for the site in accordance with the Structure Plan Framework Guidelines as prepared by the Western Australia Planning Commission (WAPC). This LSP has been informed by the following studies:

1. Preparation of an environment assessment report and a significant tree survey (PGV) to identify any potential impacts to the environment resulting from the development of the LSP area and identify management actions.
2. Preparation of a Local Water Management Strategy (LWMS) (JDA Consulting Hydrologists) to identify local surface water and ground water conditions and to make recommendations on how to manage the ongoing hydrology area, including in respect of pre-existing drainage assets.
3. Preparation of a servicing and infrastructure report (Cossill and Webley) to identify strategic engineering opportunities and constraints within the LSP area.
4. Preparation of a transport assessment (Transcore) to accommodate the modeled traffic movement that would be generated by the resultant bulky goods retail development within the LSP area.
5. Preparation of a bushfire hazard level and bushfire attack level assessment (Emerge) in response to the bushfire risk imposed by vegetation currently located in and around the LSP area.
6. Preparation of a landscape master plan (Emerge) to guide the landscaping approach for the future development of the area and tie in with other water management and proposed initiatives.

Executive Summary Table

Item	Data	Local Structure Plan Ref (Section No.)
Total area covered by the Local Structure Plan	26.44 ha	Part 2 – Section 1.2.2 CT's – Appendix A
Estimated Area of each land use proposed:		
Zones		
• Service Commercial	13.91 ha*	Part 2 – Section 4.2.1
• Special Use	6.5 ha* *includes 2.16 ha of power lines easement	Part 2 – Section 4.2.2
Reserves		
• Drainage Area / Watercourse	3.25 ha	Part 2 – Section 4.2.3
• Road Reserves	2.78 ha	Part 2 – Section 4.3
Total estimated lot yield	Not applicable	Not applicable
Estimated maximum floor space	127,750 m^2 GFA**	Not applicable
Estimated number of dwellings	Not applicable	Not applicable
Estimated maximum jobs provided	2,555 jobs***	Part 2 – Section 4.5
Estimated population	Not applicable	Not applicable
Number of primary schools	Not applicable	Not applicable
Number of high schools	Not applicable	Not applicable
Public open space	Not applicable	Not applicable

** based on plot ratio of 0.7 for developable area in the Service Commercial and Special Use zones (18.25 hectares)

*** based on 20 employees per 1,000m^2 floorspace

Contents

Part One – Implementation

Structure plan area

(a) This LSP applies to several lots in Casuarina on the southern side of Thomas Road and east of Kwinana Freeway comprising Lot 1199 (No. 740) Thomas Road, Lot 3 on Diagram 86318, Lot 9011 and Part Lots 9012 and 9013 on Plan 410834 being the inner edge of the line denoting the Local Structure Plan area boundary (Plan 1).

Operation

(a) This LSP commences operation on the day on which it is endorsed by the WAPC.

Staging

(a) The development of the LSP area will be implemented in multiple stages due to the significant size of the future development area and the nature of service commerical land uses that will occupy the area. Final development staging and composition will also be dependent upon a number of other factors, including market demand, servicing and infrastructure considerations.

(b) Staging of road, connections and accessways is anticipated, with new public roads being provided generally in accordance with this LSP and as identified on Plan 1, to service staged development.

Subdivision and Development Requirements

Land Use Permissibility

(a) The Local Structure Plan Map (Plan 1) outlines zones and reserves within the LSP area. Where applicable the intention of zones and land use permissibility within the LSP area shall be in accordance with the corresponding zone or reserve purpose under the City of Kwinana Local Planning Scheme No. 2 (LPS 2).

(b) Land use permissibility for the 'Service Commercial' zone shall be in accordance with the associated LPS 2 provisions.

(c) The following uses are permitted (P) within the 'Special Use' zone:

- Bulky goods showroom
- Car park
- Consulting rooms
- Eating house
- Liquor store
- Motor repair station
- Petrol filling station
- Service station
- Warehouse

(d) The following use is incidentally permitted (IP) within the 'Special Use' zone:

- Shop
- Fish shop

Minimum Lot Size

No minimum lot size is to be allocated to the 'Service Commercial' and 'Special Use' zones in the LSP area.

Development Requirements

Development requirements for both the 'Service Commercial' zone and 'Special Use' zones as set out in the LSP are to be in accordance with the requirements as set out within clause 6.6 of LPS 2, unless otherwise specified by the City or via an approval Local Development Plan (LDP).

Conditions of Subdivision and/or Development Approval

(a) Table 1 prescribes the regulatory provisions of the Local Structure Plan pertaining to requirements and prerequisites for subdivision within the LSP area, pursuant to the *Planning and Development (Local Planning Schemes) Regulations 2015*.

(b) At the time of subdivision, the City may recommend conditions to the WAPC, as applicable, requiring the preparation and/or implementation of conditions as outlined in Table 1.

Table 1 – Conditions of Subdivision and/or Development

1. Stormwater Management	1.1 Prior to the commencement of subdivision or development works, an Urban Water Management Plan (UWMP) is to be prepared and approved, in consultation with the City of Kwinana.
2. Movement Networks	2.1 The movement network within the Local Structure Plan area shall be provided generally in accordance with this LSP and as identified on Plan 1.
3. Infrastructure	3.1 The subdivider is to re-align the existing services corridor running from the Kwinana Freeway to Thomas Road along a replacement 18m wide local road reserve as depicted on the LSP (Plan 1).
4. Landscaping	4.1 An approved landscape plan shall be provided to the satisfaction of the City generally in accordance with the landscape master plan prepared to support the LSP. As a minimum requirement, the landscaping plan shall include appropriate acknowledgment of the old Armadale – Rockingham road alignment which intersects the site. This is to be interpreted through the proposed landscaping at the development application stage.

Local Development Plans

Where considered necessary to augment LPS 2 development requirements, LDPs may be required to be prepared as a condition of subdivision approval for land within the LSP. LDPs are to be used as a means of setting out specific and detailed guidance for future development and may include, but not necessarily be limited to the following:

(a) Height

(b) Plot Ratio

(c) Setbacks

(d) Interface Treatments

(e) Landscaping

(f) Car Parking

(g) Vehicle and pedestrian access and egress

Where a comprehensive development application is proposed or already approved, addressing the above matters, the requirement for an LDP will be waived.

Development Contribution Arrangements

Developer contributions are to be in accordance with the Scheme.

Plan 1: Local Structure Plan

Lots 9011, 9012, 9013, 1199 & 3 Thomas Road, Casuarina

0 50 100m

Project Manager: MC
Drawn: OP
Checked: MC
Date: 14 Aug 2018
Scale: 1:5,000 @ A3
Drawing No. 17-769 ST-1 A

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Part Two – Explanatory Report

Figures

PLAN 1 - Local Structure Plan

Figure 1 – Location Plan

Figure 2 – Aerial Plan

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Figure 6 – Jandakot Structure Plan

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Figure 8 – Draft Local Planning Strategy Spatial Plan

Abbreviations

AHD	Australian Height Datum
ASS	Acid Sulfate Soils
BAL	Bushfire Attack Level
BAM	Biosecurity and Agriculture Management Act 2007
BMP	Bushfire Management Plan
CoK	City of Kwinana
DAFWA	Department of Agriculture and Food Western Australia
DEC	Department of Envionment Conservation
DPLH	Department of Planning, Lands and Heritage
DBCA	Department of Biodiversity, Conservation and Attractions
DWER	Department of Water and Environmental Regulation (Formerly DOW)
DWMS	District Water Management Strategy
EPA	Environmental Protection Authority
EPBC Act	Environmental Protection and Biodiversity Conservation Act 1999
ERIC	Draft District Structure Plan - Eastern Residential Intensification Concept
JSP	Jandakot Structure Plan
JUWPCA	Jandakot Underground Water Pollution Control Area
JWRMS	Jandakot Water Resources Management Strategy
LCACS	City of Kwinana Local Commercial and Activity Centres Strategy
LDP	Local Development Plan
LSP	Local Structure Plan
LPS 2	Local Planning Scheme No. 2
LWMS	Local Water Management Strategy
POS	Public Open Space
PTA	Public Transport Authority
REW	Resource Enhancement Wetland
RNA	Retail Needs Assessment
SPP	State Planning Policy
SPP 2.3	State Planning Policy 2.3 – Jandakot Groundwater Protection Policy
SPP 3.7	State Planning Policy 3.7 – Planning in Bushfire Prone Areas
SPP 4.1	State Planning Policy 4.1 – Industrial State Buffer
UWMP	Urban Water Management Plan
UWPCA	Underground Water Pollution Control Area
WAPC	Western Australian Planning Commission
WSUD	Water Sensitive Urban Design
WWPS	Wastewater Pump Station

1. Planning background

1.1 Introduction and purpose

This Local Structure Plan (LSP) has been prepared by Element Advisory Pty Ltd (**element**) on behalf of the landowner (Aigle Royal Properties Pty Ltd) to guide the future subdivision and development of land on Lot 1199 (No. 740) Thomas Road, Casuarina, Lot 3 on Diagram 86318, Lot 9011 and Part Lots 9012 and 9013 on Plan 410834 (the Local Structure Plan area) within the City of Kwinana.

This non-statutory (explanatory) section constitutes Part 2 of the proposed LSP. The LSP will primarily facilitate the development of the LSP area and allow for a range of uses generally consistent with the Service Commercial Zone as set out in LPS 2, with minor use additions for the proposed and Special Use area. This LSP has been prepared for the north-western portion of the Northern Precinct of the Casuarina Urban Development Zone and is intended to fulfill the requirements of the WAPC's Structure Plan Preparation Guidelines and the City of Kwinana's Local Planning Scheme No. 2 (LPS 2).

This LSP will be used by the WAPC, Landowners, the Department of Planning, Lands and Heritage (DPLH), the City and State Government agencies to inform further detailed planning and provide certainty for future development over the subject lots.

Supporting documentation in the form of separate technical reports have been prepared to inform this LSP and are appended to this document. These documents include:

- *Environmental Assessment (2017) and Significant Tree Survey (2018) prepared by PGV;*
- *Local Water Management Plan (2017) prepared by JDA;*
- *Traffic Assessment (2018) prepared by Transcore;*
- *Engineering Services Report (2017) prepared by Cossill & Webley;*
- *Bushfire Hazard Level and Bushfire Attack Level Assessment (2017) prepared by Emerge; and*
- *Landscape Master Plan prepared by Emerge.*

This LSP comprises Part 1 - Implementation Section, Part 2 Explanatory Section and associated technical appendices.

Part 1 - Implementation Section sets out the provisions that apply to the LSP.

Part 2 - Explanatory Section provides supporting information and explanation as to the background of the Part 1 provisions. The content and format of Part 2 responds to the requirements of the WAPC's Structure Plan Preparation Guidelines.

1.2 Structure Plan Area

The Local Structure Plan area comprises a significant part of the Northern Precinct of the Casuarina Urban Development Zone and focuses on the establishment of 'Service Commercial' and 'Special Use' zones with the intention of establishing a new bulky goods retail and showroom precinct in the first instance, with the remainder of the structure planning for the Northern Precinct (primarily the residential component) to be prepared in due course as part of future stages.

It is noted that a staged approach such as this is supported by the following components of the applicable statutory framework:

- The City's LPS 2 provides that structure plans may be prepared and implemented in stages, pursuant to Clause 6.17.3.2.
- The LSP is broadly consistent with the Draft District Structure Plan – Eastern Residential Intensification Concept (ERIC), and the Jandakot Structure Plan.
- *The Planning and Development (Town Planning Schemes) Regulations*, under Part 4 – Section 15 provides the following, with respect to when structure plan may be prepared:

A structure plan in respect of an area of land in the Scheme area may be prepared if —

(a) the area is —

(i) all or part of a zone identified in this Scheme as an area suitable for urban or industrial development; and

(ii) identified in this Scheme as an area requiring a structure plan to be prepared before any future subdivision or development is undertaken; or

(b) a State planning policy requires a structure plan to be prepared for the area; or

(c) the Commission considers that a structure plan for the area is required for the purposes of orderly and proper planning.

- *Local Planning Policy No. 6* – Guidelines for Structure Planning in the Casuarina Cell, was recently adopted by the City. The policy objective is as follows:

  To provide guidance on the district planning matters that should be considered during the preparation of Local Structure Plans (LSPs) within the Casuarina Urban Development zone (Casuarina Cell), to ensure that subdivision and/or development proceeds in an orderly and proper manner across the whole Cell.

As alluded to, the subject site is located within the 'North Precinct' under this policy. The policy provides the following key guideline applicable to this LSP:

> *Bulky Goods and Showroom uses should be located adjacent to Thomas Road and the Kwinana Freeway to make best use of the access and exposure provided by these roads. Supermarkets and small format shops are not permitted in this area. The balance of the precinct should be used for residential purposes.*

The LSP as proposed meets the guideline requirements for the North Precinct as set out under the Policy.

In addition to staged structure planning being envisaged under the planning framework requirements applicable to the subject site, the proposed extent of the LSP is considered to be representative of orderly and proper planning for the following reasons:

- The proposed development of the land for bulky goods retailing and showroom uses will facilitate the provision of early services and employment opportunities for the local community that are currently lacking.
- All servicing related matters have been resolved as they relate to the Local Structure Plan area.
- The LSP provides a well-defined and appropriate internal road network that will frame and service future subdivision and development within the Local Structure Plan area while allowing for extensions to facilitate the future orderly and proper planning of the wider Northern Precinct.
- The LSP is responsive to current market conditions in the sense that there is no immediate intention to develop the remainder of the precinct, allowing future structure planning over this area to be responsive to conditions at the time.
- The location of the development envisaged under the LSP meets the locational criteria for bulky goods retailing and mixed business as set out in Clause 5.6.1(6) of State Planning Policy 4.2 – Activity Centres for Perth and Peel (SPP 4.2), with the LSP outcome therefore aligning with the WAPC's Structure Plan Framework intent of aligning with applicable State Planning Policies.

This staged approach does not in any way compromise the future development of the balance area, and is therefore considered to be compatible with orderly and proper planning.

1.3 Land description

1.3.1 Location

The area subject to this LSP comprises several lots being Lot 1199 (No. 740) Thomas Road, Casuarina, Lot 3 on Diagram 86318, Lots 9011 and Part Lots 9012 and 9013 on Plan 410834 (the LSP area). The LSP area is located within the municipality of the City of Kwinana, approximately 30.5 kilometres to the south of the Perth CBD, 3.5 kilometres to the east of the Kwinana Town Centre and around 4 kilometres to the coastline.

The LSP area is located in an urban growth corridor on the eastern side of the Kwinana Freeway broadly between Thomas Road on its northern boundary and Mortimer Road to the south. The LSP area is strategically located adjacent to the Kwinana Freeway, which provides a strong north-south regional connection within the Perth Metropolitan Region. Thomas Road also affords the site a strong east-west sub-regional linkage.

The LSP area is also located on the opposite side of the Kwinana Freeway from land zoned already zoned under LPS 2 for compatible mixed business purposes.

The LSP area is also approximately 100 metres south of an establishing local structure plan area on the opposite side of Thomas Road being identified as the Anketell South Local Structure Plan. This land is primarily identified for residential development with localised components of commercial and service commercial uses fronting Thomas Road.

The LSP area is currently vacant except for high voltage power transmission lines which traverse the site and a pocket of vegetation located in the north-western corner, adjacent to the Kwinana Freeway/Thomas Road intersection.

Refer to Figure 1 – Location Plan

1.3.2 Area and land use

The LSP area has a combined site area of 26.44ha. It is vacant and is broadly described as 'degraded' without any existing building improvements either within or immediately surrounding the LSP area.

Historically, the LSP area has remained vacant and has been set aside for future development, pending the preparation of various guiding planning documents being prepared for the land and surrounding precinct.

An established mushroom farm is located immediately to the south of the site.

Refer to Figure 2 – Aerial Plan

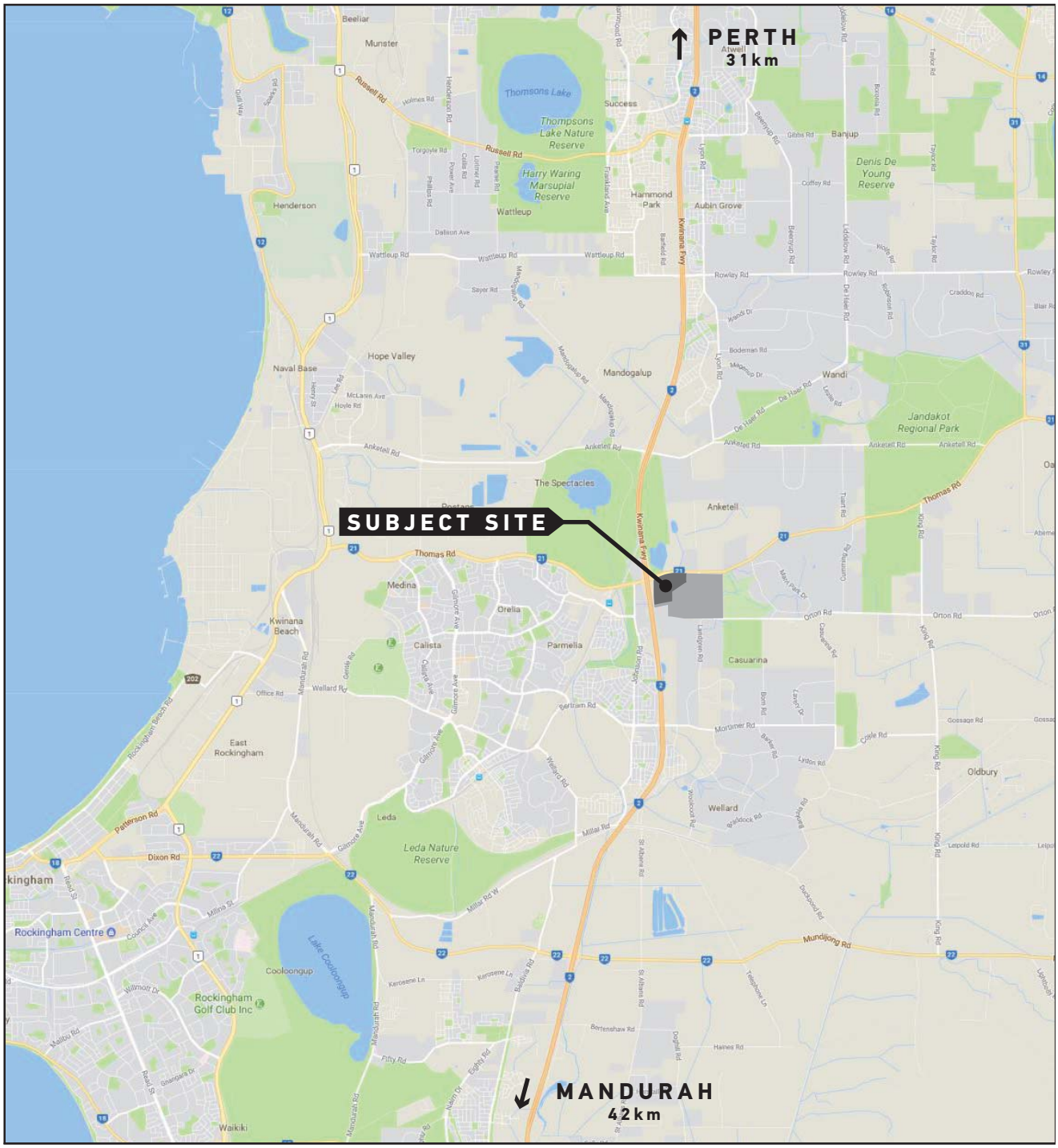

Figure 1. Location Plan

Figure 2. Aerial Plan

1.3.3 Legal description and ownership

The LSP area comprises several lots in Northern Precinct of the Casuarina Urban Development Zone. The details of the relevant Certificates of Title are provided in the following table.

Table 2 – Certificate of Title Details

Lot No.	Street Address	Volume/ Folio	Plan	Area	Owner
1199	740 Thomas Road, Casuarina	2817/293	203629	3.9451 ha	ARP No. 1 Pty Ltd (Share title)
1199	740 Thomas Road, Casuarina	2817/294	203629	As above	ARP No. 1 Pty Ltd (Share title)
3	No Street Address	2817/295	86318	3.5890 ha	ARP No. 4 Pty Ltd (Share title)
3	No Street Address	2817/296	86318	As above	ARP No. 4 Pty Ltd (Share title)
9011	No Street Address	2926/375	410834	6.6714 ha	ARP No. 7 Pty Ltd
9012	No Street Address	2926/376	410834	9.5253 ha	ARP No. 8 Pty Ltd
9013	No Street Address	2926/377	410834	15.4275 ha	ARP No. 9 Pty Ltd
Other land in the LSP area (to be acquired or adjusted)					
1372	No Street address – Sub Drain	LR3099/50	D79285	1.5692 ha	State of WA
P Road	Part of road to be closed	N/A	N/A	1.0349 ha	State of WA

In addition to the Aigle Royal Properties landholdings, a portion of a pre-existing sub-regional drain (Lot 1372) is to be re-aligned and incorporated in to the local drainage system (as discussed in further detail in the supporting LWMS prepared by JDA, Refer Appendix C), while a portion of the existing P Road (encompassing a section of the original Armadale to Rockingham Road) which intersects the site is to be closed, acquired and amalgamated into the overall LSP area. All existing services / utilities which currently run within the P Road are to be redirected into a new 18m wide local road reserve as shown on Plan 1. The landowner is currently in discussions with the State regarding these two acquisitions, and have received in principle support in this regard.

Refer to Figure 3 – Site Plan

Refer to Appendix A – Certificates of Title

1.3.4 Limitations and Encumbrances on Title

The encumbrances noted on the existing titles primarily concern taking orders and easements associated with the power transmission lines, as follows.

- I653596 – Easement to Western Power Corporation – See DP33420
- I653596 – Easement to Western Power Corporation – See DP410834
- C110527 – Easement to the State Energy Commission of Western Australia

Refer to Appendix A – Certificates of Title

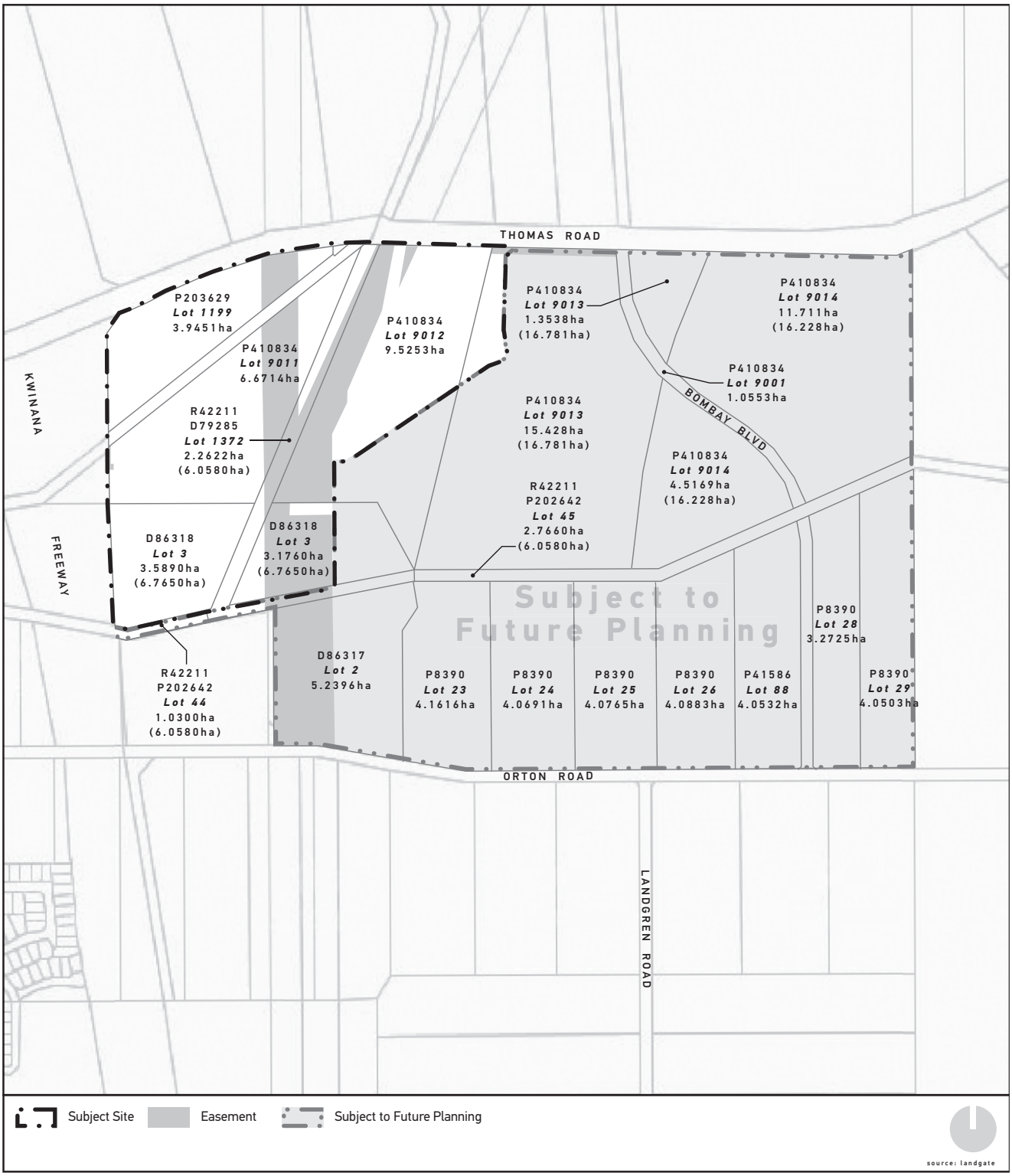

Figure 3. Site Plan

2. Planning framework

2.1 Zoning and reservations

2.1.1 Metropolitan Region Scheme

Under the provisions of the Metropolitan Region Scheme (MRS), the subject site is entirely zoned 'Urban'.

The subject site immediately abuts the Kwinana Freeway, which is identified as 'Primary Regional Road' and Thomas Road which is identified as an 'Other Regional Road'.

Refer to Figure 4 – Metropolitan Region Scheme Plan

2.1.2 City of Kwinana Local Planning Scheme No. 2

Under the provisions of the City of Kwinana Local Planning Scheme No. 2 (LPS 2) the subject site is zoned 'Development'. As provided for under Clause 6.15 of the Scheme, the objectives of the Development zone are to:

(a) designate land for future development;

(b) provide a planning mechanism for the identification and protection of areas of conservation value whilst facilitating the growth of the Town;

(c) provide for orderly and proper planning of large areas of land for residential, commercial, industrial and associated purposes through a comprehensive structure planning process;

(d) enable planning to be flexible and responsive to changing circumstances throughout the development stages of the area;

(e) provide sufficient certainty for demand forecasting by service providers.

The LSP area also includes a special control area being identified as an 'Area of landscape protection'. Clause 6.16.2 of the Scheme states the following in this regard:

6.16.2.1 Councils objective in setting aside Areas of Landscape Protection is to conserve areas of natural ecological value or landscaping amenity whilst at the same time allowing development as provided in Zoning Table No. 1 of the Scheme.

6.16.2.2 No person shall, in any Area of Landscape Protection, without Council's Planning Approval in writing;

(a) Carry out clearing of trees or other vegetation;

(b) Carry out any filling, dredging or changes to the contour of the land;

(c) Erect any advertising sign,

(d) Erect or construct any building or outbuilding,

(e) Degrade any natural wetland system,

(f) Detract from the amenity of the locality.

Notwithstanding this identified 'Area of landscape protection', it is noted that a clearing permit has been granted for the whole site, and is expected to be acted upon in due course. Accordingly, it is anticipated that in due course, the associated Scheme map designations will also be updated to the remove the area of landscape protection previously identified over the LSP area.

The City provides its respective requirements for the preparation and adoption of Structure Plans under Clause 6.17 – Division 14 - Structure Plans. Among other things, it states that all subdivision, use and development of land shall be in accordance with an approved LSP. Accordingly, this Local Structure Plan proposal has been prepared with a view to guide those future development aspects.

Refer to Figure 5 – City of Kwinana Local Planning Scheme No. 2

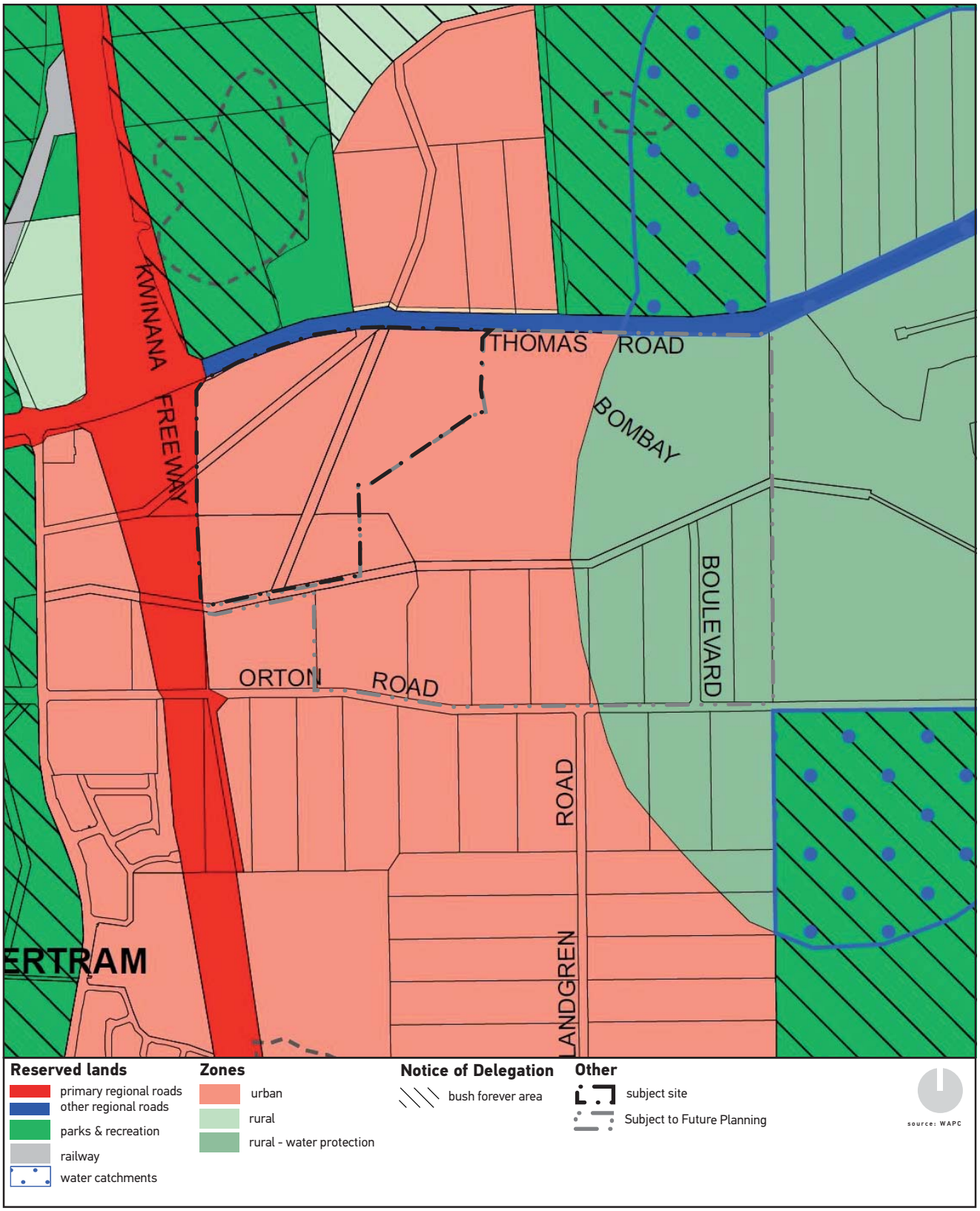

Figure 4. Metropolitan Region Scheme Plan

Figure 5. City of Kwinana Local Planning Scheme No. 2

2.2 Regional and sub-regional structure plan

2.2.1 Jandakot Structure Plan

In 1993, a Select Committee Report on Metropolitan Development and Groundwater Supplies reviewed the boundaries of the Jandakot Underground Water Pollution Control Area (JUWPCA). This review decreased the extent of the JUWPCA and as a result, revealed an area that was now without any strategic planning for future use or development. The Jandakot Structure Plan (JSP) was subsequently prepared over this subsidiary piece of land and, consequently was formally adopted in August 2007.

The JSP sets the broad strategic planning framework for the land generally surrounding the 'Jandakot Proclaimed Underground Water Pollution Control Area' which includes land in several different local governments. In the City of Kwinana however it covers an area of land up to Rowley Road to the north down to around Orton Road in the south, dealing explicitly with both groundwater and storm water management issues. The JSP requires that a Local Water Management Strategy (LWMS), consistent with the Jandakot Water Resources Management Strategy (JWRMS) be prepared and lodged with any subsequent Local Structure Plans (LSP).

The JSP outlines general locations for conservation areas, primary schools and transport links as well as providing a population projection of around 40,000 residents. The specific details on matters such as remnant vegetation protection were limited however and formed the basis for further investigations which went into the associated with Draft District Structure Plan - Eastern Residential Intensification Concept (ERIC) through the Local Government.

Under the JSP, the LSP area is identified as 'mixed use' and is therefore broadly consistent with its provisions. Given the age of the Structure Plan (dating back to 1993), it is clear that the subject site has been earmarked to form part of the mixed use/business precinct for some time, most likely due to its strategic location at the intersection of a major freeway interchange.

Refer to Figure 6 – Jandakot Structure Plan

2.2.2 Draft District Structure Plan – Eastern Residential Intensification Concept (Eric)

The Draft District Structure Plan – Eastern Residential Intensification Concept (ERIC) was prepared by the then (Town) of Kwinana in 2005 and aimed to address several additional levels of details where the JSP fell short. It expands upon the opportunities and constraints inherent to the land and *'defines a framework by which urban subdivision and development is able to occur in an orderly and co-ordinated manner'*.

ERIC identifies the LSP area as having a primary land use of 'Mixed Business', with south-western portion indicating 'Community Facilities' and a 'Local/District Recreation' reserve to the south-west of the site. This LSP proposal is generally considered to be in accordance with this District Structure Plan.

Furthermore, as requested in ERIC, the LSP responses to more detailed site-specific analysis such as urban water management, traffic management and other requirements which stem from State Planning Polices (SPPs).

Refer to Figure 7 – ERIC

2.3 Planning Strategies

2.3.1 Directions 2031 and Beyond

Directions 2031 and Beyond (Directions 2031) is the high-level spatial planning framework and strategic plan for the Perth and Peel metropolitan region. Directions 2031 provides a framework for the detailed planning and delivery of housing, infrastructure and services necessary for various growth scenarios presented within the document.

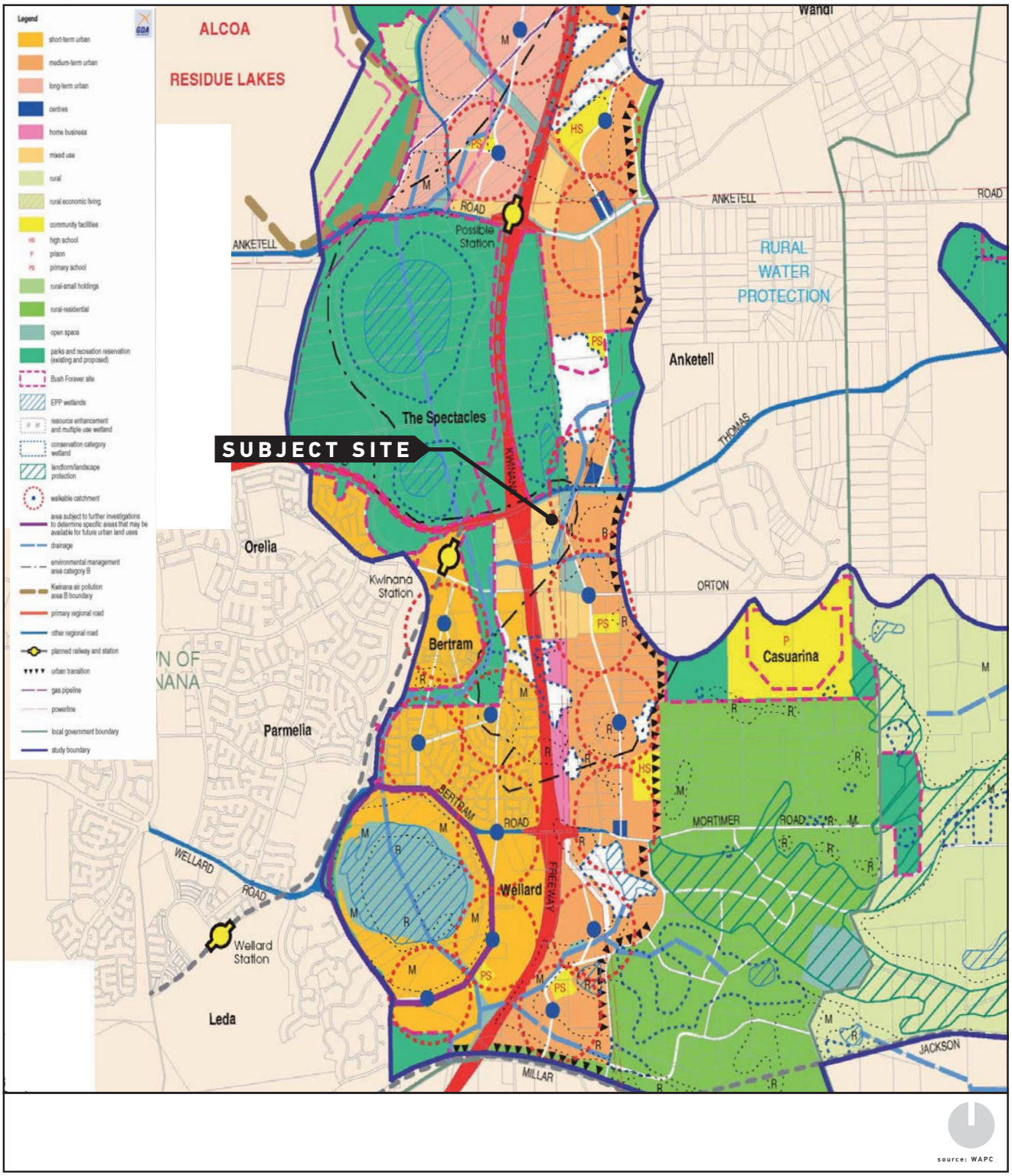

Figure 6. Jandakot Structure Plan

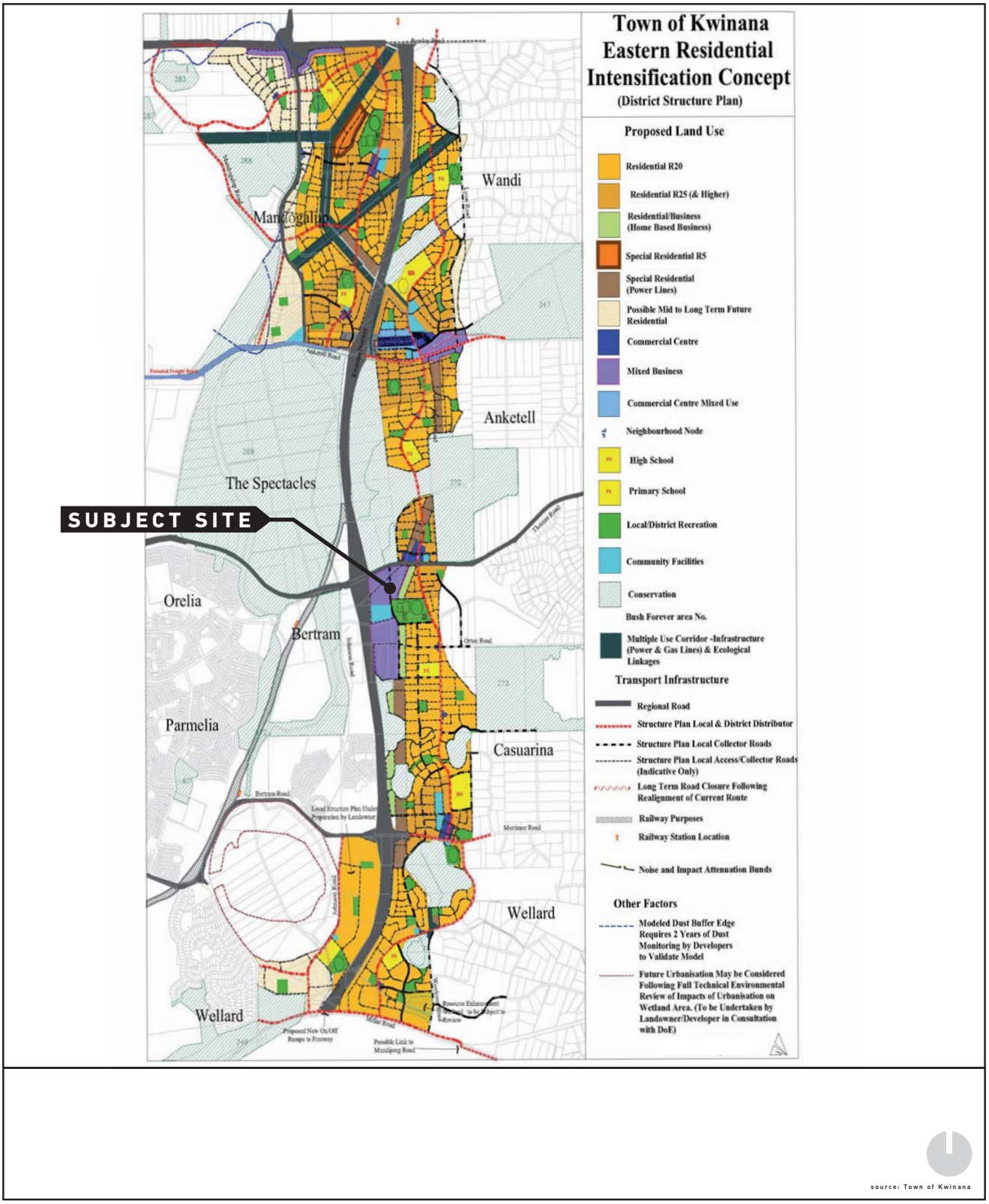

Figure 7. ERIC

Directions 2031 identifies growth scenarios for low, medium and high-density rates of infill and greenfield development. The Connected City scenario is identified as the preferred growth scenario, which was then modeled to determine the area of greenfield land that will be required for a city of 3.5 million people. Consistent with the outcomes of this approach, Directions 2031 set a target of 15 dwellings per gross urban zoned hectare of land in development areas.

Directions 2031 is supported by a series of Sub-Regional Strategies (as noted below) which provide information about the levels of expected population growth in individual local government areas. The Sub-Regional Strategies also identify development opportunities and prospects for increased density within greenfield areas to facilitate achievement of the housing targets set in Directions 2031.

The LSP is considered to be broadly consistent with Directions 2031 insofar as the precinct will aid in creating localised employment opportunities which complement the local economy, with future development stages on the eastern and southern portions of the site being able to accommodate the necessary residential yield to support the expected population growth in the region.

2.3.2 Perth and Peel @ 3.5 million

It is anticipated that more than 3.5 million people will live in Perth and Peel by 2050. The Perth and Peel @ 3.5 million plan provides a strategic planning framework on how to accommodate this substantial population increase without impacting on our way of life, natural environment and physical infrastructure. The four sub-regional planning framework illustrates where important environmental assets should be avoided and protected. The Perth and Peel @ 3.5 million document builds upon the principles established by *Directions 2031 and Beyond* as they relate to urban development and is not considered to have any significant impact on the LSP area.

2.3.3 South Metropolitan Peel Sub-Regional Planning Framework Towards Perth and Peel @ 3.5 Million

The South Metropolitan Peel Sub-Regional Planning Framework represents a whole State Government Approach to managing the future urban form within the sub-region. The South Metropolitan Peel sub-region is proposed to accommodate more than 1.26 million people. The sub-regional Planning Framework identifies sufficient land to meet the increased demand for residential dwellings inclusive of the LSP area. The subject land is identified as “Urban” on the Sub-Regional plan, consistent with its zoning under the MRS.

Whilst this LSP does not provide for housing opportunities, as noted above future stages of planning will incorporate a strong residential component into the eastern portion of the subject landholdings. Accordingly, the LSP is considered to be broadly consistent with the South Metropolitan Perth and Peel Sub-Regional Strategy.

The target dwelling yield of 15 dwellings per gross hectare of urban zoned land is carried over from Directions 2031 and Beyond. This proposed density target ensures the subject land is helping deliver a consolidated urban form in accordance with the State Government objectives and strategic planning policy. Given the significant constraints associated with the subject site, all residential components will be accommodated within the future development of the eastern landholdings, which will ultimately aim to meet the density target. Furthermore, it aims to improve employment self-sufficiency to reach the target, consistent with Strategic direction/priority of the Planning Framework.

2.3.4 Liveable Neighbourhoods

Livable Neighbourhoods was prepared by the WAPC to implement the objectives of the State Planning Strategy and deliver the strategies and actions of metropolitan spatial frameworks. As an operational policy of the WAPC, it guides the design and assessment of Structure Plans (regional, district and local), subdivision and development for new urban area. Its aims include promoting the design of walkable neighbourhoods, places that offer community a sense of place, mixed uses and active streets, accessible and sustainable parks, energy efficient design and a variety of lot sized and housing types.

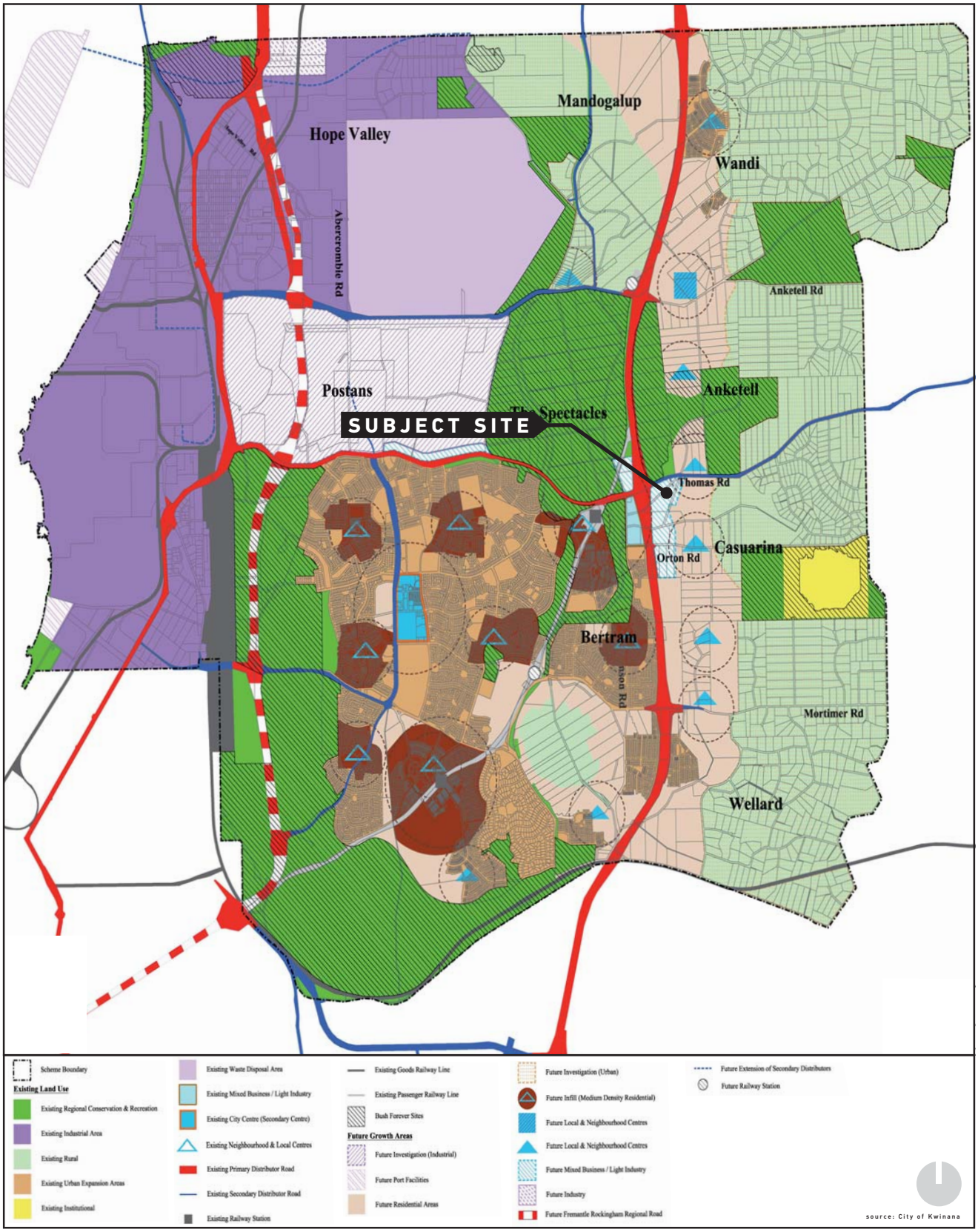

Figure 8. Draft Local Planning Strategy Spatial Plan

As far as the LSP is concerned, the development of the precinct will create a strategic location to cater for a wide range of business and employment opportunities, consistent with Element 7 of Liveable Neighbourhoods. It will generate activity areas and encourage as many locally based jobs as possible to accompany the surrounding residential areas.

2.3.5 Local Planning Strategy

We understand that the City of Kwinana Local Planning Strategy is currently under review. However, the Draft Local Planning Strategy Map 2015 identifies the subject site primarily as "Future Mixed Business/Light Industry" with the adjoining sites to the east being "Future Residential Areas". The LSP is therefore considered to be consistent with the Local Planning Strategy.

Refer to Figure 8 – Draft Local Planning Strategy Spatial Plan

2.3.6 City of Kwinana Local Commercial and Activity Centres Strategy

The City of Kwinana Local Commercial and Activity Centres Strategy states that there are no significant service commercial areas in in the City of Kwinana, other than a small precinct on the eastern side of the city centre.

On the Strategy Plan, existing and future mixed business areas are identified adjacent to both sides of the Kwinana Freeway and Thomas Road intersection due to the locational advantages presenting at this important node. Furthermore, the Retail Needs Assessment (RNA) indicates that the area has excellent long term potential for 'other retail and bulky goods' uses.

In light of the above, the proposed LSP is considered to be entirely consistent with guidance set out in the Local Commercial and Activity Centres Strategy.

2.4 Planning policies

2.4.1 Statement of Planning Policies

State Planning Policies form part of the State Planning Framework, which provide a hierarchy for the planning policies, strategies and guidelines and importantly, a context for decision making on land use and development in Western Australia.

Development of land must generally be consistent with any relevant state planning policies (SPP) which are prepared and adopted by the WAPC under statutory procedures set out in Part 3 of the Planning and Development Act 2005. The WAPC and local governments must have due regard to the provisions of SPP's when preparing or amending regional and district planning schemes and when making decisions on planning matters. Details of the SPPs relevant to the site are provided below.

2.4.2 State Planning Policy 2.3 – Jandakot Groundwater Protection Policy

State Planning Policy 2.3 – Jandakot Groundwater Protection (SPP 2.3) was initially approved by the WAPC in 1998 and was prepared to ensure that development over the Jandakot groundwater mound is compatible with the long-term use of the groundwater for human consumption. The policy has recently been revised and updated, with a new version being released in January 2017.

SPP 2.3 proposes various compatible land uses in the Rural – Water Protection zone, which provide a guide for local governments planning schemes and land use permissibility, and include for example, special rural residential subdivision.

The Department of Water (previously the Water and Rivers Commission) defined three priority protection levels within the 'Jandakot Underground Water Pollution Control Area' (UWPCA). Priority 1 and Priority 2 correlate directly to the boundary reflected in the Metropolitan Region Scheme (MRS) for the below zones:

- Water Catchment Reservation (corresponds to Priority 1)
- Rural – Water Protection Zone (corresponds to Priority 2)

Priority 3 areas aren't reflected in the MRS. However, they include areas where water-supply needs to co-exist with other land uses such as housing, commercial sites and light industry and are subject to management controls to mitigate any impacts on the water environment.

Approximately a third of the (extended) subject site is located in Priority 2 area which is reflected in the Rural – Water Protection zoning under the MRS. Priority 2 normally includes private rural with few buildings, with low-intensity land use. These areas have a high priority for public water supply use. The management objective is to ensure there is no increased risk of pollution to the water source. Restricted development may take place under specific guidelines. Notwithstanding, the LSP area of this proposal does not include any of the same restrictions.

2.4.3 State Planning Policy 3.7 – Planning in Bushfire Prone Areas

The State Planning Policy 3.7 – Planning in Bushfire Prone Areas (SPP 3.7) states that higher order strategic planning documents such as frameworks, region schemes and sub-regional structure plans should include high level consideration of relevant bushfire hazards when identifying or investigating land for future development.

SPP 3.7 forms the foundation for land use planning to address bushfire risk management in Western Australia. It will inform and guide decision makers, referral agencies and proponents on achieving acceptable fire protection outcomes on planning proposals in bushfire prone areas.

Further to the provisions of SPP 3.7 and pursuant to State Planning Policy 3.4 – Natural Hazards and Disasters', the Planning for Bushfire Protection Guidelines sets out a range of matters that need to be addressed at various stages of the planning process, to provide an appropriate level of protection to life and property from bushfires, and avoid inappropriately located or designated land use, subdivision and development on land where a bushfire risk is identified.

The identification of bushfire prone areas within any portion of the site requires further assessment of the bushfire hazard implications on proposed development to be undertaken in accordance with State Planning Policy 3.7 Planning in Bushfire Prone Areas (SPP 3.7) (WAPC 2015) and the Guidelines for Planning in Bushfire Prone Areas Version 1.2 (the Guidelines) (WAPC and DFES 2017). Accordingly, a Bushfire Management Plan has been prepared by Emerge to inform this LSP.

Refer to Appendix F – Bushfire Management Plan

2.4.4 State Planning Policy 4.1 – Industrial State Buffer

State Planning Policy 4.1 – Industrial State Buffer (SPP4.1) provides a consistent statewide approach for the protection and long-term security of industrial zones, transport terminals (including ports) other utilities and special uses, and provides for the safety and amenity of surrounding land uses while having regard to the rights of landowners who may be affected by residual emissions and risk.

The objectives of SPP4.1 are:

- *To provide a consistent statewide approach for the definition and securing of buffer areas around industry, infrastructure and some special uses.*
- *To protect industry, infrastructure and special uses from the encroachment of incompatible land uses.*
- *To provide for the safety and amenity of land uses surrounding industry, infrastructure and special uses.*
- *To recognise the interests of existing landowners within buffer areas who may be affected by residual emissions and risks, as well as the interests, needs and economic benefits of existing industry and infrastructure which may be affected by encroaching incompatible land uses.*

The LSP addresses the objectives of the SPP4.1 by not proposing sensitive land uses that may be incompatible with nearby developments.

2.4.5 EPA Guidance Statement No. 3 - Separation Distances Between Industrial and Sensitive Land Uses

In 2005, the Environmental Protection Authority (EPA) prepared Guidance Statement 3: Separation Distances between Industrial and Sensitive Land Use (GS3). GS3 relates to the EPA's environmental factors of human health and amenity which may be impacted by gaseous and particulate emissions, noise, dust and odour generated from industry, and makes reference to a range of industries which require separation from sensitive land uses, and goes on to provide the recommended separation distances.

The purpose of GS3 is to:

- *Identify the need for specific separation distance or buffer definition studies; and*
- *Provide general guidance on separation distances in the absence of site- specific technical studies.*

The LSP addresses the objectives of GS3 by not proposing sensitive land uses that may be incompatible with noise and odour from nearby developments.

Refer Appendix B - Environmental Assessment Report

2.4.6 Draft Environmental Assessment for Separation Distances Between Industrial and Sensitive Land Uses

More recently the Environmental Protection Authority (EPA) has prepared the draft Environmental Assessment Guideline for Separation Distances between Industrial and Sensitive Land Uses (EAG), which was released in 2015. This is expected to replace the existing Guidance Statement 3: Separation Distances between Industrial and Sensitive Land Use (GS3).

Further to GS3, the purpose of draft EAG is to:

- *Provide advice on which land uses require separation, and recommend the appropriate separation distances;*
- *Outline the EPA's expectations on the application of separation distances for schemes and scheme amendments in the environmental impact assessment process; and*
- *Support strategic and statutory land use planning and development decisions by planning authorities where proposed land uses have the potential to adversely impact on human health and amenity.*

In this instance there are no sensitive land uses proposed associated within the LSP area. Accordingly, mitigation or design responses to nearby pre-existing uses are to be addressed only for future planning stages where residential or other sensitive land uses are concerned.

2.5 Local Planning Policies

2.5.1 Local Planning Policy – Planning for Bush Fire Protection Guidelines

We understand that this Local Planning Policy essentially adopts the current WAPC's Planning for Bush Fire Protection Guidelines and any subsequent revisions, for enforcement by the City of Kwinana.

Consistent with the policy and Guidelines, a Bushfire Management Plan (BMP) for the LSP has been prepared by Emerge and is appended in this regard.

Refer Appendix F – Bushfire Management Plan

2.5.2 Local Planning Policy No. 6 – Guidelines for Structure Planning in the Casuarina Cell

Local Planning Policy No. 6 (LPP 6) provides guidance on the district planning matters that should be considered during the preparation of local structure plans within the Casuarina Urban Development zone (Casuarina Cell), to ensure that subdivision and/or development proceeds in an orderly and proper manner across the whole Cell.

The policy divides the Casuarina area into three broad precincts. The subject land is located within the northern precinct. In certain circumstances the policy allows for part local structure plans to be prepared within a given precinct subject to fulfilment of certain requirements. Compliance is detailed in Table 3 as follows:

Table 3 – City of Kwinana Local Planning Policy No. 6 – Policy Applicaton Assessment

Requirement	Compliance
Objectives of Local Planning Policy	As per section 1.2 above and Table 5 below
Demonstrated that LSP can be considered in isolation	As per section 1.2 above and Table 5 below
Areas comprises of at least 30% of the precinct	Area exceeds 30%
Preparation of a concept plan for the balance of the precinct	Refer Appendix G – Concept Plan and Table 5.

The policy also requires consultation with other owners within the northern precinct as part ot the preparation of a concept plan as per policy requirement. Details of consultation with other owners, including outcomes, are summarised in Table 4 below.

Table 4 – Consulation With Other Landowners in North Precinct

Subject land holding	Date of consultation	Form of consultation	Outcomes of consultation
Lot 23 Orton Rd, Casuarina	20th June 2018	Email of concept plan, Local Planning Policy No. 6 "Guidelines for Structure Planning in the Casuarina Cell". Follow up phone discussion between landowner from Aigle Royal Group.	Details of concept plan noted.
Lot 2, 24 & 25 Orton Rd, Casuarina	20th June 2018	Meeting and presentation of concept plan and Planning Policy No. 6 "Guidelines for Structure Planning in the Casuarina Cell".	Landowner objection to mushroom farm buffer and possible location of district open space on Lot 25 Orton Road.
Lot 44 Orton Road, Casuarina (Costa Mushrooms)	22nd June 2018	Email of concept plan and follow up discussion between landowner and Aigle Royal Group.	Details of concept plan noted.

With respect to the North Precinct (the LSP area), the following specific district and significant local planning matters are to be addressed, with responses/comments provided accordingly:

Table 5 – Local Structure Planning Guidelines (North Precinct)

The North Precinct should include the following:

Matters to be addressed	Comment
i. Bulky Goods and Showroom uses should be located adjacent to Thomas Road and the Kwinana Freeway to make best use of the access and exposure provided by these roads. Supermarkets and small format shops are not permitted in this area. The balance of the precinct should be used for residential purposes.	Compliant – The LSP area is located directly adjacent to Thomas Road and the Kwinana Freeway. It is intended to include bulky goods and showroom uses predominantly, with the remainder of the northern precinct to be used for residential purposes.
ii. Primary access from Thomas Road should allow a four way intersection with the approved Anketell South local structure plan. This access should become the primary north-south route through the broader Casuarina cell and should link to existing Landgren Road in the adjacent Central Precinct.	Compliant – Access to the LSP area is be provided via a four way intersection and in coordination with the Anketell South LSP.
iii. The City may support the use of the land within the power line easements for car parking associated with the adjacent commercial and recreation uses.	Compliant - As noted elsewhere, the power line easement is to incorporate parking associated with the permissible land uses.
iv. Development of a District Sporting Ground to be acquired by the Development Contribution Plan in accordance with the adopted Community Infrastructure Plan (or most recent version).	Compliant - The District Sporting Ground indicated by ERIC does not fall within the confines of this LSP. However, a 3.0 ha area of District Open Space has been indicatively identified adjacent to Orton Road as shown on the concept plan (Refer Appendix G). This matter will be the subject of further discussions between the City and the relevant landowners. From discussions with the City of Kwinana, it is understood that the DOS is likely to include a series of hard courts, primarily used for netball.
v. A maximum of 80% of the total POS requirement in the North Precinct shall be provided within the precinct with the shortfall (maximum 20%) being provided as a cost contribution through the DCP.	N/A – no POS contribution is required within the local structure plan area. This matter will be subject of further discussions between the City and landowners within the North Precinct.
vi. The identification of a site for Local Centre (commercial and activity centre) (800m^2 retail floor space) should be provided at the intersection of Landgren Road and Orton Road, either in the Northern Precinct or the Central Precinct.	N/A - a Local Centre site is to be identified during the detailed design stage of the remainder of the North Precinct, at the Landgren Road and Orton Road intersection. However as noted, it may be better located within the Central Precinct. This matter will be subject of further discussions between the City and landowners within the North Precinct.
vii. As part of the submittal of a LSP, the applicant shall consider and address the key land uses proposed in the Jandakot Structure Plan and Eastern Residential Intensification Concept for this Precinct area.	Compliant - Refer to Section 2.2.1 and 2.2.2 of this report. The Jandakot Structure Plan primarily identifies the LSP area as a 'mixed use' site, while ERIC identifies it as a 'mixed business' site. Given the LSP area is entirely dedicated to formalizing a Service Commercial precinct, it is therefore considered to generally be in-line with key land uses envisaged by these strategic documents.

To assist with addressing the relevant matters contained in LPP 6, a concept plan has been prepared to broadly identify appropriate locations for the abovementioned North Precinct features.

Indicative Concept Plan

The design of the indiciative concept plan (provided at Appendix G) as required under LPP 6 to allow for partial local structure planning of the North Precinct has taken into consideration pre-existing site constraints and other influencing factors proximal to the precinct, including:

- The pre-deternined location of a Main Roads WA controlled strategic four way intersection as approved in the Anketell South Local Structure Plan (2014) on Thomas Road linking to the development area to the north of Thomas Road and providing primary site access to the Kwinana Freeway to the west.
- A logical north-south road structure designed to tie in with the existing alignment of Landgren Road to the south in the adjacent Central Preinct.
- A logical internal road structure to support the future development of the identified sub-areas within the LSP and to maximise the exposure potential of future developments..
- Relocation of pre-existing drainage assets where necessary, including the Peel Sub Drain, and the provision of a more contemporary Water Sensitive Urban Design (WSUD) drainage solution including living streams and piped drainage in key locations. Other functional sections of the Peel Sub Drain have been retained where relocation has been considered unnecessary.
- Relocation of infrastructure and services from pre-existing road reserves to deconstrain the development of the North Precinct, with such services relocated as appropriate within the new proposed road layout.
- A strategic approach to the use of land within the power line easements for car parking, landscaping and drainage purposes assiocated with adjacent commercial uses.
- Co-location of the District Open Space (DOS) with a potential primary school and local centre that are likely to be situated on the Orton Road and Landgren Road intersection.
- Responding to the need to separate built form from the high voltage power line corridors, and the base of the towers.

Refer Appendix G - Concept Plan

3. Site conditions and constraints

3.1 Biodiversity and natural area assets

A Flora and Fauna Assessment dated June 2012 was initially undertaken by GHD to provide details to be used to inform the concept design process, highlight potential environmental approvals processes and assist in identifying further environmental investigations. PGV Environmental have provided further clarification as to environmental issues which impact the site, with a combination of desktop and field investigations. The results of the assessment are summarised below and explored in further detail in Appendix B – Environmental Assessment.

3.1.1 Flora and vegetation

Two vegetation and flora surveys have been undertaken over the whole Aigle Royal landholding including the balance of the lots to the east of the structure plan area (GHD, 2012; Bennett Environmental, 2010). The GHD Survey was conducted in May 2012 and a follow-up spring survey of the area was conducted in October 2012 by Bennett Environmental. A total of 133 species have been recorded on the whole site, of which 79 were native species and 54 introduced. None of the species are Threatened or Priority flora. Three weed species listed below recorded on the sire are Declared Pests under the Biosecurity and Agriculture Management Act 2007 (BAM Act):

- Cotton Bush (*Gomphocarpus fruticosus*);
- Cape Tulip (*Moraea flaccida*); and
- Paterson's Curse (*Echium plantagineum*).

Significant Tree Survey

A significant tree survey was undertaken by PGV in March 2018, where the following observations were made:

> *A total of 38 trees with a DBH of 500mm or greater, measure using the AS4970 method were recorded in Precincts 1 and 2 of the proposed mixed use development on Thomas Road, Casuarina.*
>
> *Sixteen of the trees were rated in Fair condition, eight in Good condition and fourteen in Poor condition. The overall low rating of the trees was largely due to the impacts of regular fires.*
>
> *None of the 38 trees had any particular feature that would recommend them for retention in a future development.*
>
> *Most of the trees would not be able to be retained due to safety issues over the tree's structural integrity.*

Based on the above conclusions in PGV's report, there is not considered to be any trees of significance within the LSP area worthy of retention.

Refer Appendix B – Significant Tree Survey

3.1.2 Fauna

Conservation Significant species that may occur on the site are:

- *Calyptohynchus latirostris* (Carnaby's Black Cockatoo);
- *Calyptohynchus baudinii* (Baudin's Black Cockatoo);
- *Calyptorhynchus Banksii naso* (Forest Red-tailed Black Cockatoo);
- *Ardea ibis* (Cattle Egret);
- *Merops ornatus* (Rainbow Bee-eater);
- *Lerista lineata* (Perth slider, Lined Skink);
- *Neelaps colonotos* (Black-striped Snake); and
- *Isoodon obesulus fusciventer* (Southern Brown Bandicoot, Quenda).

3.1.3 Wetlands

There are no significant wetlands located within the LSP area.

There is however a Resource Enhancement Wetland recorded along the eastern portion of the extended subject site. Whilst the EPA urges that all reasonable measures are taken to minimise the potential impacts on Resource Enhancement wetlands and appropriate buffers, the assessment undertaken in the Flora and Fauna Report highlights the wetlands as being highly degraded. There is potential for this wetland to be downgraded to a Multiple Use category following due process with representatives from the DBCA (formerly DEC or DPAW).

3.2 Landform and soils

3.2.1 Topography, soils and geology

Topography is gently undulating and there are no outstanding topographical features which represents no significant constraint to development. Refer to Figure 2 in the Appendix B - Environmental Assessment Report for the sites topography.

The site is mapped as part of the Bassendean System and consists of very low relief, leached, grey siliceous Pleistocene sand dunes, intervening sandy clayey swamps and gently undulating plains. These soils are very leached, infertile and mildly acidic.

The soils on the site have been described by the Department of Agriculture and Food Western Australia (DAFWA) (2017) as:

- Bassendean B1 Phase (212Bs_B1) which are described as deep bleached grey sands sometimes with a pale yellow B horizon or a weak iron-organic hardpan at depths generally greater than 2m. These soils occur on extremely low to very low relief dunes, undulating sandplain and discrete sand rises; and
- Bassendean B3 Phase (212Bs_B3) are soils on closed depressions and poorly defined stream channels. These soils are moderately deep, bleached sands with an iron-organic pan, or clay subsoil. Surfaces are dark grey sand or sandy loam.

The B1 phase is located on the western part of the site and the B3 on the eastern. The B3 soils are associated with the lower lying areas on the site

Refer Appendix B – Environmental Assessment Report

3.2.2 Acid Sulfate Soils

The Department of Environment Conservation describes Acid Sulfate Soils (ASS) as naturally occurring soils and sediments containing sulfide minerals, predominately pyrite (an iron sulfide).

A review of the Western Australian Planning Commission's Acid Sulfate Risk Map for the site indicates that it has a moderate to low risk of acid sulfate soils occurring within 3 metres of the natural soil surface.

A review of the Australian Soils Resource Information System indicates that the site is located in an area of Low Probability of Occurrence of ASS.

Refer to Appendix Cossill & Webley report (Figure 7) for the respective Acid Sulfate Soil risk map.

3.3 Groundwater and surface water

3.3.1 Groundwater

The Perth Groundwater Map shows the top of the groundwater table at 11m to 13mAHD and is approximately 3 to 5m below the ground surface. Groundwater is generally flowing to the west (DWER, 2017). The groundwater around the wetland has geological formations that have been grouped into three distinct aquifers:

- Superficial Swan Aquifer;
- Leederville Aquifer; and
- Yarragadee North (DWER, 2017b)

3.3.2 Surface water

Surface water flow will be limited due to the permeable nature of the sandy b1 phase soils. Any overland flows are likely to drain to the eastern lower lying areas and drainage line to the south of the site.

Refer Appendix B - Environmental Assessment Report for further details regarding ground and surface water

3.4 Bushfire hazard

The LSP area is currently identified as a "bushfire prone area" under the state-wide Map of Bush Fire Prone Areas prepared by the Office of Bushfire Risk Management OBRM 2017), as shown below in Plate 1. The identification of bushfire prone areas within any portion of the LSP area requires further assessment of the bushfire hazard implications on proposed development to be undertaken in accordance with State Planning Policy 3.7 Planning in Bushfire Prone Areas (SPP 3.7) (WAPC 2015) and the Guidelines for Planning in Bushfire Prone Areas Version 1.2 (the Guidelines) (WAPC and DFES 2017).

Plate 1: Areas within and surrounding the site identified as "bushfire prone areas" (OBRM 2017)

A Bushfire Management Plan (BMP) has been prepared for the site by Emerge Associates and Bushfire Safety Consulting Pty Ltd (2017), and is provided in Appendix F. The BMP includes:

- An assessment of classified vegetation and associated bushfire hazard levels in the vicinity of the site (within 150 m).
- Identification of how the development will satisfy the bushfire protection criteria, as outlined in the Guidelines, by ensuring:
    - Development can be located, sited and designed to ensure that an appropriate level of bushfire threat applies to the site (i.e. BAL-29 is not exceeded), supported by a Bushfire Attack Level (BAL) assessment. Where applicable, this includes consideration of Asset Protection Zone requirements.
    - Vehicular access to and egress from the development is safe if a bushfire occurs.
    - Water is available to the development, so that life and property can be protected from bushfire.
- An outline of the roles and responsibilities associated with implementing the BMP.

Existing bushfire hazards identified within the site and surrounding 150 m include areas of woodland (Class B), scrub (Class D) and grassland (Class G) vegetation. The areas of woodland and scrub vegetation are considered 'extreme' bushfire hazards, while areas of grassland are considered 'moderate' bushfire hazards.

In the post-development scenario, it has been assumed that the primary bushfire hazard to development within the site will be vegetation outside the site that is present at the time of development, with the majority of areas within the site assumed to be 'low threat' in accordance with Section 2.2.3.2 of Australian Standard 3959- 2009 Construction of buildings in bushfire prone areas (AS 3959). An exception is the 'drainage' and 'living stream' areas within the high voltage powerline easement, which have been classified as 'scrub' (Class D) vegetation. This is based on a worst-case scenario of no management of vegetation within these areas and that the landscape planting will be limited to species which grow up to a maximum height of 3 m, due to height restrictions associated with the overhead high-voltage powerlines.

The outcomes of the BMP indicate that future development is able to achieve an 'acceptable solution' for all four of the bushfire protection criteria (as outlined within Appendix Four of the Guidelines), summarised below:

- **Element 1 - Location:** upon completion, all areas within the LSP area proposed to accommodate future commercial land uses will be located in an area considered low bushfire hazard. While areas of moderate and extreme bushfire hazard will exist within the vicinity of future development areas, future built form can be located so that a BAL rating of BAL-29 or less achieved.
- **Element 2 - Siting and Design:** future commercial development can be suitably sited to ensure buildings are not located in an area that can or will, on completion, be subject to a BAL rating greater than BAL-29. This can be achieved through the provision of suitable setbacks (in the form of an 'asset protection zone') that can be accommodated by the location of future public roads, public open space, carpark areas, well-maintained gardens and/or internal access roads. The minimum setback distances are outlined within Figure 7 of the BMP.
- **Element 3 - Vehicular Access:** the proposed structure plan provides two connections to the existing public road network to the north (Thomas Road), allowing vehicles to move through the site easily and safely at all times. Thomas Road provides a connection to roads to the east and west and in particular the Kwinana Freeway which is adjacent to the western boundary of the site. Progression of planning and development for future commercial and urban areas to the south and east of the site will further expand the local public road network, ultimately providing additional access and egress routes to and from the site once developed.
- **Element 4 - Water:** the development will be serviced by a permanent and secure reticulated water supply, to be installed in accordance with the standard Water Corporation specifications (including fire hydrants as required).

Overall, the BMP demonstrates that while the site is identified as bushfire prone in the state Map of Bush Fire Prone Areas (OBRM 2017), the proposed LSP design will allow for the type of commercial development as envisaged to be implemented such that an appropriate level of bushfire threat will apply to those land uses within the site. If required, an updated BMP will be prepared in support of subdivision and/or development applications within the site, and will outline how the bushfire protection criteria will be addressed based on the proposed detailed designs.

Refer Appendix F - Bushfire Management Plan

3.5 Aboriginal and European Heritage

3.5.1 Indigenous Heritage

A search of the Department of Department of Planning, Lands and Heritage (DLHA) Aboriginal Heritage Inquiry System indicates there are no Registered Aboriginal Sites within the subject site.

3.5.2 European Heritage

A search of the State Heritage Council's 'InHerit Heritage Register' indicates that there are no places of heritage significance located on the site.

The City of Kwinana have however advised that the unconstructed P Road which intersects the site once formed a section of the original road network connecting Rockingham and Armadale as identified on the City of Kwinana's Municipal Inventory. The road is currently functioning as an informal track which is distinguished by the remains of limestone roadbase. As part of the future development of the area the road will be closed and integrated into the new development area.. Appropriate acknowledgment of this historic feature is to be interpreted through the landscaping response for the site with details to be determined at the development application stage.

3.6 Context and other land use constraints and opportunities

3.6.1 Overhead Power Transmission lines and Easement areas

The site is heavily constrained by Western Power overhead powerline easements which intersect the site in a north-south direction and provide power to the wider Perth metropolitan grid. The easement areas have historically been cleared of vegetation and left as scrub regrowth. It is noted that Western Powers does not own the land, but preserves the functionality of the current overhead power line easement. In this case, the easement area is to be used only for drainage and car parking purposes.

3.6.2 Adjacent Property – Mushroom Farm impacts

Located immediately south of the subject site is Lot 1 (No. 45) Orton Road which contains an existing Mushroom Farm (referred to as Costa Mushrooms). It is a significant local employer for the district and considered to have potential impacts on 'sensitive uses' in terms of odour and noise. 'Sensitive Use' — is defined under the provisions of SPP 4.1, which states that a Sensitive Use:

> *includes residential dwellings, major recreational areas, hospitals, schools and other institutional uses involving accommodation*

The LSP addresses the presence of the mushroom farm by not permitting sensitive land uses that may be incompatible. The interface between the mushroom farm and sensitive land uses will however be addressed as part of future planning stages in the remainder of the northern precinct where residential uses are proposed/incorporated.

Further information in relation to the Mushroom Farm is appended to this report at Appendix B – Environmental Assessment Report

3.6.3 Peel sub drain

The Peel main drain is a rural open drainage system which collects surface water and forms a regional drainage network that extends generally in a north-south direction eventually terminating at the Peel-Harvey Estuary. The system includes some sub drains and local government authority drains. In this case a section of the peel sub drain (identified as Peel Sub P Drain) intersects the LSP area in the general alignment of the easternmost powerline easement and then flows into another section of Peel Sub P Drain and Peel Sub P1 drain on the southern edge of the LSP area and then onto the Peel Main drain on the opposite side of Kwinana Freeway.

With development of Peel Sub P drain catchment, the drainage system design must be such that flows into the Peel main drain are maintained at pre-development levels.

4. Land use and subdivision requirements

4.1 Local Structure Plan

4.1.1 Design response to site constraints

The western power transmission lines which transect the site, present a major physical barrier to development of the site. Notwithstanding, to assist utilisation of this space, it is proposed to incorporate the drainage system (inclusive of a realignment of the Peel Sub drain), and living stream within the easement area. The result of which is that lots have been formed to either side of the easement corridor.

The existing utilities / services (located in the P Road area) which intersect the site from Kwinana Freeway through to Thomas Road is proposed to be realigned in an 18m wide local road reserve which now cuts into the proposed alignment of the north-south Neighbourhood Connector.

The Optus fibre optic cable which currently runs within the transmission corridor is also be moved, given it runs within the proposes drainage areas of the LSP. This is likely to be moved at the subdivision stage.

4.2 Land Use

The proposed LSP provides primarily for larger format commercial showroom and bulky goods retail land uses, drainage and existing infrastructure. The lots have been configured to respond to the constraints of the land with consideration for the established power transmission line easements.

In discussions with the City of Kwinana and in accordance with the policy framework for the site, it was established that the majority of the land is within the LSP area would be best served by a 'Service Commercial' zoning as well as incorporating a 'Special Use' zone component.

Where possible drainage areas have been positioned to allow for the retention of natural low points on site and to maintain the established drainage flow of the Peel sub-regional drainage system.

A summary of the LSP land uses and its key elements is provided in Table 6 below.

Table 6 - Land Use Summary

Item	
Total area covered by the Structure Plan	26.44 ha
Estimated area of each land use proposed:	
Service Commercial	13.91 ha*
Special Use	6.5 ha*
	*includes 2.16 ha of power lines easement
Road Reserve	2.78 ha
Drainage Reserve	3.25 ha

4.2.1 Service Commercial Zone

The intent of this LSP is primarily to provide for showroom and bulky goods retail type uses. It is understood that this will typically fall under as a 'showroom' land use definition under the City of Kwinana's LPS 2. Land use permissibly within the Service Commercial zone is to generally be in accordance with the zoning table and any associated provisions contained within LPS 2. It is noted that a 'Showroom' is a (P) permitted land use in the Service Commercial zone, consistent with the development intent for the precinct.

Refer Appendix I - Potential Scale and Character of Service Commercial Area

4.2.2 Special Use Zone

LPS 2 states the following in relation to the Special Use zone under 'Division 11 – Special Use Zones':

> *Land within a Special Use Zone may be used for the purposes specified on the Scheme Map and in the Third Schedule and for purposes incidental thereto and for no other purpose. 6.14.1 The site requirements of lot area, minimum effective frontage, development type, plot ratio, car parking, setbacks and other development provisions shall be determined by Council in its absolute discretion, providing that such standards are not less than that pertaining to similar uses under the Scheme.*

The following uses are permitted (P) within the 'Special Use' zone:

- Bulky goods showroom
- Car park
- Consulting rooms
- Eating house
- Liquor store
- Motor repair station
- Petrol filling station
- Service station
- Warehouse

The following use is incidentally permitted (IP) within the 'Special Use' zone:

- Shop
- Fish shop

4.2.3 Drainage Reserve

Given the importance of the POS spine in the creation of amenity and providing drainage retention basins to the site, Emerge Associates have prepared a Landscape plan, which is provided at Appendix J. The plan details functional, locational and character theming aspects of the POS design and displays a photo montage of the fundamental design features to be incorporated at the development stage.

The POS helps to dictate the design of major features including the location of movement networks, water management features and links to the future residential areas to the east and south. This is expected to be further defined by the planting of primary and secondary trees.

Refer Appendix J - Landscape Masterplan

4.2.4 District Open Space

A district open space (3.0 ha in area) has been indicatively positioned adjacent to Orton Road, as shown on the Concept Plan (see Appendix G). Preliminary discussions with the City of Kwinana indicate that this district open space area is likely to be used for "hardcourts" such as netball courts.

The rationale for positioning the district open space in the nominated position is that the location is consistent with the strategic framework for the locality, including ERIC, the Jandakot District Structure Plan and the criteria in LPP6. Additionally, it is positioned at the intersection of Orton Road and the logical intersection with Landgren Road which will provide for good access to the site for users.

4.3 Movement Networks

4.3.1 Road network

The proposed road network is summarised in table 7 below:

Table 7 – Key Characteristics of the proposed LSP Road Classifications

Road Classification	Indicative upper volume (VPD)	Indicative road width (m)	Indicative road pavement width (m)
Integrator A	35,000	40m	2 x 8.5m (incl. cycle lanes) + 6m median
Neighbourhood Connector A	7,000	24m	2 x 5m (incl. cycle lanes), 2m median and embayed parking
Access street	3,000	18m	2 x 3.5 plus embayment parking

It should be noted that the outline reservation widths are indicative only and are subject to further adjustment in consultation with the Department of Planning, Lands and Heritage (DPLH) and the City of Kwinana during detailed subdivision design process.

Refer Appendix E – Traffic Assessment

4.3.2 Intersection treatments

The proposed road network to accommodate the LSP traffic volumes has been detailed in previous section of this report, including the details of the proposed road hierarchy.

Two roundabouts are proposed at the intersections along the proposed main spine road and Road 1 and intersection of Road 1 / Road 2. These roundabouts will help manage the circulation of traffic flows and assist with speed management on major roads. A roundabout is proposed at the intersection of the main spine road/Thomas Road.

The western access intersection on Thomas Road is priority controlled T-intersection with a right turn lane on Thomas Road to Road 1 but without right turn out from Road 1 to Thomas Road.

4.3.3 Path network

In accordance with Liveable Neighbourhoods Guidelines, shared paths are proposed on one side of the main north-south spine road with a footpath on the other side. Thomas Road is proposed to have on-road cycle lanes and shared paths on both sides.

The network of paths will provide an excellent level of accessibility and permeability for pedestrians and cyclists within the proposed LSP area.

4.3.4 Public transport

According to the information obtained from Public Transport Authority (PTA), it is anticipated that all the new developments to the east of the Kwinana Freeway including Wandi, Anketell and Casuarina would be served by bus route 527 when the demand arises. The existing bus route 527 is most likely to traverse southbound on continuation of Honeywood Avenue though Anketell and onto the future Casuarina LSP area.

4.4 Water Management

A Local Water Management Strategy (LWMS) has been prepared by JDA in support of this LSP proposal and is appended to this report at Appendix C. The LWMS provides the framework for the application of total water cycle management to the proposed urban structure within the Structure Plan, consistent with the District Water Management Strategy (DWMS) and the Department of Water and Environmental Regulation (DWER) principles of Water Sensitive Urban Design (WSUD) described in the Stormwater Management Manual (DoW, 2007).

A summary of the LWMS design principles and objectives is presented in Table 1 of Appendix C.

Refer to Appendix C – LWMS

4.5 Employment

Potential employment opportunities for the Northern Precinct are likely to be confined predominantly to the LSP area once fully developed and operational. Additional employment opportunities may be associated with a future local centre at the intersection of Landgren and Orton Road.

It is estimated that the LSP area will have a maximum potential floorspace of approximately 127,750m^2. Due to the nature of showrooms and bulky goods retailing requiring a higher degree of car dependence, there is typically a need to dedicate around half the site for car parking. In this case an assumed plot ratio of 0.7 has been used to calculate potential floorspace, as a result of the likely need to offset a portion of the required car parking to be within the high voltage powerline easement.

Accordingly, based on this developable site area and the assumed maximum plot ratio of 0.7 an estimated maximum employment figure of approximately 2,555 jobs will be accommodated within the LSP area.

4.6 Infrastructure coordination, servicing and staging

An Engineering Servicing Report has been prepared by Cossill & Webley and is appended to this report at Appendix D. The report concludes that no major issues preclude the development of the LSP area. A summary of finding from the Engineering Servicing Report is provided below.

4.6.1 Road works

All newly created roads, drainage and footpaths will need to be designed and constructed to the satisfaction of the

City of Kwinana. Upgrading works along Thomas Road will need to be approved by Main Roads WA.

Thomas Road

The MRS identifies Thomas Road as a 'blue' road (Other Regional Road) and will therefore be subject to Main Roads WA approvals.

Within City of Kwinana's draft Developer Contribution Plan No.3 report for Casuarina/ Anketell, Thomas Road is classified as a District Distributor A Road. It is currently constructed as a single carriageway road in the vicinity of the Site and is required to be upgraded to a dual carriageway with a four way roundabout intersection and three other left-in, left out access points. The draft report also indicates that both Thomas Road and Mortimer Road to the south will be subject of development contributions to cover the costs of these roads where they adjoin Development Area 3. Costs are proposed to be shared on the basis of proportional land area.

Timing of the development of the Site will dictate the size and layout of the intersection that will provide the Site with its primary access off Thomas Road. If development of the Site proceeds prior to the Thomas Road upgrade, the developer will likely be required to construct a temporary or interim roundabout to provide the Site with access. If development follows the Thomas Road upgrade, it is assumed the ultimate intersection will have been constructed.

Bombay Boulevard

Bombay Boulevard is a rural-style private road outside the Site that currently provides access for a small number of properties in the area, with the majority of the traffic stemming from Casuarina Prison staff and visitors travelling from the Kwinana Freeway. Bombay Boulevard is constructed within private land and not within a road reserve.

Other Infrastructure

The Water Corporation's open cut main drain will need to be retained or realigned. Road crossings across the drain would need to ensure the predevelopment flows are catered for adequately.

It is anticipated that due to the close proximity of the Site to Kwinana Freeway, a noise wall may be required along the western boundary. However, due to the proposed land use being for commercial development, this may not be necessary. A suitable qualified acoustic engineer should be engaged during detailed design.

4.6.2 Sewer

Water Corporation's wastewater planning strategy for the area is attached as Appendix D (of PGV report). The Site's sewer strategy will involve grading into the future Kwinana Type 90 Wastewater Pump Station (WWPS) 'L' which is planned to be located 100m south of the Site.

WWPS 'L' will pump wastewater via a pressure main to Orton Road and head west before eventually discharging into a gravity sewer manhole on Datchet Turn. The pressure main route is 1,700m long and will require boring in several locations to minimize disturbance in existing suburban areas.

The pressure main and WWPS 'L' are not currently on the Water Corporation's CIP. The developer will need to apply to have WWPS 'L' placed on the CIP in the early stages of planning during Water Corporation's yearly review of the CIP.

Proceeding with development of the Site prior to the inclusion of WWPS 'L' on the CIP will result in tankering for an unknown length of time, or funding of the WWPS construction by the developer.

Based on recent sewer design (November 2016) undertaken north of Thomas Road, it appears part of the Site along Thomas Road may be gravity fed to a sewer catchment north of Thomas Road.

4.6.3 Water

The Water Corporation has advised that preliminary water reticulation planning for the site has been undertaken and is attached as Appendix D. There is an existing DN250 water pipeline recently constructed from Johnson Road through the northern part of the Site which supplies the Treeby Park development north of Thomas Road. The existing DN250 water pipeline can also provide water supply to the Site.

The DN250 water pipeline traverses through future Precinct 1 within an unmade road reserve along with power and gas services, and therefore it may be preferable to realign the road reserve and services to provide better utilization of Precinct 1. A possible realignment for the services and road reserve is along the southern boundary of Lot 9011.

Ultimately, the DN250 water pipeline will extend south along Bombay Boulevard and connect onto a future distribution main on Orton Road. Planning information provided in Appendix D indicates a DN500 steel main along Orton Road. Water Corporation has advised the sizing, timing and staging of the distribution main has yet to be determined and will depend on the demand for water supply following the development of nearby land.

For the water reticulation network to have the capacity to service the ultimate demand of the Site, it is possible that the distribution main on Orton Road will need to be constructed. Although not included on the Water Corporation Capital Investment Program (CIP), it is likely the Water Corporation will fund this infrastructure through the CIP. However, this would need to be confirmed with Water Corporation closer to the time development takes place.

4.6.4 Power

Western Power High Voltage Transmission Lines

There are two 330kV high voltage overhead transmission lines traversing the Site that contain 30m easements either side of the centre of the tower. Refer Figure 9 below. Where the alignments of the transmission lines become parallel, the easement width becomes 110m total, including 30m either side of both lines. A large portion of the easement contains the existing Water Corporation open cut main drain, conveniently allowing for an overlap in land use, and influencing where a majority of the site's POS may be located.

The project team met with Western Power Transmission team on 23rd October 2017 to discuss the draft Structure Plan which was issued to Western Power prior to the meeting. Western Power indicated their objectives in assessing development within their easements included:

1. **Access** for maintenance of WP assets needs to be provided, particularly access to transmission towers;
2. **Safety** of the public is a priority. Clearances to conductors will also need to be checked with respect to possible encroachments caused by the development

(eg road crossings). An Earth Potential Rise (EPR) study will also be required at subdivision stage.

3. **Environmental** objectives, which are to be addressed by the project team in conjunction with the Structure Planning documentation.

It is noted the Structure Plan includes a road running parallel to a transmission line, providing an environment to generate electromagnetically induced currents in parallel conductors. A Low Frequency Induction (LFI) study will need to be undertaken at subdivision stage to assess the possible generation of induced currents in metallic elements (pipes, fences etc) which run parallel to the transmission lines.

Power supply

It is anticipated that the high voltage overhead power adjacent the Site on Thomas Road will be capable of supplying the development of the Site with power and that undergrounding the portion of overhead power adjacent the Site will be a condition of development. Refer Figures in Appendix D.

The existing high voltage overhead power line on Thomas Road is fed from the power infrastructure on Johnson Road west of the Freeway, which is undergrounded and enters the Site before transferring to above ground power lines approximately 135m from the northern Site boundary.

The angle of the existing combined services easement within the site runs adjacent to an area of natural bushland offset by approximately 20m. There is an opportunity to keep the existing power alignment if the area adjacent the bushland is created as a road that runs parallel. Barring that, the power will need to be relocated within the Site before eventually connecting to its original location near the freeway reserve. As discussed in section 6, a possible realignment for the services and road reserve is along the southern boundary of Lot 9011.

There is also high voltage overhead power line on Orton Road that could potentially supply the Site with power if extended up Bombay Boulevard. This option however, would require extending the power through existing roads and feature quite a significant extension distance.

4.6.5 Gas

There is an existing 160mm diameter PE gas main contained within an unmade road reserve extending from the Freeway reserve through the Site onto Thomas Road. Refer Figures in Appendix D. It is anticipated that this gas main has sufficient capacity to service the Site, as there is currently minimal demand from the development to the north of Thomas Road.

The gas main may need to be relocated within the Site, similarly to existing water and power services. As discussed in section 6, a possible realignment for the services and road reserve is along the southern boundary of Lot 9011.

A proposal to relocate the existing DN160 PE gas was discussed with ATCO Gas in October 2017. There appears to be no fatal flaw in the proposed relocation. ATCO Gas will consider the proposal in detail when submitted as part of subdivision civil works.

The ultimate servicing of the Site may require infrastructure upgrades, and given it is a commercial development this infrastructure is anticipated to be at the Developer's expense, although subject to negotiation with a gas utility service provider such as ATCO.

There is an additional 80mm diameter steel gas main on Orton Road that may be extended to the Site if required. ATCO will need to confirm the servicing strategy prior to development.

4.6.6 Telecommunications

NBN Co has advised that due to the size of the Structure Plan area and likelihood of density, NBN Co will be aiming to install fixed line Fibre to the Premise (FTTP) network. There are a number of NBN new developments along Thomas Road and cable exists in the area. An assessment of backhaul requirements can be made closer to the time of development. Backhaul charges would apply to the development in accordance with NBN Co's policy.

Alternative telecommunication providers could also be considered to service the Site.

An existing Optus cable traverses the Site in a north–south direction as shown in Figure 11 (Appendix D). The cable will need to be surveyed to determine the exact location and depth. Subject to results of the survey, the cable may also need to be relocated, either vertically or horizontally or both, in close proximity with the existing alignment in order to accommodate development objectives such as site regrading, road crossings, living stream excavation and services installations.

4.6.7 Drainage

The Site is located within the Jandakot Drainage and Water Management Plan for the Peel Main Drain Catchment. The "Peel Sub P Drain" is a Water Corporation open cut main drain that flows through the Site within a 20m wide reserve.

A Local Water Management Strategy (LWMS) for the Structure Plan Area ihas been prepared simultaneously with this report, and as such, the generic advice below may change to accord with the LWMS.

Stormwater runoff from the Site will be collected and conveyed via a combination of open swale and piped drainage network prior to discharge into the "Peel Sub P Drain". Modifications to the drain, such as reshaping and landscaping for aesthetic appeal, will need to ensure that the capacity of the drain to convey large storm events from upstream is maintained to pre-development conditions. This will need to be confirmed by the hydrologist preparing the LWMS.

Prior to entering the main drain, stormwater flows will need to be compensated to reduce the peak outflow discharge rate. Also, stormwater quality should be improved through the adoption of 'Best Management Practices' which promote the disposal of runoff via water pollution control facilities, including vegetated swales, basins and gross pollutant traps and the implementation of non-structural source controls, including street sweeping, community education and low fertiliser landscaping regimes.

The Structure Plan provides areas for drainage either side of the main drain, to facilitate discharge attenuation and environmental requirements.

Within allotments, soakwells should be constructed when properties are developed to contain stormwater runoff generated from new buildings and hardstand areas. Drainage from newly created public roads would be collected via conventional gullies or open swales depending on the nature of the adjacent land uses, grades and the extent of traffic and pedestrian activity.

A condition of subdivision for the Site will be the preparation and approval of an Urban Water Management Plan (UWMP) prior to the commencement of development.

Appendix A

Certificates of Title

WESTERN AUSTRALIA

REGISTER NUMBER	
N/A	
DUPLICATE EDITION	DATE DUPLICATE ISSUED
2	22/8/2016

VOLUME 2817 FOLIO 293

RECORD OF CERTIFICATE OF TITLE

UNDER THE TRANSFER OF LAND ACT 1893

The person described in the first schedule is the registered proprietor of an estate in fee simple in the land described below subject to the reservations, conditions and depth limit contained in the original grant (if a grant issued) and to the limitations, interests, encumbrances and notifications shown in the second schedule.

REGISTRAR OF TITLES

THIS IS A SHARE TITLE

LAND DESCRIPTION:

2/6 UNDIVIDED SHARES OF
LOT 1199 ON DEPOSITED PLAN 203629

REGISTERED PROPRIETOR:
(FIRST SCHEDULE)

ARP NO. 1 PTY LTD OF PO BOX 7987 CLOISTERS SQUARE PERTH
AS SOLE PROPRIETOR OF THE SHARE SHOWN IN THE LAND DESCRIPTION
(T N401477) REGISTERED 4/8/2016

LIMITATIONS, INTERESTS, ENCUMBRANCES AND NOTIFICATIONS:
(SECOND SCHEDULE)

1. THE LAND THE SUBJECT OF THIS CERTIFICATE OF TITLE EXCLUDES ALL PORTIONS OF THE LOT DESCRIBED ABOVE EXCEPT THAT PORTION SHOWN IN THE SKETCH OF THE SUPERSEDED PAPER VERSION OF THIS TITLE.
2. TITLE EXCLUDES THE LAND SHOWN ON PLAN 22751.
3. TITLE EXCLUDES THE LAND SHOWN ON DIAGRAM 96302.
4. *I653596 TAKING ORDER. THE DESIGNATED PURPOSE OF THE INTEREST TAKEN FOR AN EASEMENT IS THE PROTECTION OF A 330KV ELECTRICITY TRANSMISSION LINE. REGISTERED 8/10/2003.
5. I653596 EASEMENT TO WESTERN POWER CORPORATION - SEE DP33422. REGISTERED 8/10/2003.

Warning: A current search of the sketch of the land should be obtained where detail of position, dimensions or area of the lot is required.
* Any entries preceded by an asterisk may not appear on the current edition of the duplicate certificate of title.
Lot as described in the land description may be a lot or location.

----------END OF CERTIFICATE OF TITLE----------

STATEMENTS:

The statements set out below are not intended to be nor should they be relied on as substitutes for inspection of the land and the relevant documents or for local government, legal, surveying or other professional advice.

SKETCH OF LAND: 1926-263 (1199/DP203629)
PREVIOUS TITLE: 1926-263
PROPERTY STREET ADDRESS: 740 THOMAS RD, CASUARINA.

END OF PAGE 1 - CONTINUED OVER

LOCAL GOVERNMENT AUTHORITY: CITY OF KWINANA

NOTE 1: A000001A LAND PARCEL IDENTIFIER OF PEEL ESTATE LOT 1199 (OR THE PART THEREOF) ON SUPERSEDED PAPER CERTIFICATE OF TITLE CHANGED TO LOT 1199 ON DEPOSITED PLAN 203629 ON 19-SEP-02 TO ENABLE ISSUE OF A DIGITAL CERTIFICATE OF TITLE.

NOTE 2: THE ABOVE NOTE MAY NOT BE SHOWN ON THE SUPERSEDED PAPER CERTIFICATE OF TITLE OR ON THE CURRENT EDITION OF DUPLICATE CERTIFICATE OF TITLE.

WESTERN AUSTRALIA

REGISTER NUMBER	
N/A	
DUPLICATE EDITION	DATE DUPLICATE ISSUED
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REGISTRAR OF TITLES

THIS IS A SHARE TITLE

LAND DESCRIPTION:

4/6 UNDIVIDED SHARES OF
LOT 1199 ON DEPOSITED PLAN 203629

REGISTERED PROPRIETOR:
(FIRST SCHEDULE)

ARP NO. 1 PTY LTD OF PO BOX 7987 CLOISTERS SQUARE PERTH
AS SOLE PROPRIETOR OF THE SHARE SHOWN IN THE LAND DESCRIPTION

(T N401477) REGISTERED 4/8/2016

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(SECOND SCHEDULE)

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2. TITLE EXCLUDES THE LAND SHOWN ON PLAN 22751.
3. TITLE EXCLUDES THE LAND SHOWN ON DIAGRAM 96302.
4. *I653596 TAKING ORDER. THE DESIGNATED PURPOSE OF THE INTEREST TAKEN FOR AN EASEMENT IS THE PROTECTION OF A 330KV ELECTRICITY TRANSMISSION LINE. REGISTERED 8/10/2003.
5. I653596 EASEMENT TO WESTERN POWER CORPORATION - SEE DP33422. REGISTERED 8/10/2003.

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PROPERTY STREET ADDRESS: 740 THOMAS RD, CASUARINA.

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REGISTRAR OF TITLES

THIS IS A SHARE TITLE

LAND DESCRIPTION:

2/6 UNDIVIDED SHARES OF
LOT 3 ON DIAGRAM 86318

REGISTERED PROPRIETOR:
(FIRST SCHEDULE)

ARP NO. 4 PTY LTD OF PO BOX 7987 CLOISTERS SQUARE PERTH
AS SOLE PROPRIETOR OF THE SHARE SHOWN IN THE LAND DESCRIPTION

(T N401478) REGISTERED 4/8/2016

LIMITATIONS, INTERESTS, ENCUMBRANCES AND NOTIFICATIONS:
(SECOND SCHEDULE)

1. C110527 EASEMENT TO THE STATE ENERGY COMMISSION OF WESTERN AUSTRALIA. SEE SKETCH ON VOL 2001 FOL 32. AS MODIFIED BY SURRENDER E747674. REGISTERED 1/4/1981.
2. TITLE EXCLUDES THE LAND SHOWN ON PLAN 22751.
3. *I653596 TAKING ORDER. THE DESIGNATED PURPOSE OF THE INTEREST TAKEN FOR AN EASEMENT IS THE PROTECTION OF A 330KV ELECTRICITY TRANSMISSION LINE. REGISTERED 8/10/2003.
4. I653596 EASEMENT TO WESTERN POWER CORPORATION - SEE DP33420. REGISTERED 8/10/2003.

Warning: A current search of the sketch of the land should be obtained where detail of position, dimensions or area of the lot is required.
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STATEMENTS:

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SKETCH OF LAND:	2001-32 (3/D86318)
PREVIOUS TITLE:	2001-32
PROPERTY STREET ADDRESS:	NO STREET ADDRESS INFORMATION AVAILABLE.
LOCAL GOVERNMENT AUTHORITY:	CITY OF KWINANA

WESTERN AUSTRALIA

REGISTER NUMBER	
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DUPLICATE EDITION	DATE DUPLICATE ISSUED
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VOLUME 2817 FOLIO 296

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REGISTRAR OF TITLES

REGISTRAR OF TITLES WESTERN AUSTRALIA

THIS IS A SHARE TITLE

LAND DESCRIPTION:

4/6 UNDIVIDED SHARES OF
LOT 3 ON DIAGRAM 86318

REGISTERED PROPRIETOR:
(FIRST SCHEDULE)

ARP NO. 4 PTY LTD OF PO BOX 7987 CLOISTERS SQUARE PERTH
AS SOLE PROPRIETOR OF THE SHARE SHOWN IN THE LAND DESCRIPTION

(T N401478) REGISTERED 4/8/2016

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PREVIOUS TITLE:	2001-32
PROPERTY STREET ADDRESS:	NO STREET ADDRESS INFORMATION AVAILABLE.
LOCAL GOVERNMENT AUTHORITY:	CITY OF KWINANA

WESTERN AUSTRALIA

REGISTER NUMBER	
9011/DP410834	
DUPLICATE EDITION	DATE DUPLICATE ISSUED
1	29/5/2017

VOLUME 2926 FOLIO 375

RECORD OF CERTIFICATE OF TITLE

UNDER THE TRANSFER OF LAND ACT 1893

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REGISTRAR OF TITLES

LAND DESCRIPTION:

LOT 9011 ON DEPOSITED PLAN 410834

REGISTERED PROPRIETOR:
(FIRST SCHEDULE)

AIGLE ROYAL PROPERTIES PTY LTD OF PO BOX 7987 CLOISTERS SQUARE PERTH WA 6850
(AF N614468) REGISTERED 26/5/2017

LIMITATIONS, INTERESTS, ENCUMBRANCES AND NOTIFICATIONS:
(SECOND SCHEDULE)

1. I653596 EASEMENT TO WESTERN POWER CORPORATION - SEE DEPOSITED PLAN 410834. REGISTERED 8/10/2003.
2. *I653596 TAKING ORDER. THE DESIGNATED PURPOSE OF THE INTEREST TAKEN FOR AN EASEMENT IS THE PROTECTION OF A 330KV ELECTRICITY TRANSMISSION LINE. REGISTERED 8/10/2003.
3. EASEMENT BURDEN CREATED UNDER SECTION 167 P. & D. ACT FOR ELECTRICITY PURPOSES TO ELECTRICITY NETWORKS CORPORATION - SEE DEPOSITED PLAN 410834
4. COVENANT BURDEN CREATED UNDER SECTION 150 P&D ACT TO COMMISSIONER OF MAIN ROADS - SEE DEPOSITED PLAN 410834
5. *N614481 NOTIFICATION CONTAINS FACTORS AFFECTING THE WITHIN LAND. LODGED 3/5/2017.

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SKETCH OF LAND:	DP410834
PREVIOUS TITLE:	2817-297, 2817-298
PROPERTY STREET ADDRESS:	NO STREET ADDRESS INFORMATION AVAILABLE.
LOCAL GOVERNMENT AUTHORITY:	CITY OF KWINANA

WESTERN AUSTRALIA

REGISTER NUMBER	
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RECORD OF CERTIFICATE OF TITLE

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REGISTRAR OF TITLES

REGISTRAR OF TITLES WESTERN AUSTRALIA

LAND DESCRIPTION:

LOT 9012 ON DEPOSITED PLAN 410834

REGISTERED PROPRIETOR:
(FIRST SCHEDULE)

AIGLE ROYAL PROPERTIES PTY LTD OF PO BOX 7987 CLOISTERS SQUARE PERTH WA 6850
(AF N614468) REGISTERED 26/5/2017

LIMITATIONS, INTERESTS, ENCUMBRANCES AND NOTIFICATIONS:
(SECOND SCHEDULE)

1. C110527 EASEMENT TO THE STATE ENERGY COMMISSION OF WESTERN AUSTRALIA. AS MODIFIED BY SURRENDER E747674. SEE SKETCH ON DEPOSITED PLAN 410834. REGISTERED 1/4/1981.
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4. EASEMENT BENEFIT CREATED UNDER SECTION 136C T.L.A. FOR RIGHT OF CARRIAGEWAY PURPOSES - SEE DEPOSITED PLAN 410834
5. COVENANT BURDEN CREATED UNDER SECTION 150 P&D ACT TO COMMISSIONER OF MAIN ROADS - SEE DEPOSITED PLAN 410834
6. *N614481 NOTIFICATION CONTAINS FACTORS AFFECTING THE WITHIN LAND. LODGED 3/5/2017.

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PREVIOUS TITLE:	2817-297, 2817-298
PROPERTY STREET ADDRESS:	NO STREET ADDRESS INFORMATION AVAILABLE.
LOCAL GOVERNMENT AUTHORITY:	CITY OF KWINANA

WESTERN AUSTRALIA

REGISTER NUMBER	
9013/DP410834	
DUPLICATE EDITION	DATE DUPLICATE ISSUED
1	29/5/2017

VOLUME 2926 FOLIO 377

RECORD OF CERTIFICATE OF TITLE

UNDER THE TRANSFER OF LAND ACT 1893

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REGISTRAR OF TITLES

LAND DESCRIPTION:

LOT 9013 ON DEPOSITED PLAN 410834

REGISTERED PROPRIETOR:
(FIRST SCHEDULE)

AIGLE ROYAL PROPERTIES PTY LTD OF PO BOX 7987 CLOISTERS SQUARE PERTH WA 6850
(AF N614468) REGISTERED 26/5/2017

LIMITATIONS, INTERESTS, ENCUMBRANCES AND NOTIFICATIONS:
(SECOND SCHEDULE)

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SKETCH OF LAND:	DP410834
PREVIOUS TITLE:	2817-297, 2817-298
PROPERTY STREET ADDRESS:	NO STREET ADDRESS INFORMATION AVAILABLE.
LOCAL GOVERNMENT AUTHORITY:	CITY OF KWINANA

Appendix B

Environmental Assessment Report

PRECINCTS 1 & 2 THOMAS ROAD, CASUARINA

ENVIRONMENTAL ASSESSMENT

Prepared for:	Aigle Royal Developments
Report Date:	15 November 2017
Version:	1
Report No.	2017-326

pgv ENVIRONMENTAL

CONTENTS

LIST OF ATTACHMENTS

Plates

Figures

Appendices

1 INTRODUCTION

1.1 Site Location

Aigle Royal Developments is preparing a Local Structure Plan for Precincts 1 and 2 of Lots 3, 1199, 9011, 9012 and 9013 Thomas Road, Casuarina (the site). The site is located 30km to the south of the Perth Central Business District (Figure 1). The site is bounded by Thomas Road to the north, Kwinana Freeway to the west, 'Special Rural' lots to the south and the remainder of Lot 605, which is undeveloped to the east (Figure 2).

1.2 Local Structure Plan

The Local Structure Plan for the site seeks to provide a Mixed Business land use on the site as well as land for drainage (Appendix 1). Two High Voltage Power Easements run north to south through the area.

1.3 Planning Background

1.3.1 Zoning

The site is zoned 'Urban' in the Perth Metropolitan Region Scheme and has been identified for 'Mixed Use' under the City of Kwinana Town Planning Scheme and other strategic planning documents.

1.3.2 Scheme Amendments

The site was part of a suite of five scheme amendments under the Perth Metropolitan Region Scheme to rezone land from the 'Rural' zone to 'Urban Deferred' zone in June 2006. The suite of Scheme Amendments was referred by the Western Australian Planning Commission (WAPC) to the Environmental Protection Authority (EPA) under Part IV of the *Environmental Protection Act, 1986* (EP Act).

Amendment No. 1117/33 Jandakot Structure Plan, Cell 4 – Casuarina included the Local Structure Plan area. The EPA considered (15 March 2006) that Amendment 1117/33 did not need to be assessed under Part IV of the EP Act. The EPA provided advice in relation to regional drainage, Conservation Category wetlands, remnant vegetation, fauna, soil and groundwater contamination, emissions, noise and vibration.

1.3.3 Jandakot Structure Plan

The Jandakot Structure Plan was finalised in August 2007 and provides strategic direction to co-ordinate the development of the region while ensuring environmental, social and economic objectives are met.

The structure plan provides a guide to the future development of the area and management of key environmental issues. It includes potential development areas, road networks, major community facilities, conservation and Bush Forever areas, and a neighbourhood structure. It also provides proposals for the implementation of the plan such as zoning mechanisms, staging, and financial and management arrangements.

The site is shown as Mixed Use and Medium-Term Urban in the Jandakot Structure Plan.

1.3.4 Eastern Residential Intensification Concept

The Eastern Residential Intensification Concept (ERIC) was prepared by the Town of Kwinana in 2005 to provide strategic direction and refinement of the future urban areas identified within the Jandakot Structure Plan. The intensification concept comprises the cells of Mandogalup, Wandi, Anketell, Casuarina, Wellard (east) and Wellard (west) and defines a framework by which urban subdivision and development is able to occur in an orderly and co-ordinated manner.

The intensification concept was advertised for public comment in 2006 and is currently being revised by the City of Kwinana.

The site is largely shown as Mixed Business, with a portion of Residential/Business and a small portion of Residential R25 at the eastern end.

1.4 EPBC Approval

The proposed development of the site including Lot 9014 to the east was referred under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) in 2016. The development concept referred included the proposed clearing of 4.4ha of Banksia woodland and 20 potential breeding trees which provides foraging and potential breeding habitat for Black Cockatoos which are listed under the EPBC Act. The action was assessed to be 'Not a Controlled Action' (Appendix 2) and therefore has approval under the EPBC Act.

1.5 Scope of Works

The Environmental Assessment addresses the following environmental factors:

- Previous land uses and potential contamination;
- Surrounding land uses;
- Soil Types (ASS);
- Hydrology;
- Wetland Assessment;
- Flora and Vegetation Values;
- Fauna values; and
- Heritage.

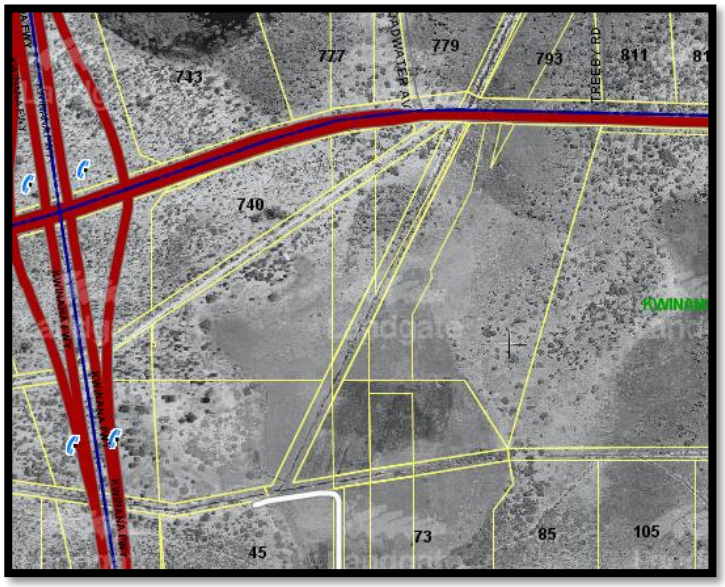
2 EXISTING ENVIRONMENT

2.1 Land Use

2.1.1 Historical Land Use

In earliest available aerial photography in 1953 half of the site has been completely cleared and the other half contain scattered trees that appear in a range of condition from parkland cleared to an area in the north-west that is likely to have an intact understorey (Plate 1).

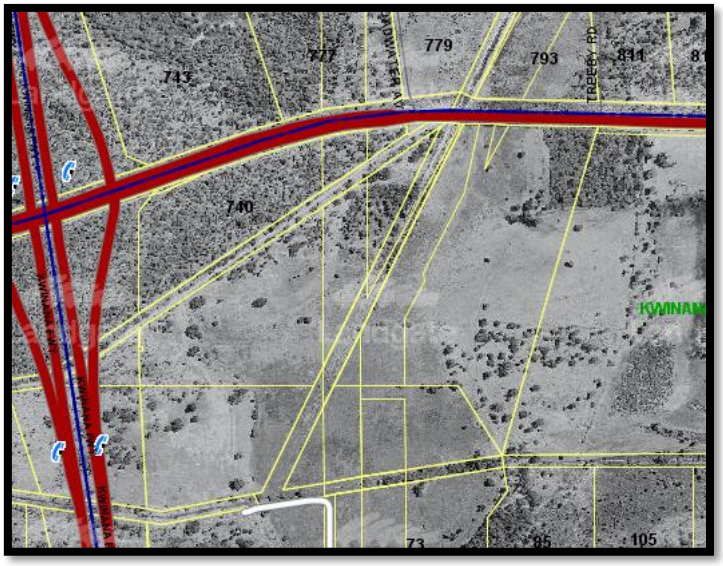
Plate 1: Historical aerial photograph from 1953 (Landgate, 2017)



8

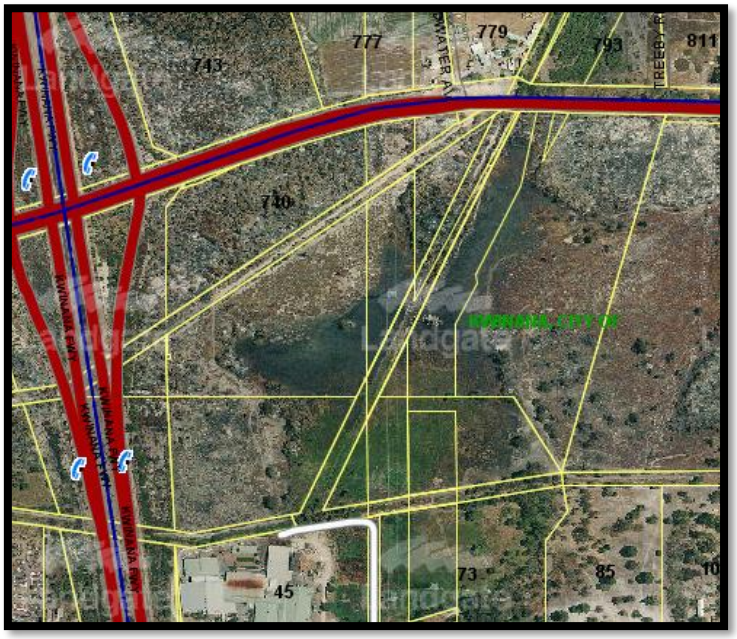
Aerial photography from 1965 shows further clearing of the site in the south-west corner (Plate 2). The vegetation in the northwestern area remains as intact remnant vegetation.

Plate 2: Historical aerial photograph from 1965 (Landgate, 2017)



The January 2008 aerial photography shows most of the site was burnt (Plate 3).

Plate 3: Aerial photography from January 2008 (Landgate, 2017).



The site is not on the Contaminated Sites Database (DWER, 2017a). The site does not appear to have had any structures or land use that would cause contamination.

2.1.2 Current Land Use

The site is currently not being utilised for any purposes.

2.1.3 Surrounding Land Use

The balance of the Aigle Royal landholding to the east of Precincts 1 and 2 is generally vacant cleared land with some isolated trees and shrubs and a Resource Enhancement wetland that is vegetated to an extent. The southern boundary in the western part of the site is adjacent to the existing drainage reserve that is part of the Peel Sub-regional drainage corridor and is zoned as Parks and Recreation. Further south there are large lots that form part of a 'Special Rural' development to the south. The eastern part of the southern boundary is Part of Lots 9012 and 9013 that are subject to future planning (Appendix 1).

The Kwinana Freeway is located to the west of the site. The land to the north of Thomas road includes some remnant vegetation (Bush Forever Site 270) as well as a small horticulture industry and factory fertiliser and bird seed supply.

A Mushroom Farm is approximately 30m from the southern boundary. The potential impact of odour and noise on the future mixed use tenants on the site is discussed in section 3.1.

2.2 Topography

The site is predominantly flat and low lying. The elevation of the site varies between approximately 18 and 20m Australian Height Datum (AHD) (Figure 2).

2.3 Geology and Soils

2.3.1 Geology

The site is mapped as part of the Bassendean System and consists of very low relief, leached, grey siliceous Pleistocene sand dunes, intervening sandy and clayey swamps and gently undulating plains (Bolland, 1998). These soils are very leached, infertile and mildly acidic (DAFWA, 2017).

2.3.2 Soils

The soils on the site have been described by the Department of Agriculture and Food Western Australia (DAFWA) (2017) as:

- Bassendean B1 Phase (212Bs_B1) which are described as deep bleached grey sands sometimes with a pale yellow B horizon or a weak iron-organic hardpan at depths generally greater than 2m. These soils occur on extremely low to very low relief dunes, undulating sandplain and discrete sand rises; and
- Bassendean B3 Phase (212Bs_B3) are soils on closed depressions and poorly defined stream channels. These soils are moderately deep, bleached sands with an iron-organic pan, or clay subsoil. Surfaces are dark grey sand or sandy loam.

The B1 phase is located on the western part of the site and the B3 on the eastern. The B3 soils are associated with the lower lying areas on the site (Figure 3).

2.3.3 Acid Sulphate Soils

Acid sulphate soils (ASS) are wetland soils and unconsolidated sediments that contain iron sulphides which, when exposed to atmospheric oxygen in the presence of water, form sulphuric acid. ASS form in protected low energy environments such as barrier estuaries and coastal lakes and commonly occurs in low-lying coastal lands such as Holocene marine muds and sands. When disturbed, these soils are prone to produce sulphuric acid and mobilise iron, aluminium, manganese and other heavy metals. The release of these reaction products can be detrimental to biota, human health and built infrastructure (WAPC, 2009).

The ASS Risk on the site has been mapped by the Department of Environmental Regulation (DER) (Landgate, 2016) as being Moderate to Low (<3m from the surface) (National Map, 2017).

2.3.4 Phytophthora Dieback

Phytophthora Dieback (*Phytophthora cinnamomi*) is a soil-borne pathogen that infects the roots of vulnerable species, limiting the roots ability to take up water, thereby weakening or killing the host plant. The spores of Phytophthora Dieback are transported by water and in soil (DPaW, 2013). The limited number of native species on most of the site renders it 'Uninterpretable' for Phytophthora Dieback. The area of Banksia woodland in the north-west of the site was rated as Very Good to Good by GHD (2012) with no mention of any evidence of Dieback.

2.4 Hydrology

2.4.1 Groundwater

The Perth Groundwater Map shows the top of the groundwater table at 11m to 13mAHD and is approximately 3 to 5m below the ground surface. Groundwater is generally flowing to the west (DWER, 2017b). The groundwater around the wetland has geological formations that have been grouped into three distinct aquifers:

- Superficial Swan Aquifer;
- Leederville Aquifer; and
- Yarragadee North (DWER, 2017b)

2.4.2 Surface Water

Surface water flow will be limited due to the permeable nature of the sandy B1 phase soils. Any overland flow is likely to drain to the eastern lower lying areas and the Drainage Line to the south of the site.

2.4.3 Wetlands

The site contains part of 'Sandy Lake' which is classified as Multiple Use Wetland with the Unique Feature Identifier (UFI) 6669 as mapped in the DPaW's *Geomorphic Wetlands of the Swan Coastal Plain* dataset (National Map, 2017). Wetland UFI 6669 is a Sumpland which is defined as a seasonally inundated basin (Hill *et al.,* 1996).

2.5 Flora

Two vegetation and flora surveys have been undertaken over the whole Aigle Royal landholding including the balance of lots to the east of the structure plan area (GHD, 2012; Bennett Environmental, 2010). The GHD Survey was conducted in May 2012 and a follow-up spring survey of the area was conducted in October 2012 by Bennett Environmental. A total of 133 species have been recorded on the whole site, of which 79 were native species and 54 introduced. None of the species are Threatened or Priority flora. Three weed species listed below recorded on the site are Declared Pests under the *Biosecurity and Agriculture Management Act 2007* (BAM Act):

- Cotton Bush (*Gomphocarpus fruticosus*)
- Cape Tulip (*Moraea flaccida*); and
- Paterson's Curse (*Echium plantagineum*).

2.6 Vegetation

2.6.1 Vegetation Types

A total of seven vegetation types have been mapped on the whole site of which five occur in the structure plan area as well as (Appendix 5) (GHD, 2012 and Bennett Environmental, 2012). These are:

Banksia Woodland

Woodland of *Banksia attenuata*, *Banksia menziesii* and *Allocasuarina fraseriana* over Shrubland of *Hibbertia* spp., *Acacia* spp. and *Leucopogon conostephioides* over Grassland of *Ehrharta calycina* and *Briza maxima* over Sparse Sedgeland of *Schoenus curvifolius* and

Lepidosperma pubisquameum over Herbland of *Dasypogon bromeliifolius*, *Carpobrotus* spp. and *Phlebocarya ciliata.*

Eucalyptus and Melaleuca Open Woodland to Woodland
Open Woodland to Woodland of *Eucalyptus rudis*, *Corymbia calophylla* and *Melaleuca* spp. over weeds.

Mixed Myrtaceous Closed Shrubland
Closed shrubland of *Kunzea glabrescens*, *Melaleuca teretifolia* and *Melaleuca* spp. over Herbland of *Isolepis* spp. and *Carpobrotus* spp.

Sedgeland
Sedgeland of *Juncus kraussii* subsp. *australiensis* over Grassland of *Phalaris* ?*paradoxa.*

Cleared Paddocks
Scattered trees (*Eucalyptus* spp. and *Melaleuca* spp. and shrub species remain with an understorey dominated by introduced grass and herbs

2.7 Vegetation Condition

The Cleared areas on the site are rated as Completely Degraded and contain pasture weedy species. The Banksia woodland in the north-west part of the site was rated as being in Good to Very Good condition with areas of Degraded vegetation (GHD, 2012; Appendix 6).

2.8 Fauna

GHD (2012) conducted a Level 1 Fauna Survey of the site. The fauna habitat types were divided into five broad categories:

- Banksia Woodland – high habitat value for Black Cockatoos and other fauna species;
- Mixed Myrtaceous Closed Shrubland – recently burnt, small, fragmented with limited habitat value;
- Sedgeland – degraded and extensive weed invasion, would provide breeding habitat for frogs;
- Eucalyptus and Melaleuca Woodland – grazed extensively and there is limited diversity within the habitat type. Provide some roosting and cover for fauna species, particularly birds; and
- Cleared Paddocks – completely degraded very limited fauna habitat.

Conservation Significant species that may occur on the site are:

- *Calyptorhynchus latirostris* (Carnaby's Black Cockatoo);
- *Calyptorhynchus baudinii* (Baudin's Black Cockatoo);
- *Calyptorhynchus banksii naso* (Forest Red-tailed Black-Cockatoo);
- *Ardea ibis* (Cattle Egret);
- *Merops ornatus* (Rainbow Bee-eater);
- *Lerista lineata* (Perth Slider, Lined Skink);
- *Neelaps calonotos* (Black-striped Snake);
- *Isoodon obesulus fusciventer* (Southern Brown Bandicoot, Quenda);

2.9 Heritage

The Department of Aboriginal Affairs Aboriginal Heritage Inquiry System (DAA, 2017) was used to determine if there are any Aboriginal heritage sites recorded on the site. The database did not show any listed sites (Appendix 7).

There are no Heritage Places recorded in the search area (Appendix 7).

A search of the National (DoEE, 2017) and State (Heritage Council of WA, 2017) registers of historical sites indicated that there are no other heritage sites on the site.

3 ENVIRONMENTAL ASSESSMENT

3.1 Land Use

Previous land use indicates that the site is not likely to be contaminated. There has been some dumping of domestic rubbish on parts of the site and therefore raises the potential for localised areas of contaminants such as hydrocarbons and asbestos. Areas containing rubbish should be investigated and, if required, remediated prior to construction.

Mushroom farms and market gardens are listed in the EPA Guidance Statement No. 3: *Separation Distances between Industrial and Sensitive Land Uses* as land uses that require separation distances. The guidance states:

> *…some commercial, institutional and industrial land uses which require high levels of amenity or are sensitive to particular emissions may also be considered "sensitive land uses". Examples include some retail outlets, offices and training centres, and some types of storage and manufacturing facilities.*

A generic separation distance of 500-1000m from mushroom farms and 300-500m from market gardens applies to sensitive land uses which may include some of the mixed business tenants in the future.

In accordance with the guidelines the generic distance is:

> *Not intended to be absolute separation distances, rather they are a default distance for the purposes of:*
>
> - *identifying the need for specific separation distance or buffer definition studies; and*
> - *providing general guidance on separation distances in the absence of site specific technical studies.*

The generic separation distance applies only in the absence of site-specific studies. An odour assessment on the mushroom farm has been undertaken by Environmental Alliances (Appendix 3). The Environmental Protection Authority (EPA) interim criterion for acceptable odour impacts is 2.5 ou, 1-hour. The results of the Environmental Alliances' assessment showed that the 2.5ou, 1 hour, 99.5 percentile contour extends approximately 70m into the southern section of the Structure Plan area. As a result, businesses located in the 2.5 ou, 1-hour contour should be notified prior to purchase that the lot is within the 2.5 ou, 1-hour contour and may experience some intermittent odour impacts. This may affect sensitive retail businesses such as food outlets.

Noise studies undertaken on the mushroom farm by Herring Storer show exceedances at night of 6dB(A) and 4dB(A) during the day as a worst-case scenario (Appendix 4). Noise studies indicate that exceedances of noise are higher at night, at which time sensitive retailers in the proposed Structure Plan are unlikely to be operating. Noise impacts on businesses in the Structure Plan are likely to be low, given the highest noise is from loader activity. Businesses should be informed if they wish to locate within 100m of the Mushroom Farm that intermittent noise impacts may be experienced.

3.2 Topography

Topography is gently undulating and there are no outstanding topographical features and no constraints from this factor.

3.3 Geomorphology and Soils

3.3.1 Geology

The Bassendean Dune geological unit is not constrained for residential development.

3.3.2 Soil Types

The soils in the eastern part of the site are prone to waterlogging. Stormwater controls and appropriate separation to groundwater will need to be considered when designing any development for the site.

3.3.3 Acid Sulphate Soils

The WAPC Acid Sulphate Soils Planning Guidelines (WAPC, 2009) indicate that "acid sulphate soils are technically manageable in the majority of cases". ASS Investigation and Management Plans are likely to be required with a Development Application once the detailed design of the proposed industry is finalised. This will be undertaken in accordance with the Acid Sulphate Soils Guideline Series: *Identification and Investigation of Acid Sulphate Soils and Acidic Landscapes* (DEC, 2009) and *Treatment and Management of Soils and Water in Acid Sulphate Soil Landscapes* (DEC, 2011).

3.3.4 *Phytophthora* Dieback

The site is largely 'Uninterpretable' with small areas of Uninfested for *Phytophthora* Dieback. Standard hygiene protocols should be in place during construction to protect any retained vegetation that may not be infected and vegetation in surrounding areas.

3.4 Hydrology

Groundwater is close to the surface in the low-lying areas. Stormwater management will be required to be addressed in accordance with *Better Urban Water Management* (WAPC, 2008). A Local Water Management Strategy (LWMS) is required at Local Structure Plan stage and an Urban Water Management Plan (UWMP) will be required for each subdivision/development. Stormwater controls should consider water quality and quantity in the drain to the south of the site that is in the Peel Drain Network.

3.5 Wetlands

The draft LSP does not propose to retain the portion of MU wetland UFI 6669 on the site. The wetland has very limited ecological value due to the highly degraded nature of the predominantly cleared vegetation.

3.6 Flora

The site does not contain any native species of conservation significance. Therefore, flora is not an impediment to the proposed development.

3.7 Vegetation

The vegetation on the site is proposed to be largely completely cleared with the potential for some isolated trees and shrubs to be retained in the drainage areas. The vegetation on the site is not regionally significant and is mostly in a Good to Degraded condition that is not suitable for retention for conservation values.

The Banksia woodland in the north-west corner is in Good to Very Good condition and, at 4.4ha, could be suitable for retention for its local environmental significance. However, the location of the vegetation close to the intersection of Thomas Road and the Kwinana Freeway and the zoning of the land for commercial activity makes this part of the site highly visible and valuable for development.

The proposed Mixed Business land use for the site does not require Public Open Space.

Therefore, the retention of the Banksia woodland is highly problematic for planning purposes and is not recommended for the structure plan. The clearing of all vegetation on the site has been approved under the Commonwealth EPBC Act.

3.8 Fauna

Fauna habitats on the site consist of Open Eucalyptus Woodland, Banksia Woodland and Shrubland. The fauna habitat is classified as Highly Degraded or Disturbed Fauna Habitat.

Approval to clear any vegetation that could be habitat for listed Black Cockatoo species was granted under the Commonwealth EPBC Act in 2016.

3.9 Heritage

There are no registered Aboriginal Heritage or Cultural Heritage sites within the proposed development boundary. Therefore, Heritage issues are not impacted by the proposed development in accordance with the Structure Plan.

4 SUMMARY AND CONCLUSIONS

4.1 Summary

This Environmental Assessment Report has been prepared as part of the Local Structure Plan for Precincts 1 and 2 of Lots 3, 1199, 9011, 9012 and 9013 Thomas Road, Casuarina. The report includes an environmental impact assessment of the proposed development of the site as a Mixed Business Precinct.

The site has the following environmental characteristics:

- Historical land use has been for agricultural purposes and the land has been largely cleared since 1953 with a pocket of retained vegetation in the north-west corner;
- The soils are on the Bassendean Dune System and Phase B3 can be prone to waterlogging and Acid Sulphate Soils;
- The site is considered to be 'Uninfested' in small areas and the rest 'Uninterpretable' for Phytophthora Dieback;
- The site contains a Multiple Use wetland;
- The site is adjacent to the northern boundary of part of the Peel Drainage network;
- There are no Conservation Significant flora species on the site and three Declared Pest flora species;
- The vegetation is largely cleared and degraded. A small (4.4ha) area of Banksia woodland in Good to Very Good condition remains in the north-west part of the site;
- The fauna habitat on the site is limited due to the large amount of clearing on the site. The remnant Eucalypts and the Banksia Woodland in the north-west part of the site provide habitat for listed Black Cockatoos;
- There are no Aboriginal Heritage Places mapped on the site; and
- A mushroom farm and market garden are located close to the site.

4.2 Conclusion

The Environmental Assessment concludes:

- Site-specific odour and noise studies undertaken on the mushroom farm indicate that some sensitive businesses within 70-100m of the farm may impact on commercial ventures deemed to be Sensitive Receptors;
- Soils are not an impediment to development. Acid Sulphates Soil Investigation and Management Plans are likely to be required if proposed industries are going to disturb soils. Hygiene protocols are likely to be required to minimise the risk of spreading *Phytophthora* Dieback on and off-site;
- The site is generally low lying so separation to groundwater and management of stormwater will be required through the implementation of a Local Water Management Strategy and Urban Water Management Plans;
- Drainage will also require management of water quality and quantity that is drained into the Peel Drainage Network;

- The development on the site is likely to decrease the Declared Pest species that occur on the site;
- The vegetation on the site is either cleared or has been impacted by previous land use. The vegetation is not regionally significant. Retention of the Banksia woodland in the north-west part of the site is not considered viable due to its location and the intended use of the site as a Mixed Business Precinct;
- Habitat for Black Cockatoos is not required to be retained under Commonwealth legislation as development of the entire site was referred under the EPBC Act and was deemed to be 'Not a Controlled Action'; and
- There are no listed heritage sites, however the developer will need to ensure works are undertaken in accordance with obligations under the *Aboriginal Heritage Act, 1972*.

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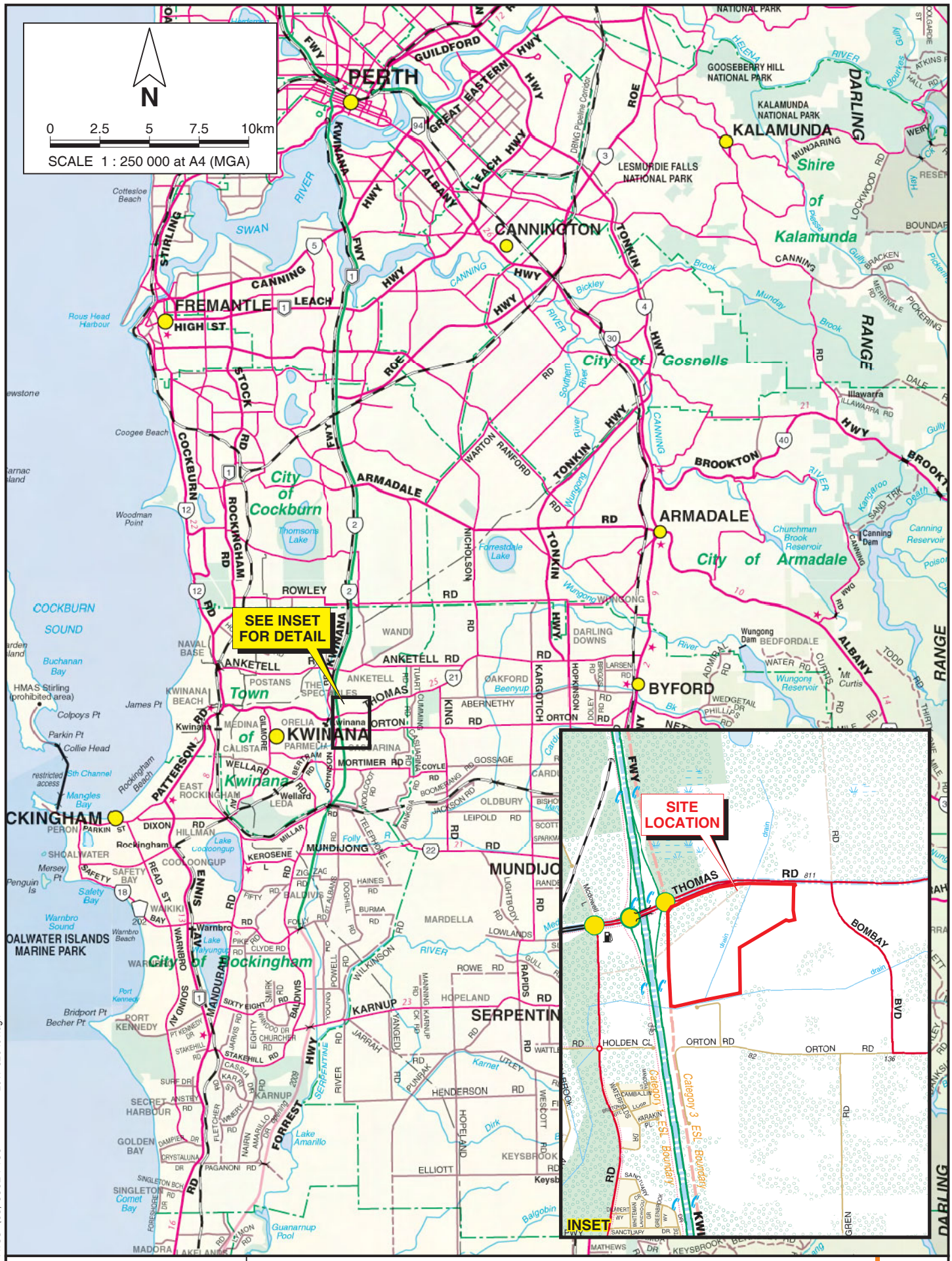
FIGURES



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pgv ENVIRONMENTAL

Aigle Royal
ENVIRONMENTAL ASSESSMENT
PRECINCTS 1 & 2 THOMAS ROAD, CASUARINA

Drawn: J. Cabot	Date: 18 Oct 2017
Job: 10247 Rpt: 2017-326	Revision: A

SITE LOCATION

Figure 1

N

0 25 50 75 100m

SCALE 1 : 2 500 at A3 (MGA)

Legend

- Structure Plan Boundary
- Precinct Boundary
- Cadastral Boundary
- Easement Boundary
- Topographic Contour

392 000mE
392 250mE
392 500mE
6 433 250mN
6 433 000mN

THOMAS ROAD
BOMBAY BOULEVARD
KWINANA FREEWAY

PRECINCT 1
PRECINCT 2

1199
9011
9012
9013
1372
R 42211
44
R 42211
1
2
3
23
24
25

CADASTRAL SOURCE: Landgate, October 2017.
CONTOURS SOURCE: Dept. of Agriculture, 2000.
AERIAL PHOTOGRAPH SOURCE: NearMap, flown August 2017.
STRUCTURE PLAN SOURCE: TPG, Dwg No. 17-769 ST-1 Rev A, 30/10/17.

PINPOINT CARTOGRAPHICS (08) 9562 7136
2017-326-I02.dgn

pgv ENVIRONMENTAL

Aigle Royal
ENVIRONMENTAL ASSESSMENT
PRECINCTS 1 & 2 THOMAS ROAD, CASUARINA

Drawn: J. Cabot | Date: 1 Nov 2017
Job: 10247 Rpt: 2017-326 | Revision: A

SITE BOUNDARY AND TOPOGRAPHY

Figure 2

N

0 25 50 75 100m

SCALE 1 : 2 500 at A3 (MGA)

392 000mE

392 250mE

392 500mE

6 433 250mN

6 433 000mN

THOMAS ROAD

KWINANA FREEWAY

PRECINCT 2

PRECINCT 1

Legend

- Structure Plan Boundary
- Precinct Boundary
- Cadastral Boundary
- Easement Boundary

Soil Landscape Mapping

212Bs__1
Bassendean, Phase 1
Red to yellowish-red weak clayey sands to 150 cm +, commonly associated with limestone.

212Bs__3
Bassendean, Phase 3
Yellowish-brown sands.

212Bs__6
Bassendean, Phase 6
Light grey sand to depth between 90-150 cm overlaying pale yellow to yellow sand.

CADASTRAL SOURCE: Landgate, October 2017.
SOILS SOURCE: Dept. of Agriculture, November 2004.
AERIAL PHOTOGRAPH SOURCE: NearMap, flown August 2017.
STRUCTURE PLAN SOURCE: TPG, Dwg No. 17-769 ST-1 Rev A, 30/10/17.

pgv ENVIRONMENTAL

Aigle Royal
ENVIRONMENTAL ASSESSMENT
PRECINCTS 1 & 2 THOMAS ROAD, CASUARINA

Drawn: J. Cabot | Date: 1 Nov 2017

Job: 10247 Rpt: 2017-326 | Revision: A

SOIL TYPES

Figure 3

2017-326-f03.dgn

PINPOINT CARTOGRAPHICS (08) 9562 7136

N

0 25 50 75 100m

SCALE 1 : 2 500 at A3 (MGA)

392 000mE

392 250mE

392 500mE

6 433 250mN

6 433 000mN

THOMAS

ROAD

KWINANA

FREEWAY

PRECINCT 1

PRECINCT 2

6721

6667

6669

15937

15938

Legend

- Structure Plan Boundary
- Precinct Boundary
- Cadastral Boundary
- Easement Boundary

Geomorphic Wetlands

- Conservation Category
- Resource Enhancement
- Multiple Use
- 6667 Wetland UFI

WETLAND SOURCE: DPaW, July 2017.
CADASTRAL SOURCE: Landgate, October 2017.
AERIAL PHOTOGRAPH SOURCE: NearMap, flown August 2017.
STRUCTURE PLAN SOURCE: TPG, Dwg No. 17-769 ST-1 Rev A, 30/10/17.

PINPOINT CARTOGRAPHICS (08) 9562 7136 2017-326-f04.dgn

pgv ENVIRONMENTAL

Aigle Royal
ENVIRONMENTAL ASSESSMENT
PRECINCTS 1 & 2 THOMAS ROAD, CASUARINA

Drawn: J. Cabot | Date: 1 Nov 2017

Job: 10247 Rpt: 2017-326 | Revision: A

WETLANDS

Figure 4

APPENDIX 1

Proposed Structure Plan

Plan 1: Local Structure Plan

Lots 9011, 9012, 9013, 1199 & 3 Thomas Road, Casuarina

0 50 100m

Project Manager: MC
Drawn: OP
Checked: MC
Date: 14 Aug 2018
Scale: 1:5,000 @ A3
Drawing No. 17-769 ST-1 A

element.
the art and science of place

Level 18, 191 St Georges Terrace
Perth Western Australia 6000
Telephone +61 08 9289 8300
Facsimile +61 08 9321 4786
www.elementwa.com.au

APPENDIX 2

EPBC Act Decision Notice

Notification of

REFERRAL DECISION – not controlled action
Urban development of Lots 3, 1199 and 650 Thomas Road, Casuarina, WA (EPBC 2016/7659)

This decision is made under Section 75 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

Proposed action

person named in the referral	Aigle Royal Group Pty Ltd ACN: 601 435 116
proposed action	To clear native vegetation for the purpose of developing Lots 3, 119 and 650 Thomas Road, Casuarina, WA [See EPBC Act referral 2016/7659].
Referral decision:	**Not a controlled action**
status of proposed action	The proposed action is not a controlled action.
Person authorised to make decision	
Name and position	Bruce Edwards Assistant Secretary Assessments (WA, SA, NT) and Air Branch
signature	
date of decision	4 April 2016

APPENDIX 3

Odour Study (Environmental Alliances)

(COSTA) MUSHROOM EXCHANGE, CASUARINA

REVISION OF PREDICTED ODOUR LEVELS BASED ON SAMPLING OF STERILISATION BUILDING EMISSIONS

Prepared for

MushroomExchange Pty Ltd Trading as Costa (Mushroom Category)

by

ENVALL

Environmental Alliances Pty Ltd

August 2015

Disclaimer and Limitation

Environmental Alliances Pty Ltd (ENVALL) will act in all professional matters as a faithful adviser to the Client and exercise all reasonable skill and care in the provision of its professional services.

This report has been prepared on behalf of and for the exclusive use of the Client, and is subject to and issued in accordance with the agreement between the Client and ENVALL. ENVALL accepts no liability or responsibility whatsoever for it in respect of any use of or reliance upon this report by any third party.

This report is based on the scope of services defined by the Client, budgetary and time constraints requested by the Client, the information supplied by the Client (and its agents), and methods consistent with the preceding.

Where site inspections, testing or fieldwork have taken place, the report is based on the information made available by the client or their nominees during the visit, visual observations and any subsequent discussions with regulatory authorities. It is assumed that normal activities were undertaken at the site on the day of the site visit(s) unless explicitly stated otherwise.

ENVALL has not attempted to fully verify the accuracy or completeness of the written or oral information supplied for the preparation of this report. While ENVALL has no reason to doubt the information provided, the report is complete and accurate only to the extent that the information provided to ENVALL was itself complete and accurate.

This report does not purport to give legal advice, which can only be given by qualified legal advisors.

Client: MushroomExchange Pty Ltd Trading as Costa (Mushroom Category)

Job No: L2144c	**Version**	**Prepared by**	**Reviewed by**	**Submitted to Client**	
Status				**Copies**	**Date**
Draft Report	V0b	DP	-	*.doc	5/7/2015
Final Report	V1b	DP	KP	*.pdf	19/7/2015
Updated Final Report	V1c	DP	-	*.pdf	17/8/2015

Environmental Alliances Pty Ltd
Tel: (08) 9343 0554
Fax: (08) 9343 0079
ABN: 75 103 600 620

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1. INTRODUCTION

1.1 2013 ODOUR MODELLING

In 2012, Environmental Alliances was engaged to undertake an assessment of the odour emissions and impacts from the operating facility (ENVALL 2013). This included an investigation of other odour sources in addition to compost receivals/handling.

The three main sources of odour that were considered to be the main contributors to off-site odour impacts were:

- Compost Receivals and handling into the Pasteurisation Building;
- Pasteurisation Building Vents; and
- Sterilisation Building.

1.2 SUMMARY OF ANNUAL EMISSIONS

By way of some perspective, a summary of the odour emissions from the three main sources from the ENVALL (2013) report is shown in Table 1 below:

Table 1 Estimated annual average odour emission rates for quantified Mushroom Exchange odour sources

Source	Annual odour emission rate based on 2011-12 meteorology (ou.m^3/s)
Compost Receivals and handling into the Pasteurisation Building	
Bunker (incl storage and truck dumps)	1,674
Hopper (inclined belt loaded by FE loader incl transfer to conveyor)	3,680
Conveyor	151
Total Compost Receivals	5,505
Sterilisation	18,952
Pasteurisation Vents	8,149

1.3 REDUCTION OF ODOUR EMISSIONS FROM STERILISATION BUILDING

Since the 2013 study, Costa has reduced leakages from the Sterilisation Building. This report describes a re-assessment of odour emissions from this building and re-modelling of odour levels based on the results.

2. STERILISATION BUILDING ODOUR EMISSIONS RE-ASSESSMENT

2.1 FUNCTION OF STERILISATION BUILDING

The Sterilisation Building (also referred to as Cookout Building) contains two similarly sized chambers used to sterilise the mushroom-growing trays using steam produced by an adjacent boiler. Each chamber has its own vehicle door to allow a fork-lift to transport the trays into the chamber and remove them after the sterilisation process. The doors are fitted with rubberised seals. There is also a sub-surface drain within each chamber.

For a sterilisation cycle, steam is pumped into the required chamber for approximately 20 hours to heat the trays to the required temperature (72°C) then eased off to maintain that temperature for a further 8 hours before being shut off completely after which the trays are allowed to cool naturally.

When steam is pumped into a chamber containing the trays, heat transferred from the steam into the trays causes much of the steam to condense, which allows additional steam to be pumped in with little increase to the net pressure inside the building. The drain allows the condensed steam (as water) to escape to prevent flooding the floor.

The lower density of the incoming steam does, however, cause it to initially rise to the top of the chamber. This creates a small pressure difference between the upper part of the Chamber and the outside (cooler) ambient air. If there are gaps in the upper walls and roof, some of the steam, together with any odour from the trays that has been imparted into the steam, will escape.

The Sterilisation Building was considered to be a major source of odour emissions following the sampling in 2012.

2.2 EMISSIONS SAMPLING

The emissions from the Sterilisation Building were sampled on 1 July 2015.

It was observed that the volume of emission is much less than it was in 2012. In 2012, vertical gaps in the corners of the walls were in the order of a centimetre wide in places, and the resulting plume was visible well above the roof of the building.

Now, the emissions can only be observed by close inspection of the door and upper section of the walls. The emissions were through occasional very small gaps:

- between the concrete cladding where the roof section abutted the tilt-up wall panels; and
- around the truck door seal.

The gaps in the concrete were inconsistent in size and there were substantial lengths where no emission (i.e. no gap) was apparent (see Figure 1).

Figure 1 Example of leakage between concrete panels

The emission in the truck door seals was also intermittent and appeared less than the concrete.

2.2.1 Estimation of volume flow rate

It is not possible using conventional sampling methods to make a particularly accurate determination of volume flow rate in these circumstances. The approach used was to measure the velocity of the leakages using a hot-wire anemometer, which has a small probe that can be pressed into the gaps, then multiply this result by the estimated surface area of the gaps.

Using this method, the average of six velocity measurements through the largest of the gaps in the concrete was 1.5 m/s.

Even with the small probe, the velocity through the door seals gaps was too low to measure. There were no obvious gaps as such through the door seal – rather the leaks appeared to be where the rubber seal was only in weak contact with the frame, hence the emission was more of a "seepage". A probable contributing factor to the low emission through the door is that the internal pressure is lower near the base than near the roof due to the vertical temperature gradient. Therefore the anemometer threshold of 0.1 m/s was assumed for the velocity.

It is considered that an average 1 mm gap, if assumed continuous along the front (east), north and rear (west) concrete walls, would be a reasonable estimate. For the door seal, a 1 mm "gap", if assumed continuous around the entire door perimeter, would be a conservative estimate.

This gives the volume flow through the concrete gaps of:

[10.5m x 2 (east and west facing walls) + 21m (north facing wall)] x 0.001 m (gap) x 1.5 m/s = 0.063 m^3/s.

Similarly, the volume flow through the door seal is:

[3.5m (height) x 2 + 4m (width) x 2] x 0.001m (gap) x 0.1 m/s = 0.0015 m^3/s.

This gives a total volume flow of 0.0645 m^3/s.

There is a small hinged hatch in the door (dimensions 0.45 x 0.5 m) which acts as periodic pressure relief. This appears to discharge very infrequently (observed once in approximately 1 hour).

For the purpose of calculating the odour emission rate, the volume flow calculated for the gaps (as above) was therefore rounded up to 0.1 m^3/s, which should be quite conservative.

2.2.2 Temperature

The exit temperature of the leakage should be close to 72°C, which is the air temperature maintained and measured inside the cookhouse. The diffuse nature of the leakages means that the buoyancy is quickly lost, hence the plume rise above the roof is negligible. The remodelling was therefore based on the same "volume source" configuration as previously, except that the emission height was reduced to the roof height.

2.2.3 Odour concentration

The odour concentrations were sampled using the "drum" approach as described in Australian Standard AS4323:3, with a stainless steel probe being inserted into the building through the pressure relief hatch to extract the internal air sample. The samples were analysed for odour concentration in accordance with AS4323:3 by The Odour Unit, which is a NATA Certified laboratory. The detailed results are given in Appendix 1. The average odour concentration reported was 23,250 ou.

2.3 OPERATING REGIME

Since the 2013 assessment, the usage of the Sterilisation Building (also referred to as Cookhouses) has changed.

In 2013, the building was operated four times per week.

The current regime is[1]:

- Tuesday AM – Sterilisation Room opened up and trays removed and emptied.
- Tuesday PM – Next Growing Room that has completed growing cycle - trays put into Sterilisation Room. At approx. 4-5pm, sterilisation process started. Warm up to 72°C using steam from adjacent boiler; process normally reaches temperature (72°C) by approx. 12pm on the Wednesday. Hold at temperature for 12 hours. Steam then shut off and allowed to cool naturally.
- Thursday AM - Sterilisation Room opened up and trays removed and emptied.
- Thursday PM – Next Growing Room that has completed growing cycle - trays put into sterilisation room.
- Saturday AM - At approx. 8-9am sterilisation process started - warm up to 72°C using steam from adjacent boiler; process normally reaches temperature (72°C) by approx. 12am on the Sunday. Hold at temperature for 12 hours then turn steam off and allow to cool naturally.
- Tuesday AM – As per above and the cycle continues.

The key change from 2012 is that empty trays are no longer separately sterilised using steam. Instead, new and repaired trays are dipped prior to use in a fungicide treatment bath. All trays are sprayed on the day of re-use when filling with fresh mushroom substrate (spawned compost) with a germicide product to reduce the potential for wood mould propagation. The use of the Sterilisation Building has therefore been approximately halved. This in itself would lead to an approximate 50% reduction in emissions compared to 2012.

The summary of the odour sources and characteristics through production stages from the 2013 report has been updated incorporating these changes, and is shown in Appendix 2.

2.4 ODOUR EMISSION RATE

The revised, modelled odour emission rate when the Sterilisation Building is operating is 0.1 m^3/s x 23,250 ou = 2,325 ou.m^3/s, with a "pulse" of 9,256 ou.m^3/s, calculated assuming assumed the internal building air volume is released[2], over each hour during which the doors are opened.

[1] Costa email 27/5/2015.

[2] This ignores the displacement inside the building due to crates - which would over-state the odour emissions, however it is assumed that crates themselves will also contribute odour emissions. Therefore, the overall estimate is considered reasonable.

Over the 2011-12 year used as the basis for modelling, the revised average odour emission rate from the Sterilisation Building is 442 ou.m^3/s. This compares to 18,952 ou.m^3/s from 2013. The average odour emission is therefore approximately 2.3% of what it was previously.

3. MODELLING ASSUMPTIONS

The modelled re-assessment of odours from the Sterilisation Building has followed the same methodology and assumptions as used in the 2013 report, except for the revised emissions and operating regime.

The nominal time periods of operations, and therefore emissions from leakages, were obtained from temperature plots provided by Costa where the internal temperate was 72°C. These were:

- Wednesdays 0100 hours to 1300 hours (12 hour duration); and
- Saturdays 2000 hours to Sunday 0800 hours (12 hour duration).

For completeness, the odours from the building when the doors are opened at the end of the process were also incorporated. (Note that this was not done in the 2012 modelling).

4. RESULTS

4.1 STERILISATION BUILDING EMISSIONS IN ISOLATION

The predicted 2.5 ou 1-hour average 99.5 percentile odour concentrations from the Sterilisation Building only are shown in Figure 2. The orange contour is from the 2013 assessment. The green contour is from 2015 sampling and revised operating regime. The level of odour against the criterion is insignificant.

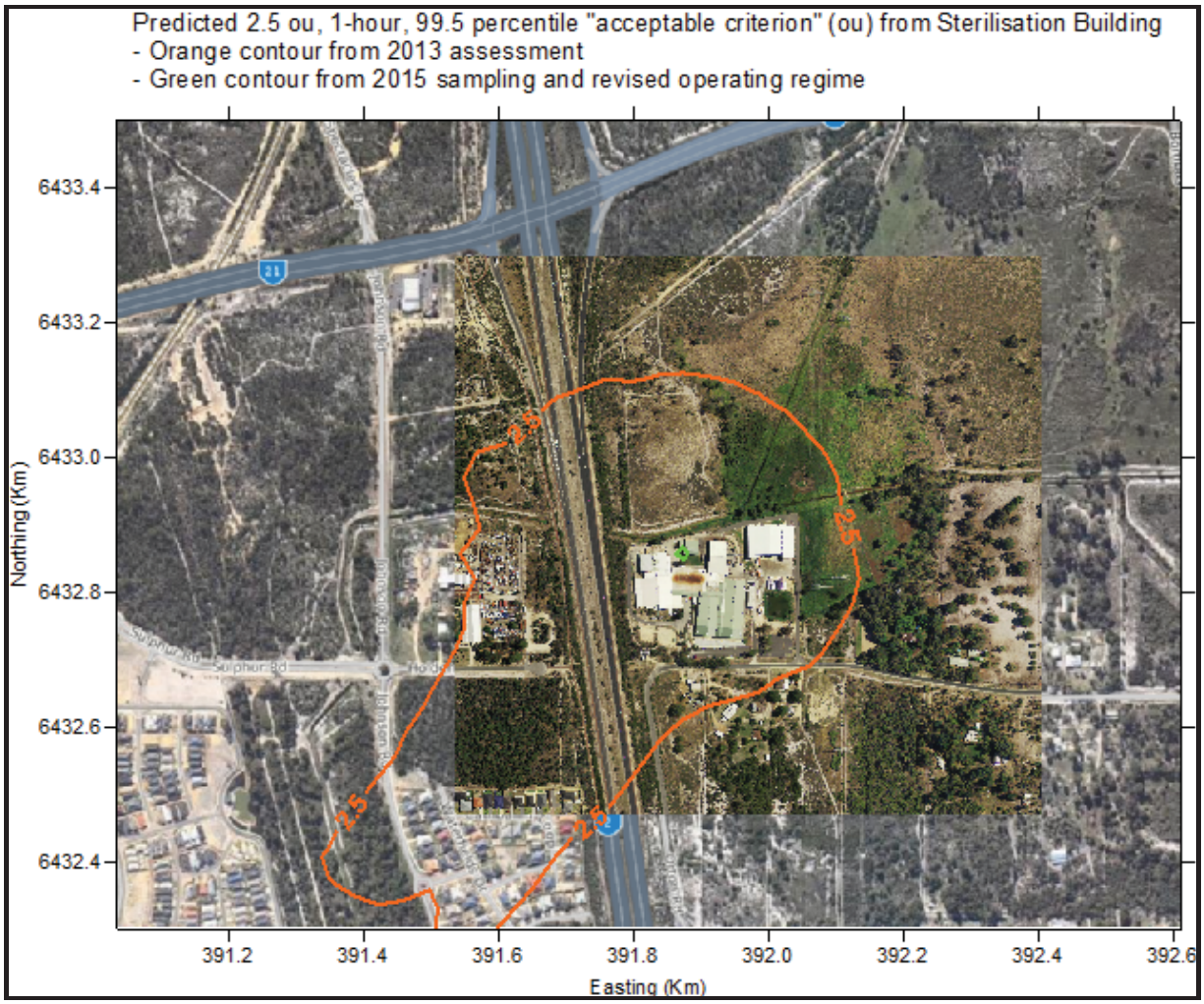

Figure 2 Predicted 2.5 ou 1-hour average 99.5 percentile odour concentrations from the Sterilisation Building only

4.2 ALL MODELLED SOURCES (CURRENT SITUATION)

The predicted odour contours from compost deliveries/handling, plus the Pasteurisation Building Vents, plus the Sterilisation emissions from the 2015 sampling, is shown in Figure 3. This, then, represents the best estimate of the current situation i.e. the 2.5 ou criterion level lies between the two contours shown - depending on modelling/assumption uncertainties.

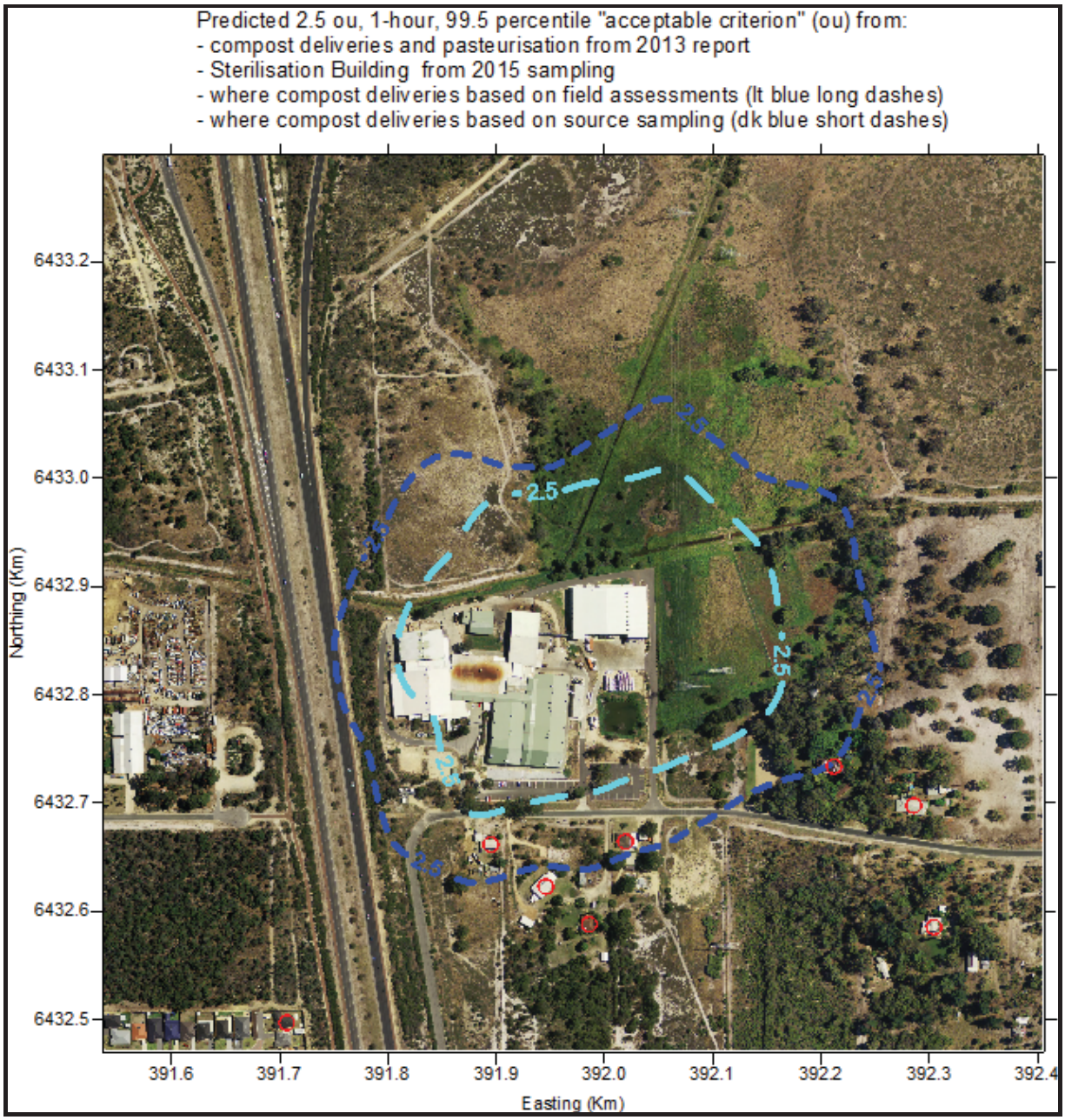

Figure 3 Predicted 2.5 ou 1-hour average 99.5 percentile odour concentrations range for compost deliveries, Pasteurisation Building vents from 2013 modelling and Sterilisation Building from 2015 sampling

Red circles show residences (from "Costa Mushroom Exchange – Environmental Management Plan – Casuarina Production Facility" (2014)).

The 2013 Report (in Figure 11) contained two estimates of odour contours from the compost deliveries/handling 1) based on field assessments and 2) based on source sampling, with the latter, more conservative estimate used in the final presentations (in Figure 12). In other words, the area between these contours lies within the predicted range of the "acceptable" odour levels in view of identified "scientific uncertainty".

4.3 ASSESSMENT OF WALKING FLOOR DELIVERIES OF COMPOST

Currently, trucks deliver compost by dumping it into a bunker. A front-end loader picks up the compost from the bunker and tips it into a hopper, which feeds a conveyor to the Pasteurisation Building.

On 1 July 2015, Costa trialled the use of a truck with a walking floor directly discharging the compost to the hopper.

This would eliminate odour emissions from aspects of the current arrangement whereby trucks dump initially into bunkers. The specific sources/mechanisms of odour generation eliminated would be:

- Truck dumps to the bunkers;
- Front-end loader pick up from the bunkers; and
- Emissions from stationary compost whilst in the bunkers.

From a visual review, the odour emissions from the walking floor discharge to the hopper are similar in magnitude to that from the front-end loader tipping into the hopper. This is because most of the emissions from the hopper appear to arise from the rotating paddle which levels the compost being discharged from the hopper to the conveyor by flinging and re-distributing it within the hopper. (Figure 4 shows a visual comparison, however conclusions shown not be drawn simply from this).

The predicted odour levels for the "current" scenario except assuming walking floor deliveries (i.e. omitting the odour emissions from the truck dumping to the compost bunker and front-end loader pick-up from the bunker) are shown in Figure 5.

The predicted odour levels meet the criteria at all of the residences – albeit only just at the most affected residence for the "conservative" prediction.

These predictions would, however, be further reduced if there were some covering of the hopper (and conveyor to the Pasteurisation). It is considered that if the walking floor deliveries were to be fully implemented together with covering of the hopper and conveyor (even without extraction), the odour criterion will be met at all of the nearby residences.

Figure 4 Comparison of hopper loading from front-end loader 25/7/2012 0817 hours and walking floor truck 1/7/2015 0900 hours

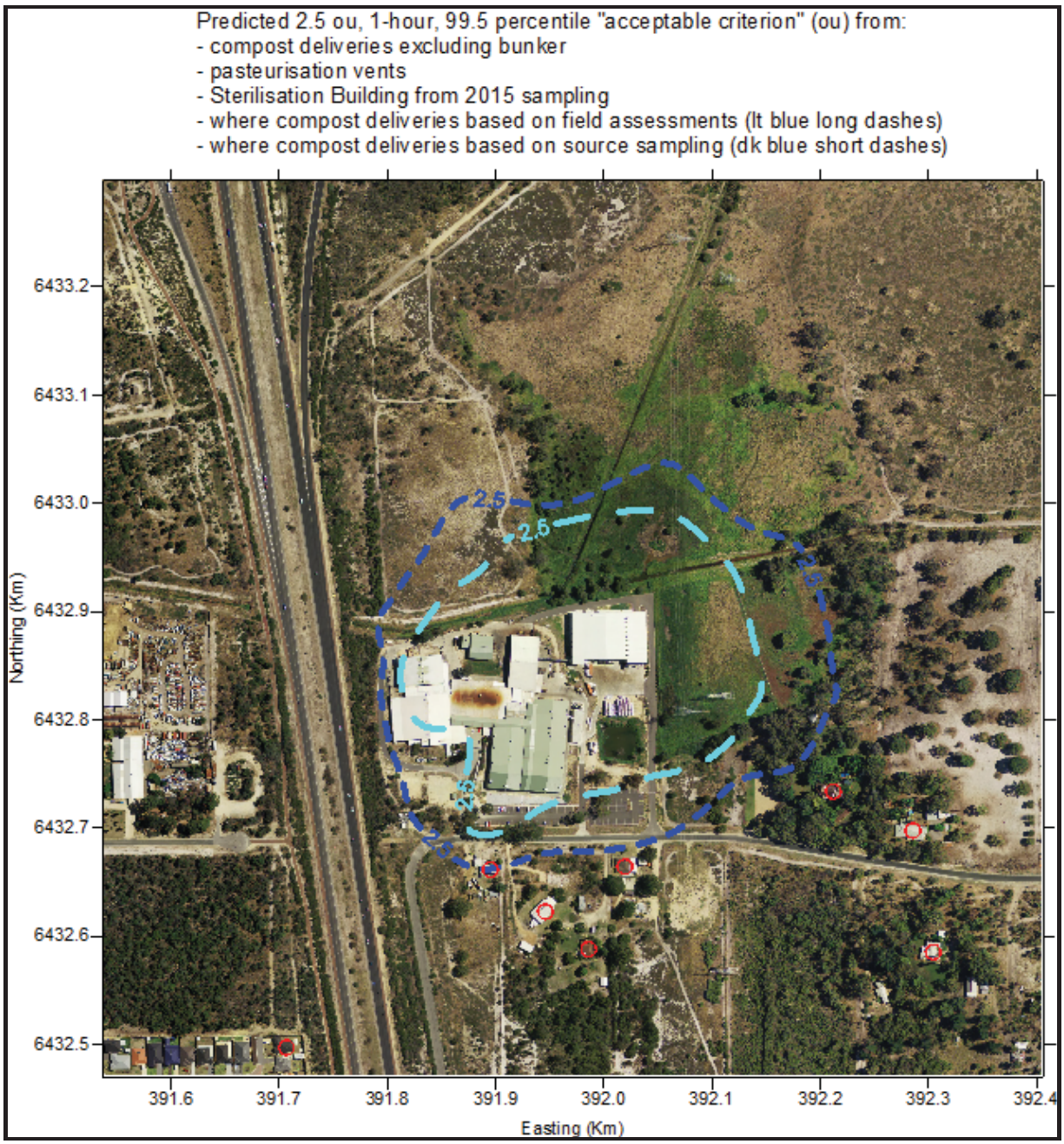

Figure 5 Predicted 2.5 ou 1-hour average 99.5 percentile odour concentrations range for compost deliveries assuming travelling floor discharge direct to hopper is implemented

5. REFERENCES

Environmental Alliances, 2005, "Determination of Odour Levels from Chiquita Mushrooms, Casuarina", Prepared for Chiquita Mushrooms by Environmental Alliances Pty Ltd, April 2005.

Environmental Alliances, 2008, "Modelling Of Off-Site Odours For Proposed New Compost Handing System At Costa Exchange Mushroom Farm, Casuarina", Draft Only, Prepared for Costa Exchange by Environmental Alliances Pty Ltd, January 2008.

ENVALL, 2013, "Investigation of Odour Impacts from Mushroom Exchange, Casuarina", Prepared for Mushroom Exchange by ENVALL Environmental Alliances Pty Ltd, December 2013.

Appendix 1 Results from odour concentration analysis of Sterilisation Building emissions

THE ODOUR UNIT (WA) PTY LTD

THE ODOUR UNIT

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Myaree
WA 6154

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Email: tschulz@odourunit.com.au
Internet: www.odourunit.com.au
ABN: 70 126 439 076

NATA
Accreditation Number: 14974

Form 06 - Perth Laboratory
Odour Concentration Measurement Results

The measurement was commissioned by:

Organisation	Environmental Alliances	Telephone	(08) 9343 0554
Contact	David Pitt	Facsimile	(08) 9343 0079
Sampling Site	Costa Mushrooms	Email	david.pitt@ea.iinet.net.au
Sampling Method	Drum & Pump	Sampling Team	David Pitt

Order details:

Order requested by	David Pitt	Order accepted by	John Hurley
Date of order	July 2015	TOU Project #	W2060R.01
Order number	TBA	Project Manager	John Hurley
Signed by	TBA	Testing operator	Clayton Hough

Investigated Item	Odour concentration in odour units 'ou', determined by sensory odour concentration measurements, of an odour sample supplied in a sampling bag. Odour character is also assessed, however, AS4323.3:2001 and NATA accreditation do not cover the performance of this service. Where parties other than The Odour Unit perform the dilution of samples, the result that has been modified by the dilution factor is not covered by The Odour Units NATA accreditation. Sample collection using a hood or IFH (and calculation of the SOER) is not covered by The Odour Units NATA accreditation.
Identification	The odour sample bags were labelled individually. Each label recorded the testing laboratory, sample number, sampling location (or Identification), sampling date and time, dilution ratio (if dilution was used) and whether further chemical analysis was required.
Method	The odour concentration measurements were performed using dynamic olfactometry according to the Australian Standard 'Determination of Odour Concentration by Dynamic Olfactometry AS/NZS4323.3:2001. The odour perception characteristics of the panel within the presentation series for the samples were analogous to that for butanol calibration. Any deviation from the Australian standard is recorded in the 'Comments' section of this report.
Measuring Range	The measuring range of the olfactometer is $2^2 \leq \chi \leq 2^{18}$ ou. If the measuring range was insufficient the odour samples will have been pre-diluted. This is specifically mentioned with the results.
Environment	The measurements were performed in an air- and odour-conditioned room. The room temperature is maintained at 25°C or less, with temperature fluctuations of less than ± 3 °C.
Measuring Dates	The date of each measurement is specified with the results.
Instrument Used	The olfactometer used during this testing session was: ODORMAT SERIES V02 The software used during this testing session was: ODORMAT V3.0
Instrumental Precision	The precision of this instrument (expressed as repeatability) for a sensory calibration must be $r \leq 0.477$ in accordance with the Australian Standard AS/NZS4323.3:2001. ODORMAT SERIES V02: $r = 0.168$ (18th & 19th November, 2014) Compliance – Yes
Instrumental Accuracy	The accuracy of this instrument for a sensory calibration must be $A \leq 0.217$ in accordance with the Australian Standard AS/NZS4323.3:2001. ODORMAT SERIES V02: $A = 0.057$ (18th & 19th November, 2014) Compliance – Yes
Lower Detection Limit (LDL)	The LDL for the olfactometer has been determined to be 16 ou (four times the lowest dilution setting)
Traceability	The measurements have been performed using standards for which the traceability to the national standard has been demonstrated. The assessors are individually selected to comply with fixed criteria and are monitored in time to keep within the limits of the standard. The results from the assessors are traceable to primary standards of n-butanol in nitrogen.

NATA

Accredited for compliance with ISO/IEC 17025.
This report shall not be reproduced, except in full.

Date: Wednesday, 1 July 2015

Report Number / Panel Roster Number: PER20150701_1

J. Hurley
State Manager WA

C. Hough
Authorised Signatory

The Odour Unit (WA) Pty Ltd
ACN 126 439 076
Form 06 – Odour Concentration Results Sheet

Issue Date: 13.11.2003
Issued By: SB
Odour Measurement Manual

Revision: 6.1
Revision Date: 02.09.2013
Approved By: TJS

THE ODOUR UNIT (WA) PTY LTD

Accreditation Number: 14974

Odour Sample Measurement Results

Sample Location	TOU Sample ID	Sampling Date & Time	Analysis Date & Time	Panel Size	Valid ITEs	Nominal Sample Dilution	Actual Sample Dilution (adjusted for Temperature)	Sample Odour Concentration (as analysed, in the bag) (ou)	Sample Odour Concentration (Final, allowing for dilution) (ou)	Odour Character
EA 1	PC18267	01/07/2015 @ 07:20hrs	01/07/2015 @ 11:40hrs	4	8	-	-	21,200	21,200	Soil / manure / dry / chemical
EA 2	PC18268	01/07/2015 @ 07:30hrs	01/07/2015 @ 12:04hrs	4	8	-	-	25,300	25,300	Soil / manure / dry / chemical

THE ODOUR UNIT (WA) PTY LTD

Accreditation Number: 14974

Odour Panel Calibration Results

Reference Odorant	Reference Odorant Panel Roster Number	Concentration of Reference gas (ppm)	Panel Target Range for n-butanol (ppb)	Measured Concentration (ou)	Measured Panel Threshold (ppb)	Does this panel calibration measurement comply with AS/NZS4323.3:2001 (Yes / No)
n-butanol	PER20150701_1	50.2	$20 \leq \chi \leq 80$	1,450	35	Yes

Comments: None

END OF DOCUMENT

Report Number / Panel Roster Number: PER20150701_1
The Odour Unit (WA) Pty Ltd
ACN 126 429 078
Form 06 – Odour Concentration Results Sheet
- 3 -
Issue Date: 13.11.2003
Issued By: GB
Odour Measurement Manual
Revision: 6.1
Revision Date: 02.09.2013
Approved By: TJG

Appendix 2 Mushroom Exchange odour sources and characteristics through production stages

Stage	Timing	Source Location	Emission characteristics	Qualitative Assessment[(a)]	
				Odour character	Potential for off-site impacts
Phase 1 compost receival	0800 to 1500 hours (latest) Wednesdays	Compost receival area	Off-site impacts likely to be wind speed dependent and fluctuate as a function of handling.	Earthy, ammonia	High, particularly for low moderate wind speeds cloudy days; may be detectable off-site.
Phase 2 composting	1 week, Wednesday to Tuesday	Pasteurisation building vent emissions	Elevated release during pasteurisation process – cycle repeated each 7 days therefore maximum emissions most likely from Wed evening to Thursday afternoons. See emissions profile in Figure 6.	Earthy, ammonia to start with (0 - 8 hours during levelling), possible smoulder character (8 – 16 hours), decreasing odour emission rate 16 – 144 hours)	Limited due to small volume flows and elevated release, noticeable but transient levels close to source.
Packing into trays and Casing	Twice per week Monday 0600 to 1630 Friday 0600 to 1630	Tray Line	No substantial emissions.	-	No.
Flushing initiation	Three rooms per week 1 on Tuesday 2 on Friday	Various Growing Rooms in Growing Buildings	Possible pulse of odour.	Mushroom	Possible transient.

Stage	Timing	Source Location	Emission characteristics	Qualitative Assessment[a]	
				Odour character	Potential for off-site impacts
Growing/ Harvesting	In each growing room: • 4 days • Initiate 1st flush lasting 7-10 days • 1 day to harvest (0700 to 1600 hours) • 2nd flush lasting 7-10 days • 1 day to harvest (0700 to 1600 hours) • 3rd flush lasting 7-10 days • 1 day to harvest (0700 to 1600 hours) • leave trays until ready to sterilise Total time = 6 weeks from trays in to trays out	Various Growing Rooms in Growing Buildings. A room (somewhere) is harvested each day.	Ventilation regime in each growing room is variable according to stage of growing. Possible pulses of odour if doors are opening for harvestings and final tray removal.	Mushroom	Possible transient. Limited due to nature of the odour character; may be detectable off-site as transient "slug".
Packing and transport	Packing is daily 0700 to 1600 hours. Transported off site daily (Mon-Sun).	Packing room. Picked up from west yard area.	No odours	-	-
Spent Compost & tray sterilisation[b]	Twice per week Wed approx. 0100-1300 hours & Sat-Sun approx. 2000-0800 hours (12 hours @ 72 °C). Ramp up to temperature takes 8-12 hours beforehand	Sterilisation Building – Cookout 1 & 2 alternating.	Very minor leakage from gaps in concrete panels abutting rook section. Possible "slug" as doors are opened afterwards.	Pine/wood/sweetish as observed in ambient air downwind. "Soil/manure/dry/ chemical" as reported by Odour Laboratory from source sample.	Negligible.
Spent compost removals	0700 to 1500 hours, Tuesdays and Thursdays	Spent compost bunker	Wind dependent.	Earthy Spent compost has only low odour when freshly dumped – need to confirm nature/level of odour when picking up older stockpile.	Appears unlikely if compost removed soon after stockpiling.

Stage	Timing	Source Location	Emission characteristics	Qualitative Assessment[a]	
				Odour character	Potential for off-site impacts
Total compost cycle time	4 weeks in tunnels 6 weeks in growing rooms				
Auxiliary activities					
Tray manufacture	Monday to Friday 0600 to 1430 hours	Growing trays assembly area	Minor odour from storage/assembly areas.	Fresh cut Pine/wood.	Unlikely.
Tray disposals	When skip bin is full	Skip bins on north boundary of premises	Minor odour from Skip Bins.	Decaying wood.	Unlikely.
Waste water disposal	Continuous wash downs from all buildings	4 intermediate below-ground covered sumps Main below-ground collection sump Pond	No odour from covered sumps. Minor odour from Main sump. Pond odour likely to be greater during warmer months due to anaerobic activity. Wind dependent.	Aerobic mild putrescent. Anaerobic/putrescent.	High during light winds – early morning, spring, summer.
Waste mushroom /solid waste disposal	Skip bins removed daily	Small yellow skip bins in mushroom pick up area	Minor odour from Skip Bins.	Mushroom, possibly putrescent/decaying if left for too long.	Unlikely.

[a] Note that Costa has developed a Risk Matrix based on the findings of the ENVALL investigations. The Risk Matrix is included in the EMP.

[b] Updated from the original Table in the ENVALL (2013) report on the basis of the current sampling. Also the "Tray sterilisation" referred to as an odour source/"Stage" in the ENVALL (2013) has been omitted from this revised Table as it is no longer undertaken.

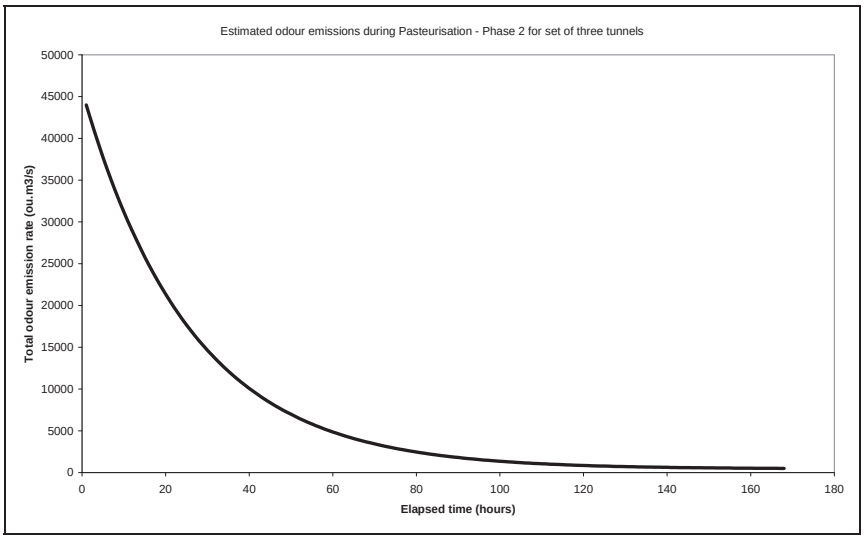

Figure 6 Estimated odour concentration of emissions over pasteurisation (phase 2) process for a set of three tunnels

APPENDIX 4:

Noise Assessment (Herring Storer)

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COSTA GROUP PTY LTD

MUSHROOM EXCHANGE

45 ORTON ROAD, CASUARINA

NOISE ASSESSMENT

JULY 2015

OUR REFERENCE: 19347-3-14278-02

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NOISE ASSESSMENT
MUSHROOM EXCHANGE

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APPENDICIES

EXECUTIVE SUMMARY

Herring Storer Acoustics was commissioned by the Mushroom Exchange to undertake an acoustical assessment of noise emissions from the current operations located at 45 Orton Road, Casuarina.

Noise level measurements have been conducted both on a continuous and short term, observed basis. Generally, noise level measurements at the nearest noise sensitive premises (or equivalent distance) were influenced by background noise emanating from the Kwinana Freeway and Thomas Road. As per the regulatory requirement, measurements conducted closer to the noise source were also carried out, with these measured noise levels being used to construct a predictive noise model of the individual noise emissions and various operating scenarios.

Based on analysis of all three (near and far field measurements and the predictive noise model) an assessment of noise levels has been carried out at the neighbouring noise sensitive premises.

Noise levels, under the worst case operating and noise propagation conditions, have been assessed as follows:

Location A. 46 Orton Rd
Assessable noise levels for this location result in an exceedance of 7 dB(A) for the night period. For other regulatory times compliance is achieved. Analysis of the noise levels show the main cooling towers at the Mushroom Exchange are highest contributing noise source.

B. 60 Orton Rd
Assessable noise levels for this location result in an exceedance of 6 dB(A) for the night period and 4 dB(A) for the day period during times of compost delivery / loading. As for Location A, analysis of the noise levels show the main cooling towers at the Mushroom Exchange are highest contributing noise source during the night period.

C. 73 Orton Rd
Assessable noise levels for this location result in an exceedance of 1 dB(A) for the day period during times of compost delivery / loading. For other regulatory times compliance is achieved.

Due to the above potential exceedances, further investigation into noise control for individual noise emissions contributing to the exceedance has been made. These noise control recommendations are provided in this study.

Based on the implementation of the noise control options (as provided in this study), noise levels received at the nearest neighbouring premises have been determined to comply with the *Environmental Protection (Noise) Regulations 1997* for the operating times as outlined in this assessment.

1. INTRODUCTION

Herring Storer Acoustics was commissioned by the Mushroom Exchange to undertake an acoustical assessment of noise emissions from the current operations located at 45 Orton Road, Casuarina.

The Mushroom Exchange is a facility which grows, processes and markets mushrooms to wholesale providers. The facility comprises various operational areas, with the majority of activities being carried out within buildings. The focus of this study is the noise emissions associated with external noise sources, such as product delivery, loading and mechanical services (exhaust fans etc.).

Measurements of the operations in have been undertaken and used as the basis of this assessment. As there is a requirement for the mechanical ventilation to run at all hours, the assessment of the mechanical services has been conducted of the most critical regulatory period of night. For other individual activities such as compost delivery and loading which is carried out once a week during the day, assessment of the relevant time period has been made.

As part of the study, the following was carried out:

- Measure noise levels associated with delivery activities including operations of the front end loader and truck movements in and out of the facility.
- Conduct hand held noise measurements of other noise sources (mechanical plant, exhaust fan, etc.) in near field locations.
- Monitor noise levels continuously in near and far field locations for a period of one week.
- Construct predictive noise model of Mushroom Exchange operations using sound power levels of plant and equipment on site.
- Model a scenario for the worst case noise conditions, as outlined by the DER guidelines.
- Assess noise levels received at neighbouring premises for compliance or otherwise with the requirements of the *Environmental Protection (Noise) Regulations 1997.*
- If exceedances are found, identify noise emissions contributing to the exceedances and provide noise control options for these items.
- Model various scenarios with noise control option included and assess noise levels in accordance with *Environmental Protection (Noise) Regulations 1997*.
- Develop Noise Management Plan based on noise assessment.

For information, a locality plan is attached in Appendix A.

2. CRITERIA

The allowable noise level at the surrounding locales is prescribed by the *Environmental Protection (Noise) Regulations 1997*. Regulations 7 & 8 stipulate maximum allowable external noise levels determined by the calculation of an influencing factor, which is then added to the base levels shown below. The influencing factor is calculated for the usage of land within two circles, having radii of 100m and 450m from the premises of concern.

TABLE 1 - BASELINE ASSIGNED OUTDOOR NOISE LEVEL

Premises Receiving Noise	Time of Day	Assigned Level (dB)		
		$L_{A\ 10}$	$L_{A\ 1}$	$L_{A\ max}$
Noise sensitive premises within 15 metres of a dwelling	0700 - 1900 hours Monday to Saturday (Day)	45 + IF	55 + IF	65 + IF
	0900 - 1900 hours Sunday and Public Holidays (Sunday / Public Holiday Day Period)	40 + IF	50 + IF	65 + IF
	1900 - 2200 hours all days (Evening)	40 + IF	50 + IF	55 + IF
	2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and Public Holidays (Night)	35 + IF	45 + IF	55 + IF

Note: L_{A10} is the noise level exceeded for 10% of the time.
L_{A1} is the noise level exceeded for 1% of the time.
L_{Amax} is the maximum noise level.
IF is the influencing factor.

It is a requirement that received noise be free of annoying characteristics (tonality, modulation and impulsiveness), defined below as per Regulation 9.

"impulsiveness" means a variation in the emission of a noise where the difference between L_{Apeak} and $L_{Amax\ Slow}$ is more than 15 dB when determined for a single representative event;

"modulation" means a variation in the emission of noise that –

(a) is more than 3dB $L_{A\ Fast}$ or is more than 3 dB $L_{A\ Fast}$ in any one-third octave band;
(b) is present for more at least 10% of the representative assessment period; and
(c) is regular, cyclic and audible;

"tonality" means the presence in the noise emission of tonal characteristics where the difference between –

(a) the A-weighted sound pressure level in any one-third octave band; and
(b) the arithmetic average of the A-weighted sound pressure levels in the 2 adjacent one-third octave bands,

is greater than 3dB when the sound pressure levels are determined as $L_{Aeq,T}$ levels where the time period T is greater than 10% of the representative assessment period, or greater than 8 dB at any time when the sound pressure levels are determined as $L_{A\ Slow}$ levels.

Where the noise emission is not music, if the above characteristics exist and cannot be practicably removed, then any measured level is adjusted according to Table 2 below.

TABLE 2 - ADJUSTMENTS TO MEASURED LEVELS

Where **tonality** is present	Where **modulation** is present	Where **impulsiveness** is present
+5 dB(A)	+5 dB(A)	+10 dB(A)

Note: These adjustments are cumulative to a maximum of 15 dB.

The nearest potential noise sensitive premises to the proposed development have been identified using the area map attached as Figure A2 in Appendix A.

The influencing factor at the closest identified premises has been assessed as 2 to 6 dB:

Major Roads (Kwinana Freeway) within inner circle
A + 6 dB

Major Roads (Freeway) within outer circle
B and C + 2 dB

Hence, Table 3 summarises the Assigned Noise Levels for residences identified in Figure A2.

TABLE 3- ASSIGNED OUTDOOR NOISE LEVEL

Receiver Type	Influencing Factor	Time of Day	Assigned Level (dB)		
			$L_{A\ 10}$	$L_{A\ 1}$	$L_{A\ max}$
A	+6	Day	51	61	71
		Sunday / Public Holiday Day Period	46	56	71
		Evening	46	56	61
		Night	41	51	61
B and C	+2	Day	47	57	67
		Sunday / Public Holiday Day Period	42	52	67
		Evening	42	52	57
		Night	37	47	57

Note: L_{A10} is the noise level exceeded for 10% of the time.
L_{A1} is the noise level exceeded for 1% of the time.
L_{Amax} is the maximum noise level.

FIGURE 1 – RECEIVER LOCATION MAP

3. NOISE MEASUREMENT

3.1 CONTINUOUS NOISE MONITORING

The acoustic environment was monitored at two locations from 9th to 16th June 2015. Monitoring was performed using automatic noise data loggers (NGARA). These loggers were set to measure statistical data intervals in accordance with EPA Draft Guidance for Assessment of Environmental Factors No. 8 - Environmental Noise. Of the statistical noise level data recorded, the L_{Aeq}, L_{A1}, L_{A10}, and L_{A90} levels are reported. Additionally the monitors recorded wav files for the entire period. The wav files were used for post analysis to confirm "audibly" and characteristics of the noise emissions.

Two locations were used for the continuous noise monitors, firstly the main compost loading / unloading area outside of the Tunnel building within the Mushroom Exchange facility. The second monitor was situated near to the boundary of the residential premise located at 73 Orton Road. Whilst not the closest noise sensitive premise, this site was chosen as from information provided, this was the main premise of concern in regard to noise. Monitor locations are shown in Appendix A.

The Noise Logger was calibrated prior to and after use with a Bruel and Kjaer 4230 Calibrator. All equipment used is currently NATA calibrated. Calibration certificates are available on request. The monitored noise levels are shown graphically in Appendix B with pictures of the monitors and surrounds shown in Figure 2.

FIGURE 2 – LOGGER A – MUSHROOM EXCHANGE LOADING PAD NOISE MONITOR

FIGURE 3 – LOGGER B – FAR FIELD NOISE MONITOR

3.2 SHORT TERM OBSERVED MEASUREMENTS

Hand held observed measurements were conducted on Wednesday 10th June 2015 from 06:30 to 10:30 hours. Noise level measurements were conducted with a Svan 948 Sound and Vibration Analyser which has a current NATA calibration. The calibration certificate is available on request.

Measurements were conducted at various locations within the facility, as well as locations representing the neighbouring noise sensitive premises. Generally, measurements were short term and where possible only of the individual noise emissions from the Mushroom Exchange operations. Figure 4 outlines the measurement locations.

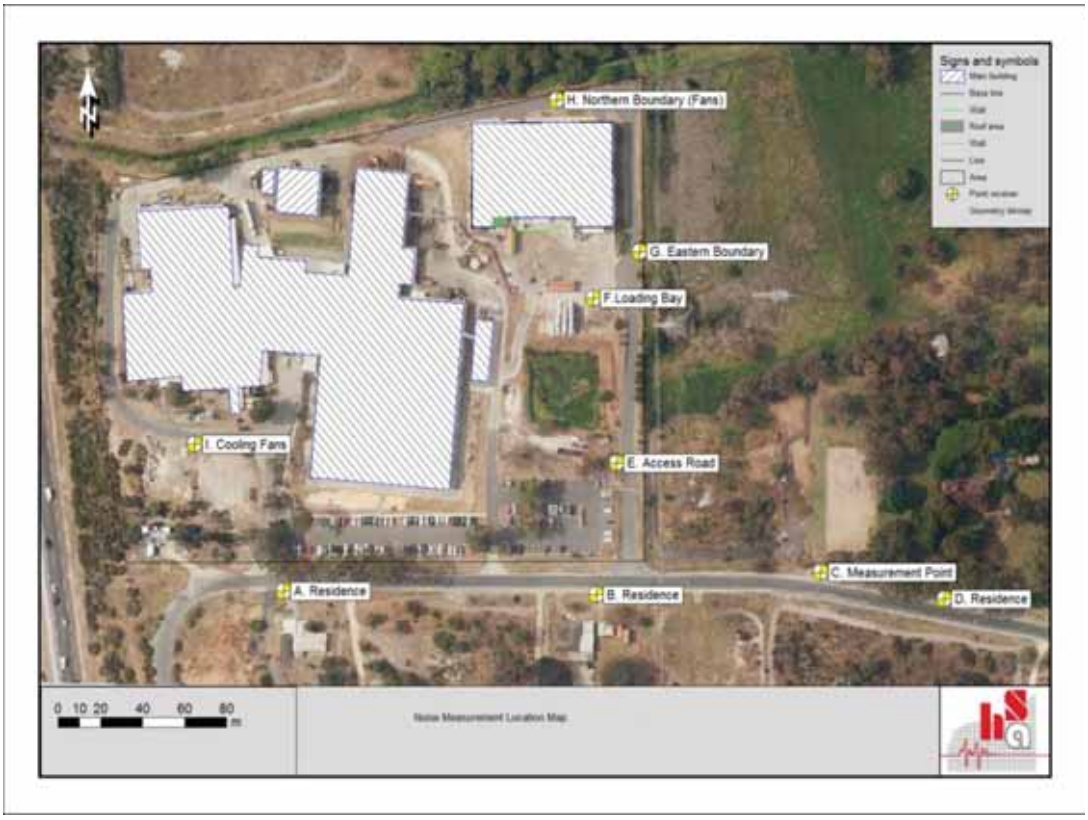


FIGURE 4 – MEASUREMENT LOCATIONS

During the measurements, the Mushroom exchange operations were considered to be at a maximum. Operations measured included:

- Delivery of compost via semi-trailer trucks (one and two trailer units);
- Front end loader, loading the conveyor system;
- Hopper and conveyor system;
- General plant; and
- Cooling Towers.

Note: During the loading of the hopper with the front end loader, there is a requirement to "shake" the bucket to release any compost sticking to the bucket. This is a hydraulic action resulting in transferred noise into the mechanical arm. The above measurements include this operation with the results noted accordingly.

4. MEASURED NOISE LEVEL RESULTS

4.1 HAND HELD OBSERVED MEASUREMENTS

Summarised noise levels for the various locations and the corresponding Mushroom Exchange activity are listed in Table 4. The overall noise descriptor of L_{A1}, L_{A10} and L_{Amax} are noted.

TABLE 4 – SHORT TERM MEASURED NOISE LEVELS dB(A)

Measurement Location	Operating Condition / Noise Source	Comment	L_{A10}	L_{A01}	L_{Amax}
A*	Cooling Tower Fans	Fans Audible/ Traffic influence	60	64	68
B*	General Plant (No Loading)	No Loading / traffic influence	52	55	56
	Loader Loading Hopper	Shaking of Bucket included	52	58	59
C	General Plant (No Loading)	No Loading / traffic influence	52	54	56
	Truck In	-	53	54	58
	Truck Unloading	-	54	55	57
	Loader Loading Hopper	Shaking of Bucket included	56	64	65
D*	Loader Loading Hopper	Shaking of Bucket included	51	55	56
E	Truck In	-	67	72	73
	Loader Loading Hopper	Shaking of Bucket included	56	64	66
F	Truck Unload	Includes Loader	76	78	83
	Loader Loading Hopper	Shaking of Bucket included	73	79	88
G	Truck Out	Includes Loader	75	79	79
	Loader Loading Hopper	Shaking of Bucket included	71	79	85
	General Plant (No Loading)	No Loading / traffic influence	55	56	56
H	Tunnel Building Fans	No Loading / traffic influence	69	-	70
I	Cooling Tower Fans	Fans Audible/ Traffic influence	71	-	72

* Denotes approximate noise sensitive premise measurement location

4.2 CONTINOUS NOISE MONITORING

A Summarised comparison of the 15 minute noise levels for the L_{A10}, L_{A1} and L_{Amax} at both monitoring locations is shown in Figures 5 to 7. For the purpose of the summary, only Wednesday 10th June is detailed, with the entire monitoring period comparison contained in Appendix B.

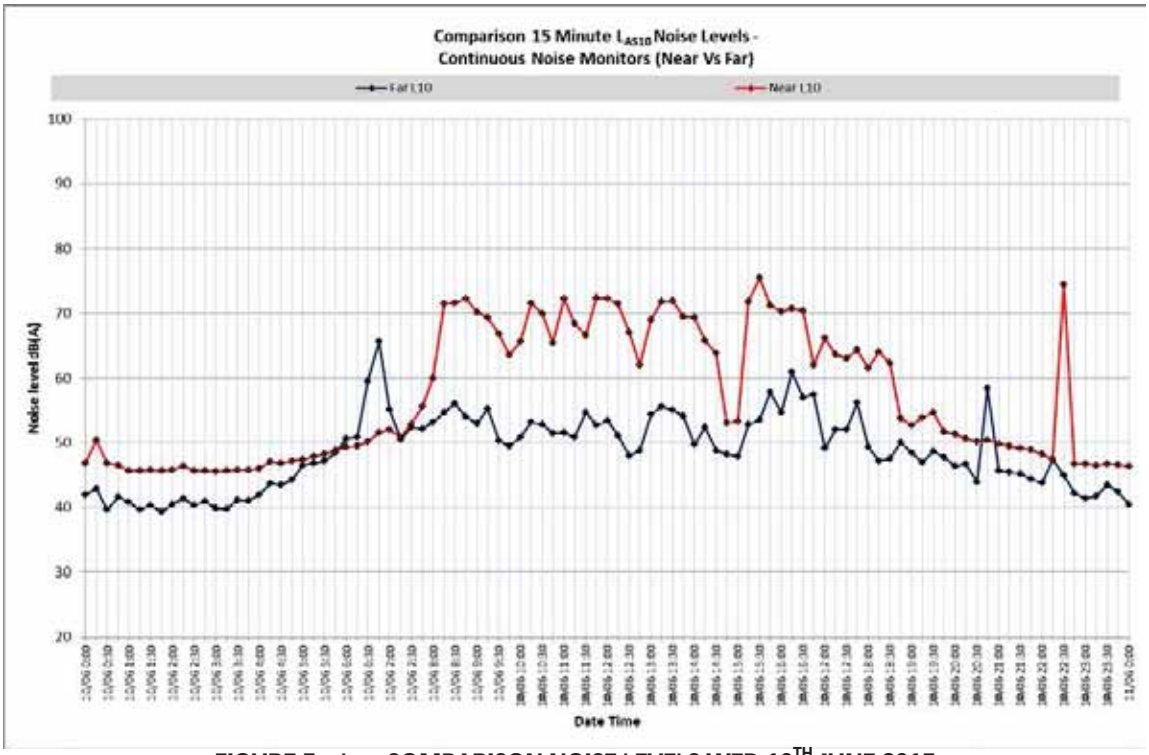


FIGURE 5 – L_{A10} COMPARISON NOISE LEVELS WED 10TH JUNE 2015

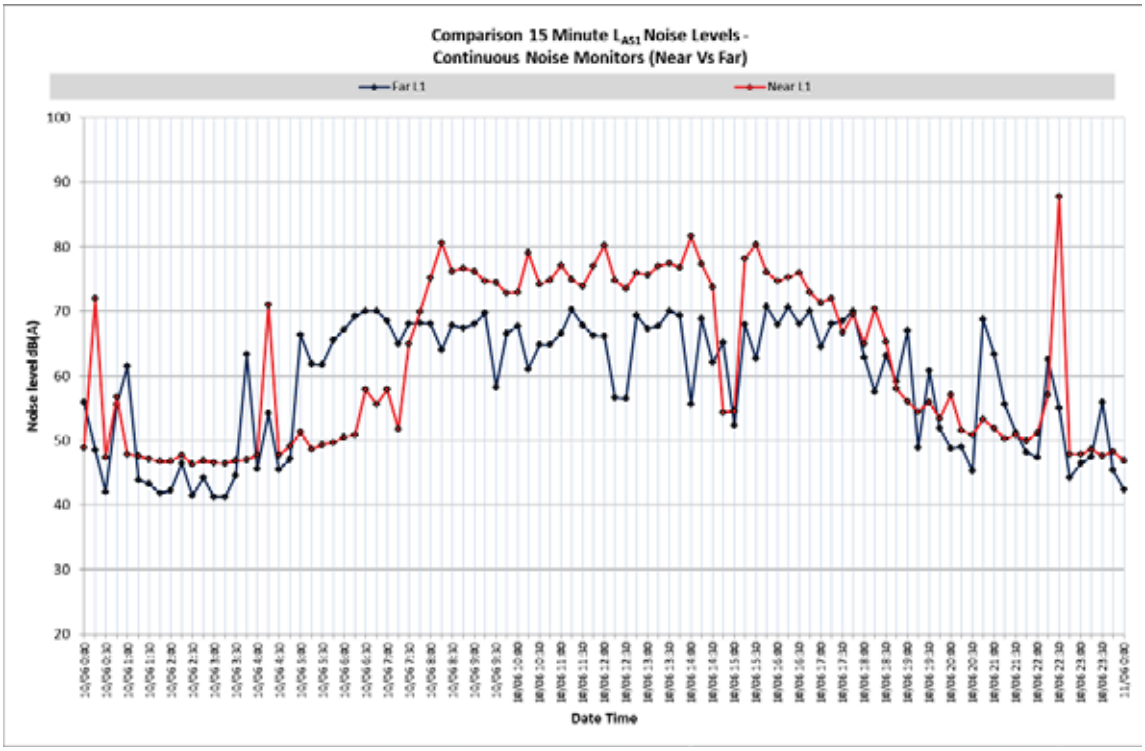


FIGURE 6 – L_{A01} COMPARISON NOISE LEVELS WED 10th JUNE 2015

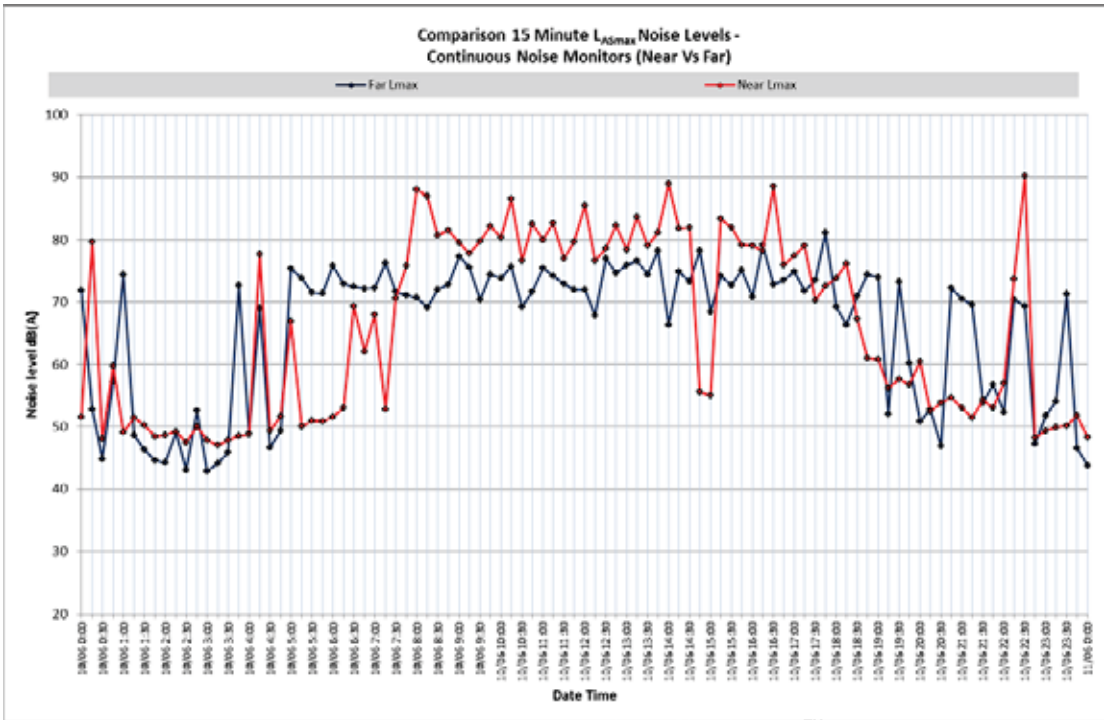


FIGURE 7 – L_{AMAX} COMPARISON NOISE LEVELS WED 10TH JUNE 2015

5. CALCULATED NOISE LEVELS

Noise emissions at the nearest neighbouring residential premises, due to noise associated with the Mushroom Exchange facility, were modelled using the computer programme SoundPlan. Due to the influence of ambient (traffic) noise, as per the regulatory requirements (Regulation7), noise emissions from the Mushroom Exchange were measured at a closer distance with these measured noise levels being used to construct the predictive noise model.

Sound power levels used for the calculations are based on measured sound pressure levels of the various plant and equipment during the site visit.

The modelling of noise levels has been based the sound power levels for the noise sources contained in Table 5.

TABLE 5 – SOURCES SOUND POWER LEVELS

Element Name	Sum dB(A)	
	L_{A10}	L_{Amax}
Truck In	87	93
Loader (At Hopper)	100	112
Hopper and Conveyor (No Loader)	100	-
Tunnel Building Fans	93	-
Tunnel Building Exhaust Fan (Attenuated)	79	-
Sump Pump	96	-
Growing Room Cooling Towers	80	-
Main Cooling Towers (West)	99	-
Loading Dock Chillers	87	-
Refrigeration Truck (Chiller Unit)	90	-
Forklift	90	-

Based on noise emissions from the above equipment, various operating scenarios have been developed. These scenarios represent periods of worst case noise emissions for the operations including:

Scenario 1 Night Operations (L_{A10})

- Fixed Plant:
  - Tunnel Building Fans x 3
  - Tunnel Building Exhaust Fan (Attenuated) x 1
  - Sump Pump x 1
  - Growing Room Cooling Tower x 1
  - Main Cooling Tower x 1
  - Loading Dock Chillers x 1
- Refrigerator Truck x 1

Scenario 2 Day Operations (No Compost Delivery) (L_{A10})

- Fixed Plant:
  - Tunnel Building Fans x 3
  - Tunnel Building Exhaust Fan (Attenuated) x 1
  - Sump Pump x 1
  - Growing Room Cooling Tower x 1
  - Main Cooling Tower x 1
  - Loading Dock Chillers x 1
- Truck Delivery x 1
- Forklifts x 2
- Loader x 1

Scenario 3 Day Operations (Compost Delivery Wednesday Only) (L_{A10})

- Fixed Plant:
  - Tunnel Building Fans x 3
  - Tunnel Building Exhaust Fan (Attenuated) x 1
  - Sump Pump x 1
  - Growing Room Cooling Tower x 1
  - Main Cooling Tower x 1
  - Loading Dock Chillers x 1
- Hopper and Conveyor System
- Loader x 1
- Truck Delivery (Compost) x 1
- Forklifts x 2

Additional to the above scenarios, two more operating parameters were modelled. Analysis of the measured noise levels associated with the truck movement and the shaking of the front end loader bucket during the hopper loading showed that the time noise was present for these operations would not be considered under the L_{A10} criteria. Therefore the two additional scenarios are as follows:

Scenario 4 Day Operations – Truck Movements on Access Road (L_{A1})

- Truck movement on Access Road

Scenario 5 Day Operations – Loader "Banging" of bucket (L_{A1})

- Front End Loader – Bucket movement

It is noted that the Mushroom Exchange has some diversity in operations and it is unlikely that all equipment would be operating at the same time, as some items may not be in use. However, to provide a conservative assessment, the calculated operating scenario includes all items operating at the same time.

Modelling does not allow for the inclusion reversing alarms noise emissions. Whilst it is a recommendation that all equipment on site be fitted with the broadband alarms, information from the Mushroom Exchange is that these broadband alarms are not deemed to be safe, having being previously trialled on site. This is due to the interaction between pedestrians and the mobile equipment, with the broadband alarms not providing sufficient warning for pedestrians.

Based on the site visit and measurements, we believe that there are no other significant noise sources and hence, no other noise sources have been considered for this assessment.

The following input data was used in the calculations:

a) Supplied Drawings and source locations, shown in part in Figure 7.
b) Sound Power Levels listed in Table 5.
c) Ground Absorption of 0.65

FIGURE 7 – SOURCE LOCATION MAP

Weather conditions for modelling were as stipulated in the Environmental Protection Authority's "*Draft Guidance for Assessment of Environmental Factors No. 8 – Environmental Noise"* and for the day and night periods are as listed in Table 6.

TABLE 6 – WEATHER CONDITIONS

Condition	Day	Night
Temperature	20°C	15°C
Relative humidity	50%	50%
Pasquill Stability Class	E	F
Wind speed	4 m/s*	3 m/s*

* From sources, towards receivers.

6. RESULTS

Calculated noise levels associated with noise emissions from the various activities for the Mushroom Exchange, are summarised below in Table 7. The calculated noise contour plots are contained in Appendix C.

TABLE 7 – CALCULATED NOISE LEVELS AT NEAREST NEIGHBOURS

Location	Calculated Noise Level, dB(A)				
	Scenario 1 - Base Fixed Plant (Night) L_{A10}	Scenario 2 - All Noise Sources Normal Day (Non compost loading) L_{A10}	Scenario 3 - All Noise Sources Including Loader L_{A10}	Scenario 4 - Truck In Access Road L_{A1}	Scenario 5 - Loader Only L_{A1}
A. 46 Orton Rd	48	48	48	36	45
B. 60 Orton Rd	43	43	51	47	58
C. 73 Orton Rd	33	35	48	38	56

7. ASSESSMENT

Analysis of the measured noise levels has been conducted. Generally, measured noise for the Mushroom Exchange noise emissions at far field locations were audible, although they are still influenced by background noise levels, such as freeway traffic.

Whist normal practice is to make comment on whether annoying characteristics were present, due to the critical nature of this assessment; an analysis of the annoying characteristics has been undertaken, with the evidence of the analysis included in this report.

For the determination of tonality, the short term L_{Aeq} noise measurements of individual activities were employed.

For the loader bucket movement, there is a possibility that when the bucket shakes, it could be impulsive. Therefore, analysis for this impulsiveness has been based on the detailed time histories. Figures 8 to 10 contain the analysis data for each of the representative noise sensitive premises.

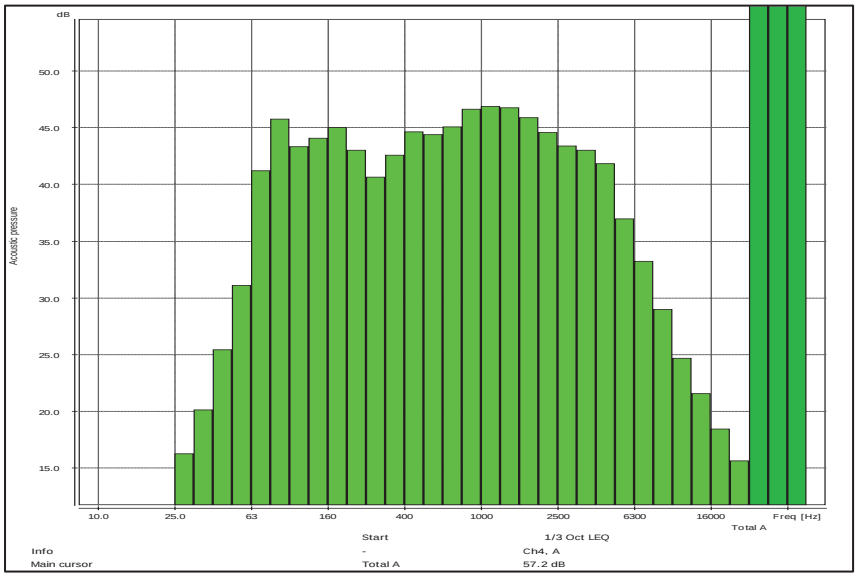
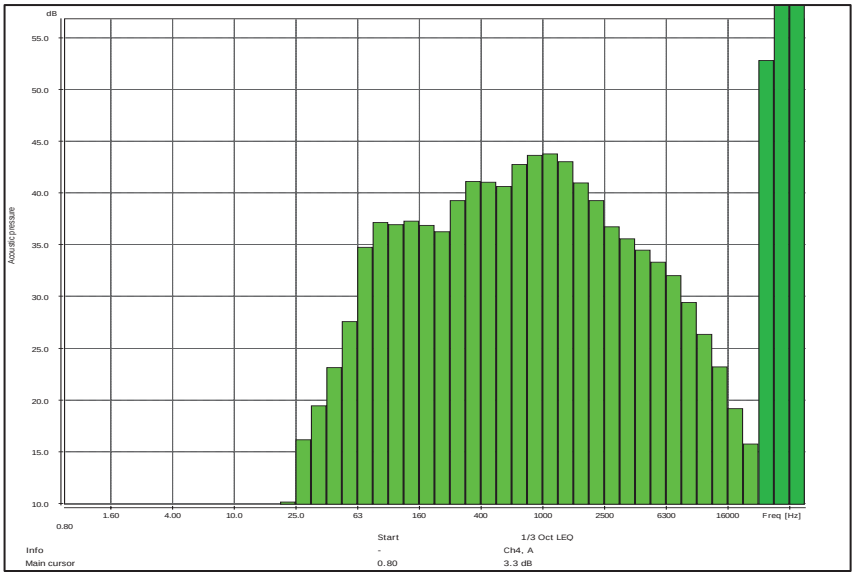


FIGURE 8 – LOCATION A – TONAL ASSESSMENT



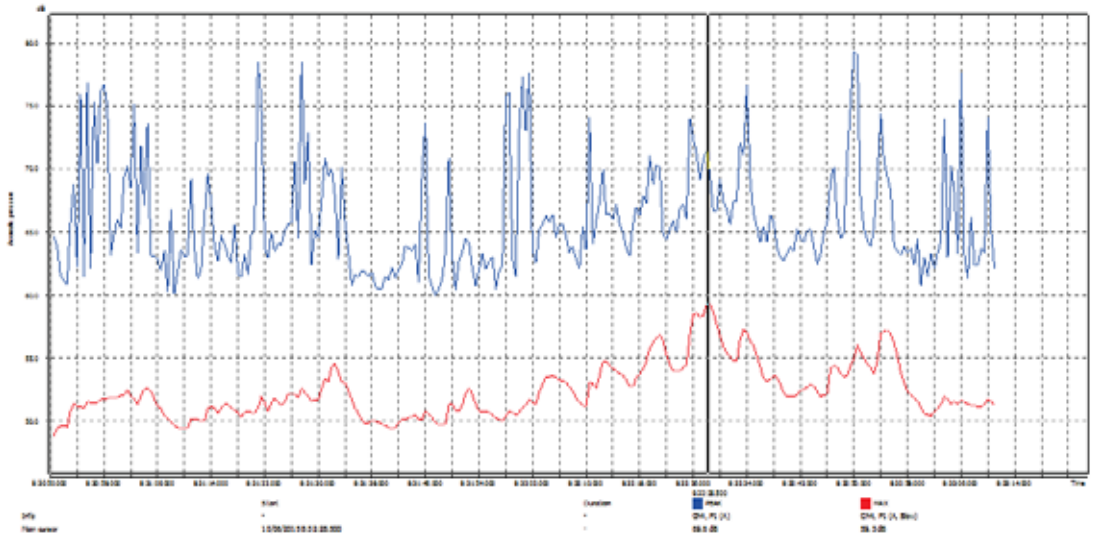


FIGURE 9 – LOCATION B – TONAL AND IMPULSIVE ASSESSMENTS

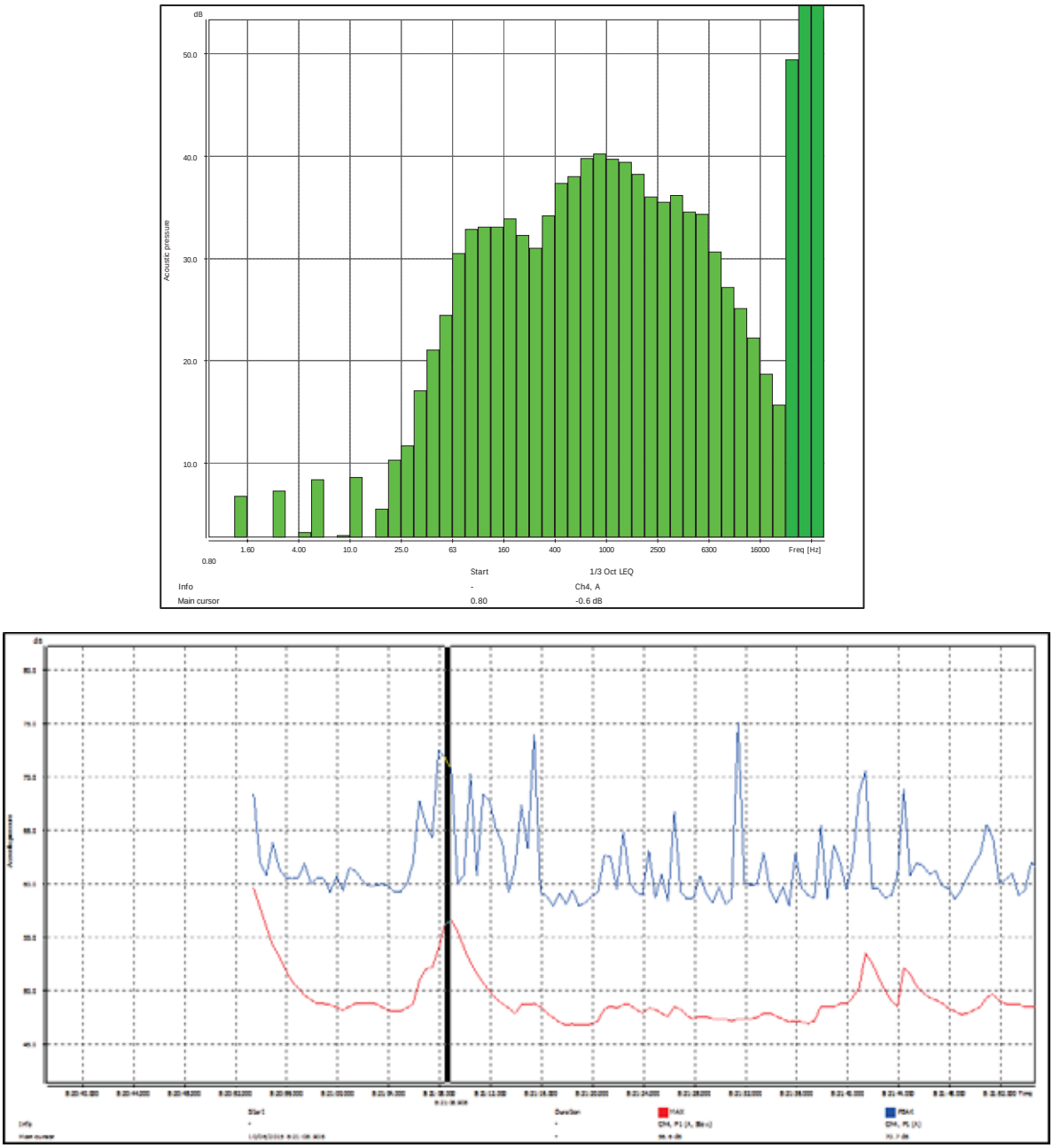


FIGURE 10 – LOCATION D – TONAL AND IMPULSIVE ASSESSMENTS

Analysis of the measured noise levels shows that it is unlikely that noise emissions would contain tonal characteristics due to the presence of traffic noise, masking the tonality. Additional, analysis of the noise associated with the loader bucket showed that noise levels would not be impulsive; hence no penalty has been applied.

Hence, Table 8 summarises the applicable Assigned Noise Levels, and assessable noise level emissions.

TABLE 8 – ASSESSMENT OF NOISE LEVELS

Receiver	Operating Condition / Scenario	Assessable Noise Level, dB(A)	Applicable Times of Day	Applicable Assigned Noise Level (dB)			Exceedance to Assigned Noise Level (dB)
				L_{A10}	L_{A01}	L_{Amax}	
A. 46 Orton Rd	Scenario 1 -Base Fixed Plant (Night) L_{A10}	48	Night	41			+7
	Scenario 2 - All Noise Sources Normal Day (Non compost loading) L_{A10}	48	Day	51	-	-	Complies
	Scenario 3 - All Noise Sources Including Loader L_{A10}	48		51	-	-	Complies
	Scenario 4- Truck In Access Road L_{A1}	36		-	61	-	Complies
	Scenario 5 - Loader Only L_{A1}	45		-	61	-	Complies
B. 60 Orton Rd	Scenario 1 -Base Fixed Plant (Night) L_{A10}	43	Night	37	-	-	+6
	Scenario 2 - All Noise Sources Normal Day (Non compost loading) L_{A10}	43	Day	47	-	-	Complies
	Scenario 3 - All Noise Sources Including Loader L_{A10}	51		47	-	-	+4
	Scenario 4 - Truck In Access Road L_{A1}	47		-	57	-	Complies
	Scenario 5 - Loader Only L_{A1}	58		-	57	-	+1
C. 73 Orton Rd	Scenario 1 -Base Fixed Plant (Night) L_{A10}	33	Night	37	-	-	Complies
	Scenario 2 - All Noise Sources Normal Day (Non compost loading) L_{A10}	35	Day	47	-	-	Complies
	Scenario 3 - All Noise Sources Including Loader L_{A10}	48		47	-	-	+1
	Scenario 4 - Truck In Access Road L_{A1}	38		-	57	-	Complies
	Scenario 5 - Loader Only L_{A1}	56		-	57	-	Complies

8. DISCUSSION

It is noted that, both the measured noise levels and calculated noise levels correlate. There is a variation of around 1 dB lower for the calculated noise levels, which after investigation, is accounted for by the influence of background (i.e. measured noise levels would be 1 dB less when adjusted for traffic influence).

Exceedances in noise levels were assessed for different areas of the facility noise emissions. These noise sources and the respective noise sensitive receiver are explored further, with recommendations on noise control options included.

Location A

Assessable noise levels for this location result in an exceedance of 7 dB(A) for the night period. For other regulatory times compliance is achieved. Analysis of the noise levels show the main cooling towers at the Mushroom Exchange are highest contributing noise source.

Noise control in the form of a barrier is recommended for this area. Information provided is that there are only two of the towers in operations. Hence, the barrier would be required to extend approximately 1m above the top of the two operating cooling towers. Figure 11 details the location of the barrier.

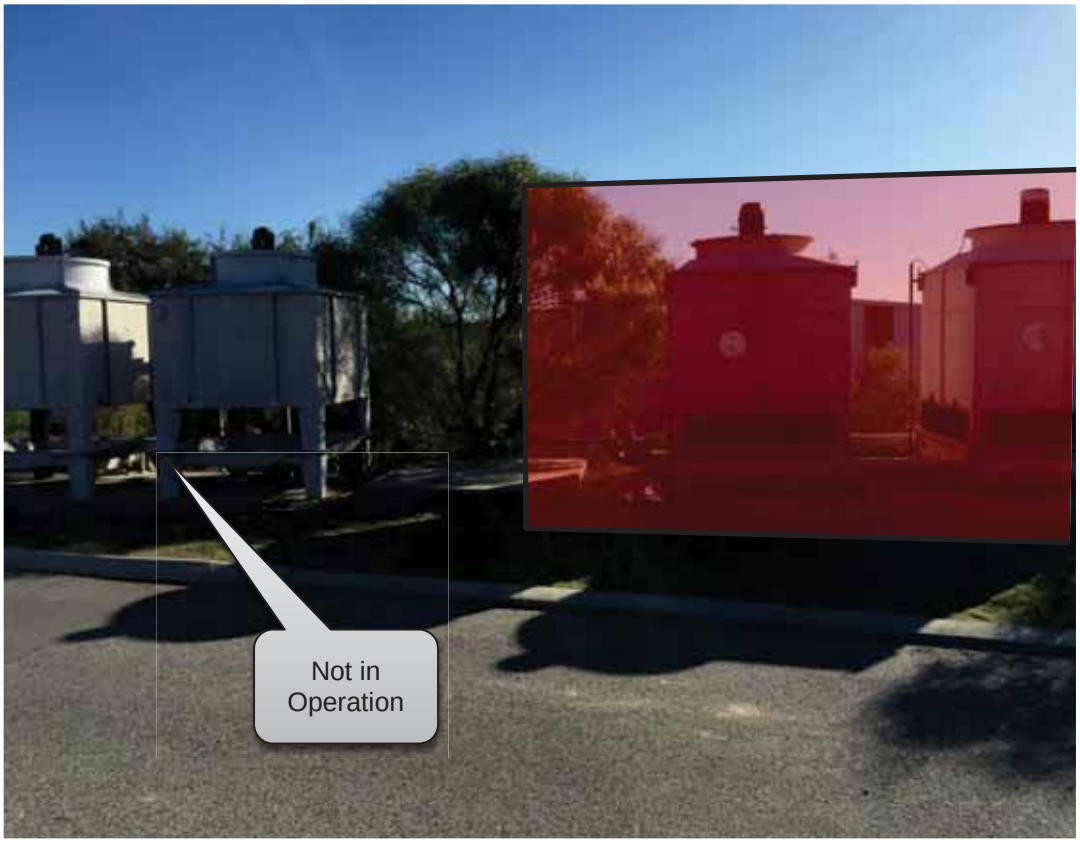


FIGURE 11 – COOLING TOWER BARRIER

Location B

Assessable noise levels for this location result in an exceedance of 6 dB(A) for the night period and 4 dB(A) for the day period during times of compost delivery / loading.

As for Location A, analysis of the noise levels show the main cooling towers at the Mushroom Exchange are highest contributing noise source during the night period. Therefore noise control in the form of a barrier, as recommended, would ensure the same reduction in noise levels for this location.

For noise emissions associated with the Mushroom Exchange compost delivery / loading operations, which normally occur on a Wednesday, noise levels exceed the assigned criteria by 4 dB(A). Investigations show the combination of front end loader operations and the hopper / conveyor are the cause of the exceedance.

Investigations are being conducted into the enclosure of the hopper and conveyor system for the compost loading area. Once enclosed the hopper is loader directly via a “walking deck” truck which eliminates the need for the front end loader. With the reduction of noise emissions from the usage of the front end loader and the attenuation of the hopper and conveyor noise emissions, noise levels would be reduced at this location to a level where compliance would be achieved.

Modelling has also been carried out to include a barrier 4.8 m high along the southern end of the concrete loading area. The height of 4.8 m has been chosen as this is the same as two stacked sea containers. With the inclusion of this barrier, noise levels would be reduced at this location to a level where compliance would be achieved.

Either of the noise control options provided for the composting loading area would result in noise emissions being reduced to a level where compliance is achieved at this location.

Location C

Assessable noise levels for this location result in an exceedance of 1 dB(A) for the day period during times of compost delivery / loading. For other regulatory times and operations, compliance is achieved.

As for location B, investigations show the combination of front end loader operations and the hopper / conveyor are the cause of the exceedance.

The preferable noise control option is the enclosure of the hopper / conveyor and the removal of the front end loader by utilising walking deck trucks to load directly into the hopper as outlined for Location B.

To provide an alternative to the enclosing of the loading equipment, modelling has been carried out to include a barrier 4.8m high along the southern end of the concrete loading area. The height of 4.8 m has been chosen as this is the same a two stacked sea containers. With the inclusion of this barrier, noise levels would be reduced at this location to a level where compliance would be achieved.

FIGURE 12 SHOWS THE LOCATION OF THE BARRIER REQUIRED FOR THE LOADING AREA

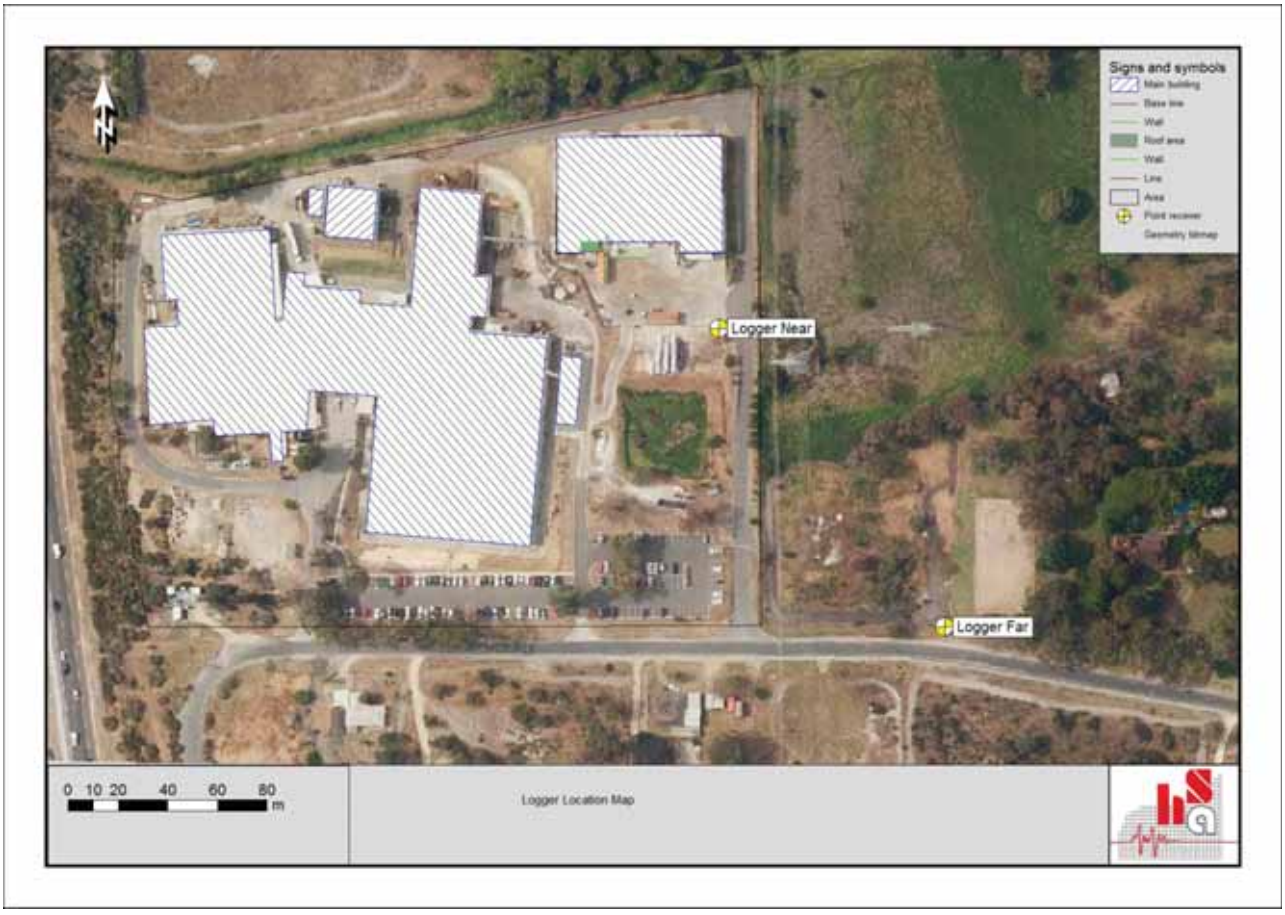
As for Location B advice, either of the noise control options provided for the composting loading area would result in noise emissions being reduced to a level where compliance is achieved at this location.

APPENDIX A

FIGURE A1 – SITE LAYOUT
FIGURE A2 – MONITORING LOCATION

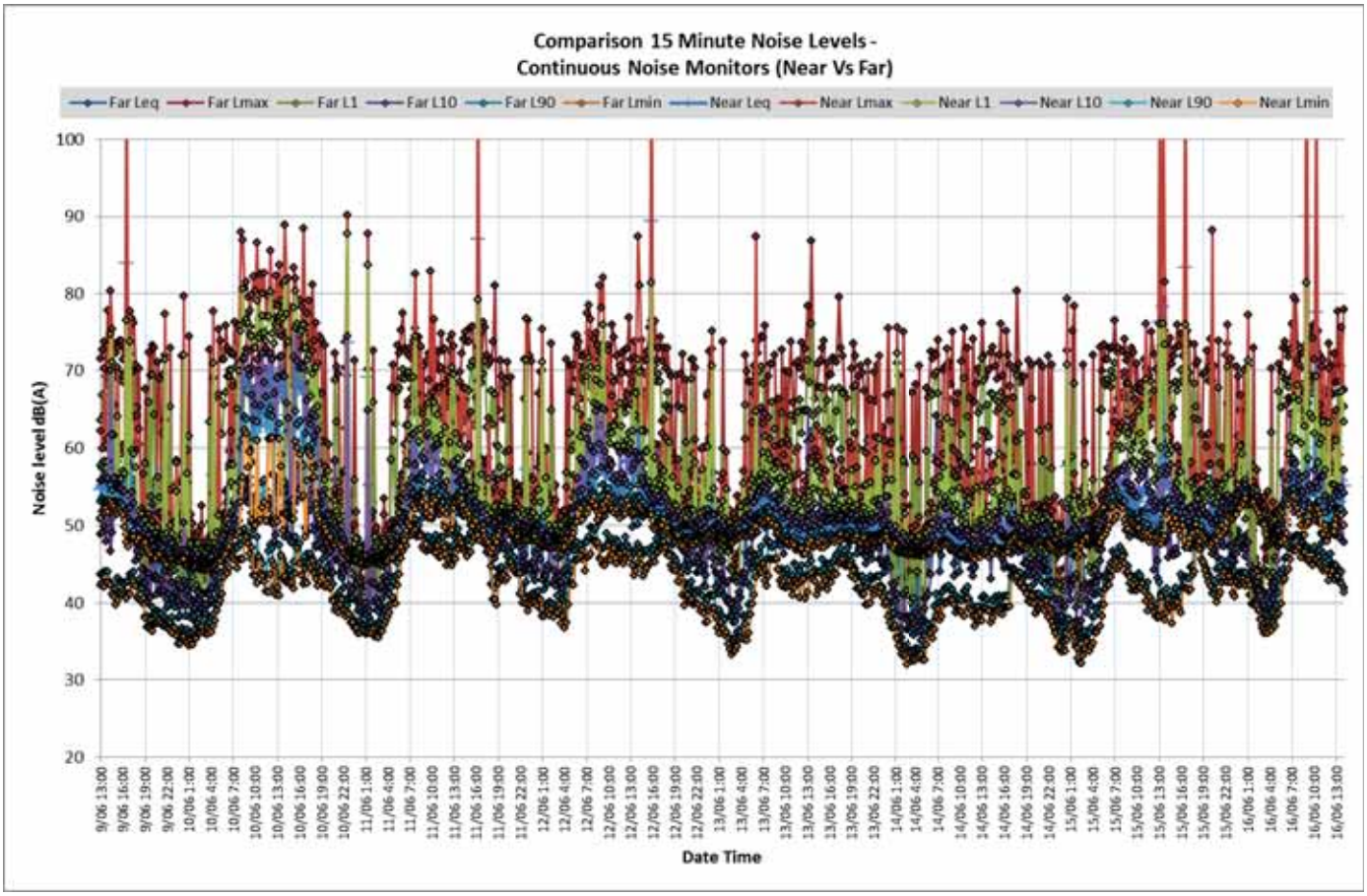
FIGURE A1 – SITE LAYOUT

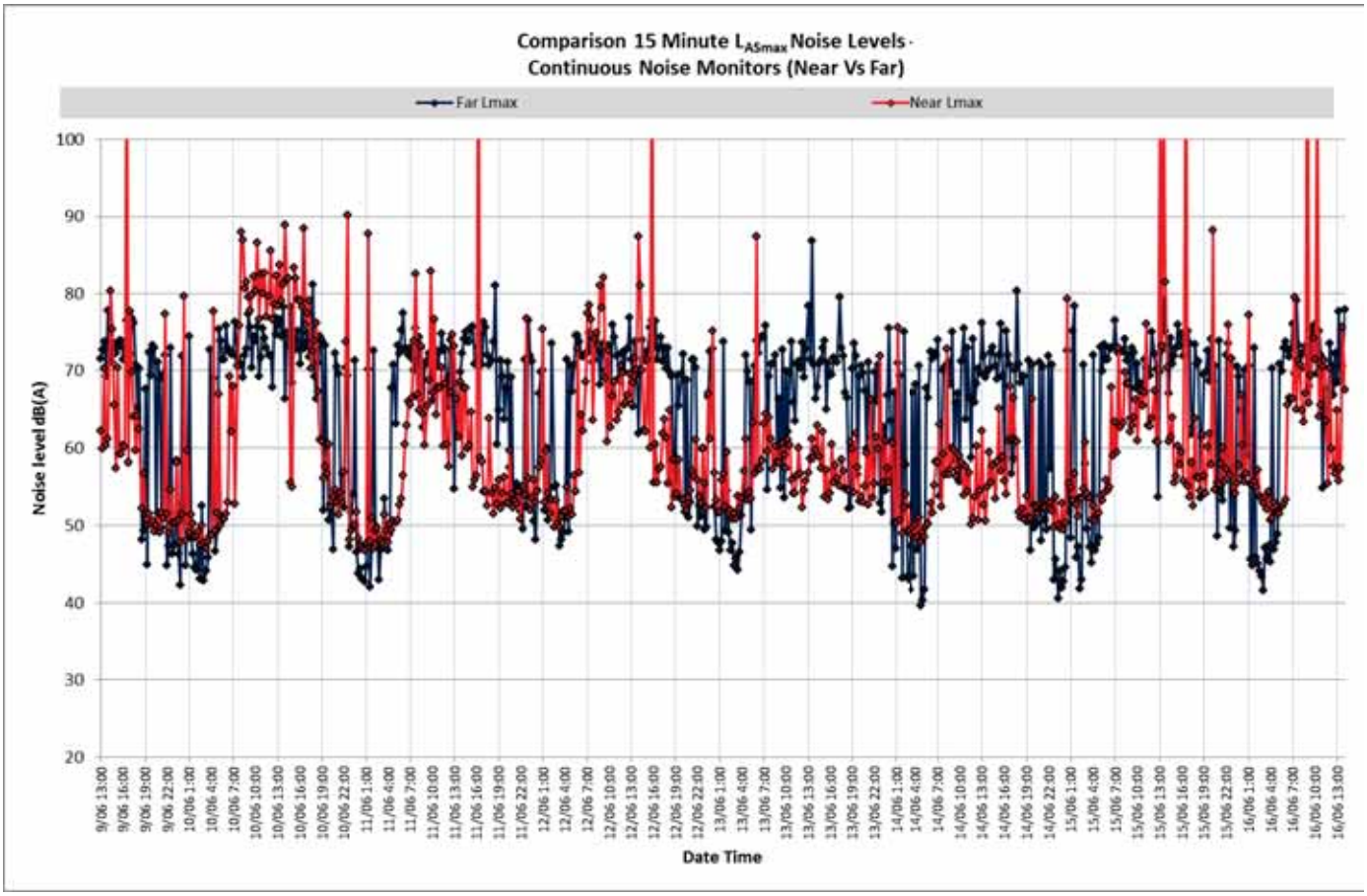
FIGURE A2 – MONITOR LOCATION

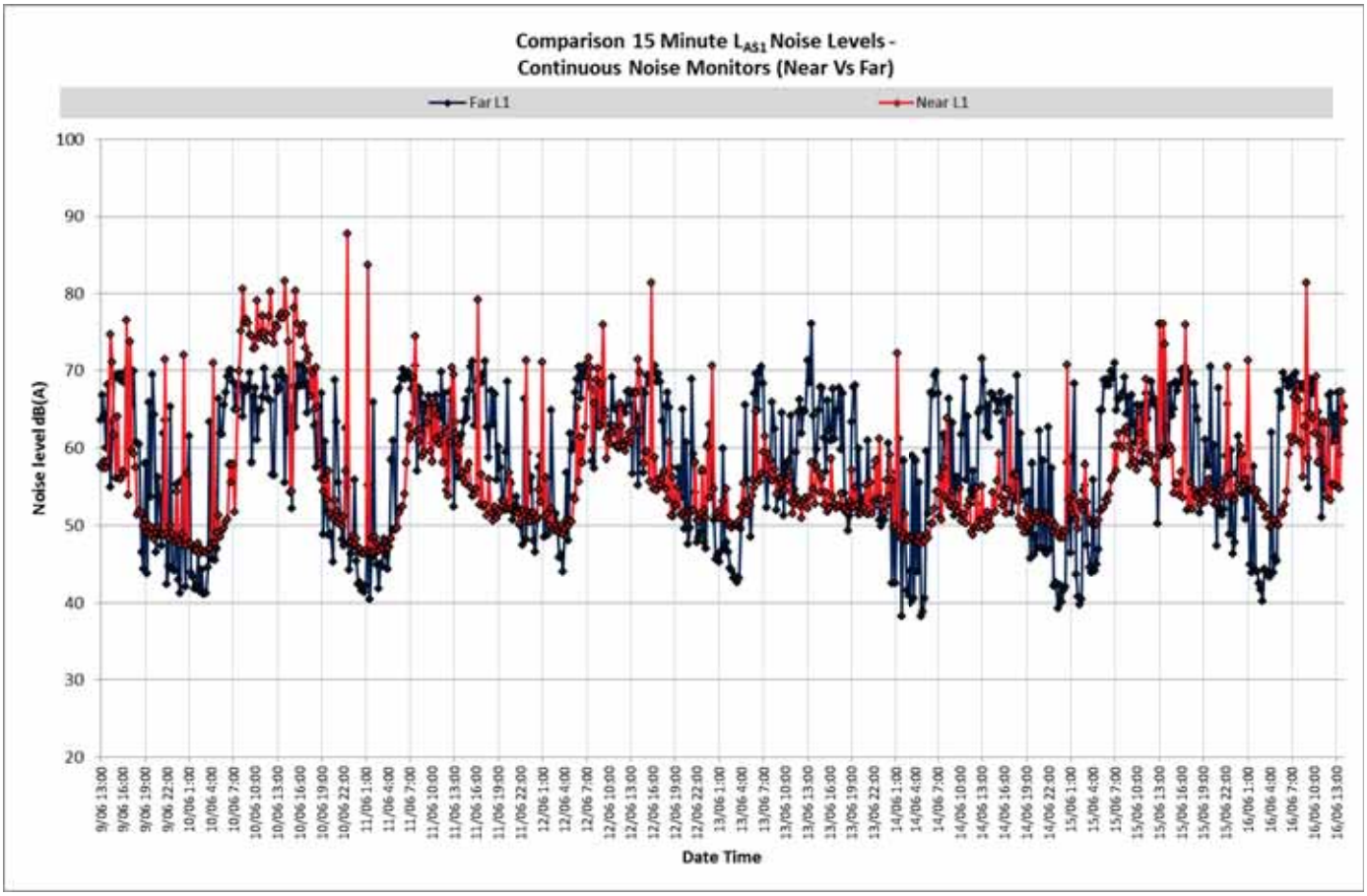


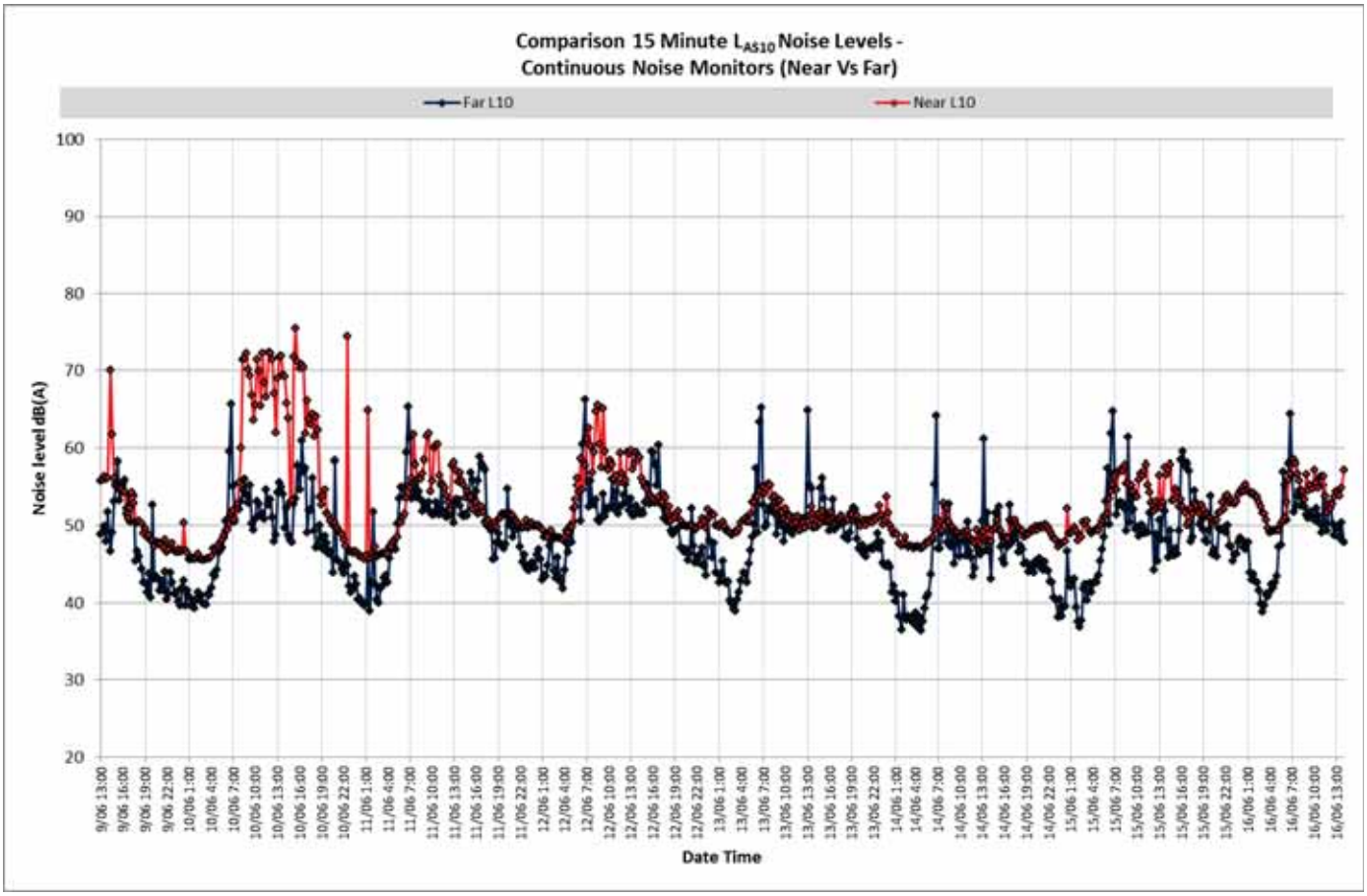
APPENDIX B

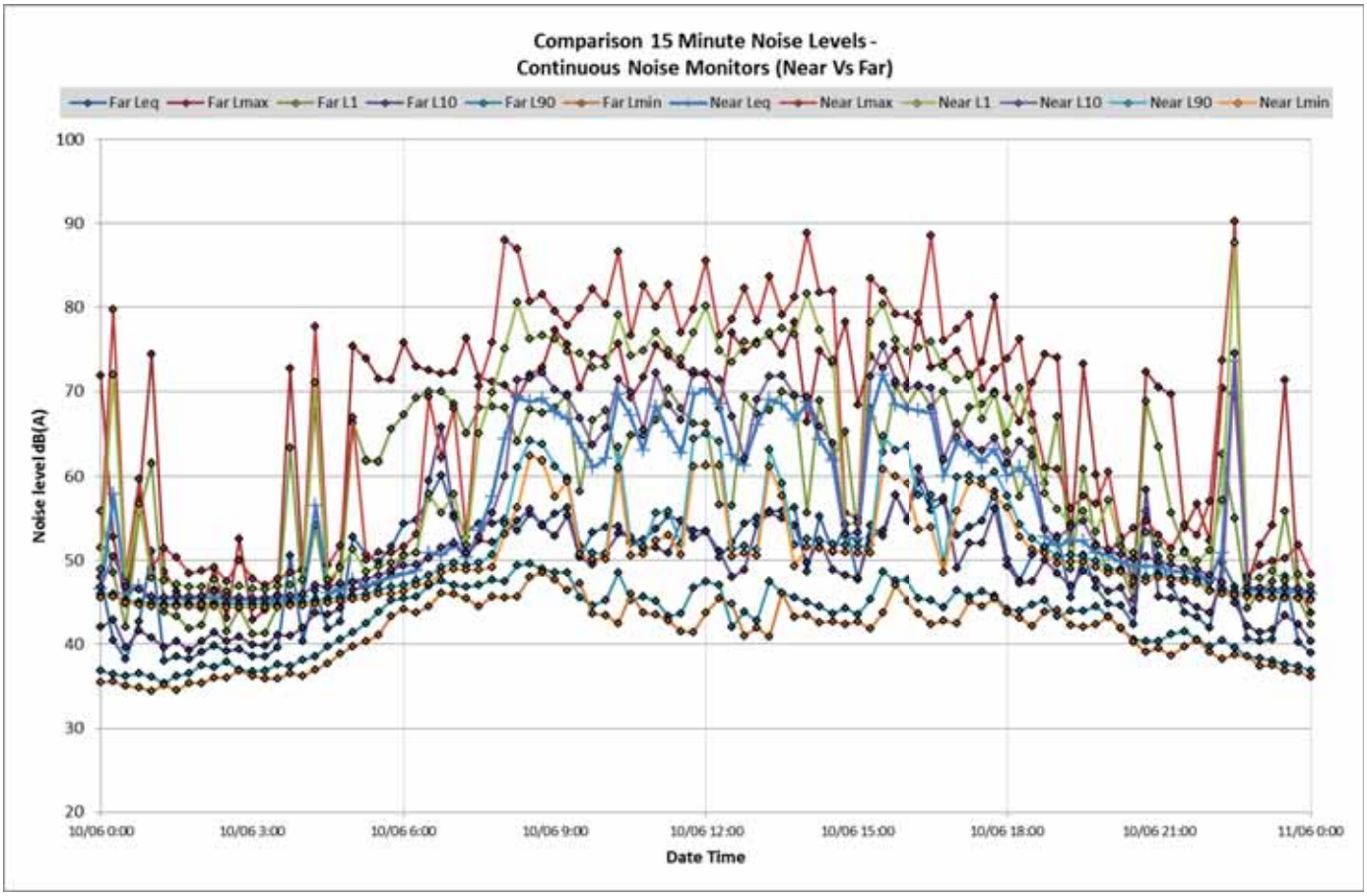
NOISE MONITORING RESULTS

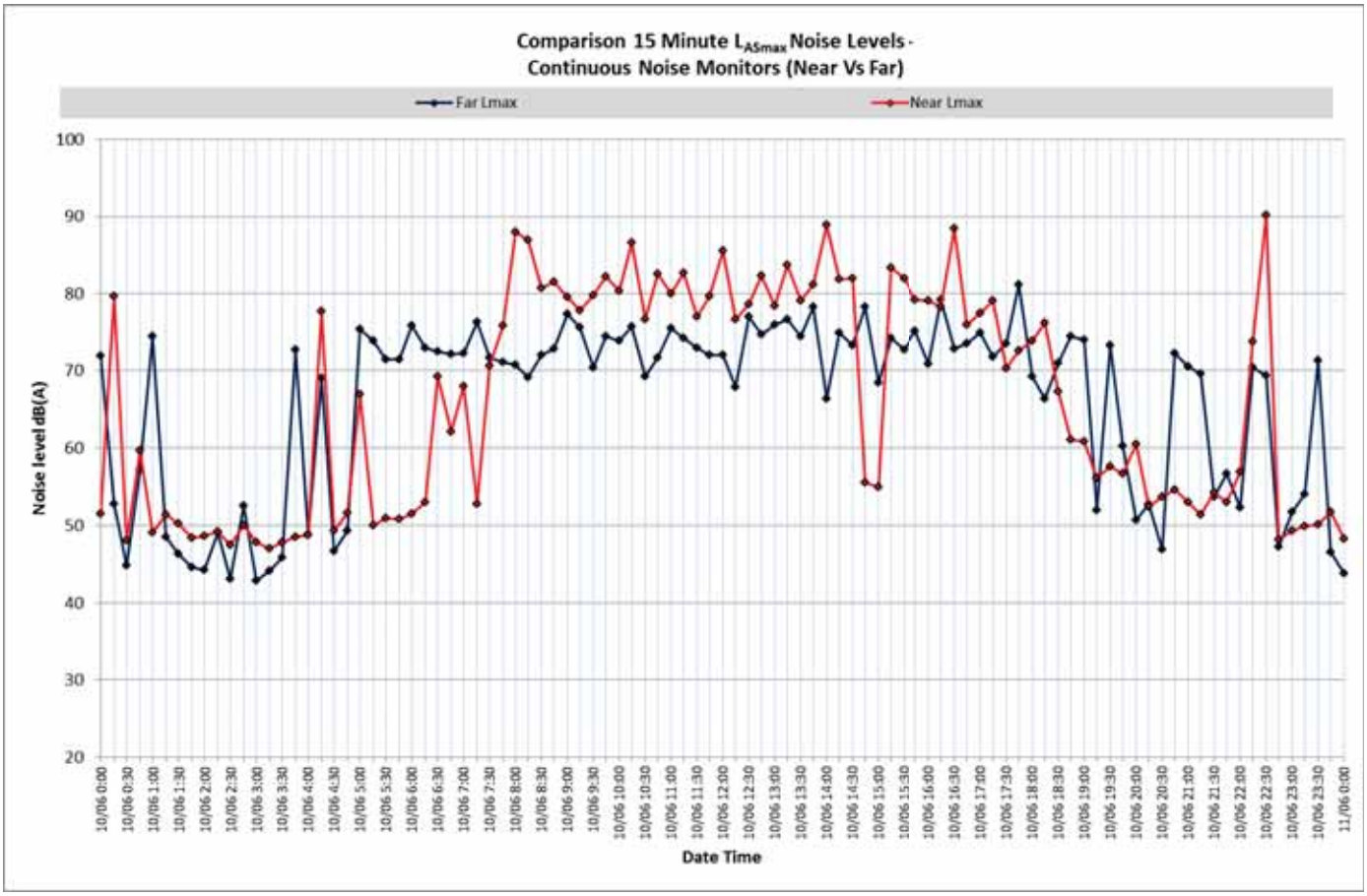

Comparison 15 Minute Noise Levels -
Continuous Noise Monitors (Near Vs Far)
Far Leq
Far Lmax
Far L1
Far L10
Far L90
Far Lmin
Near Leq
Near Lmax
Near L1
Near L10
Near L90
Near Lmin
Noise level dB(A)
100
90
80
70
60
50
40
30
20
Date Time

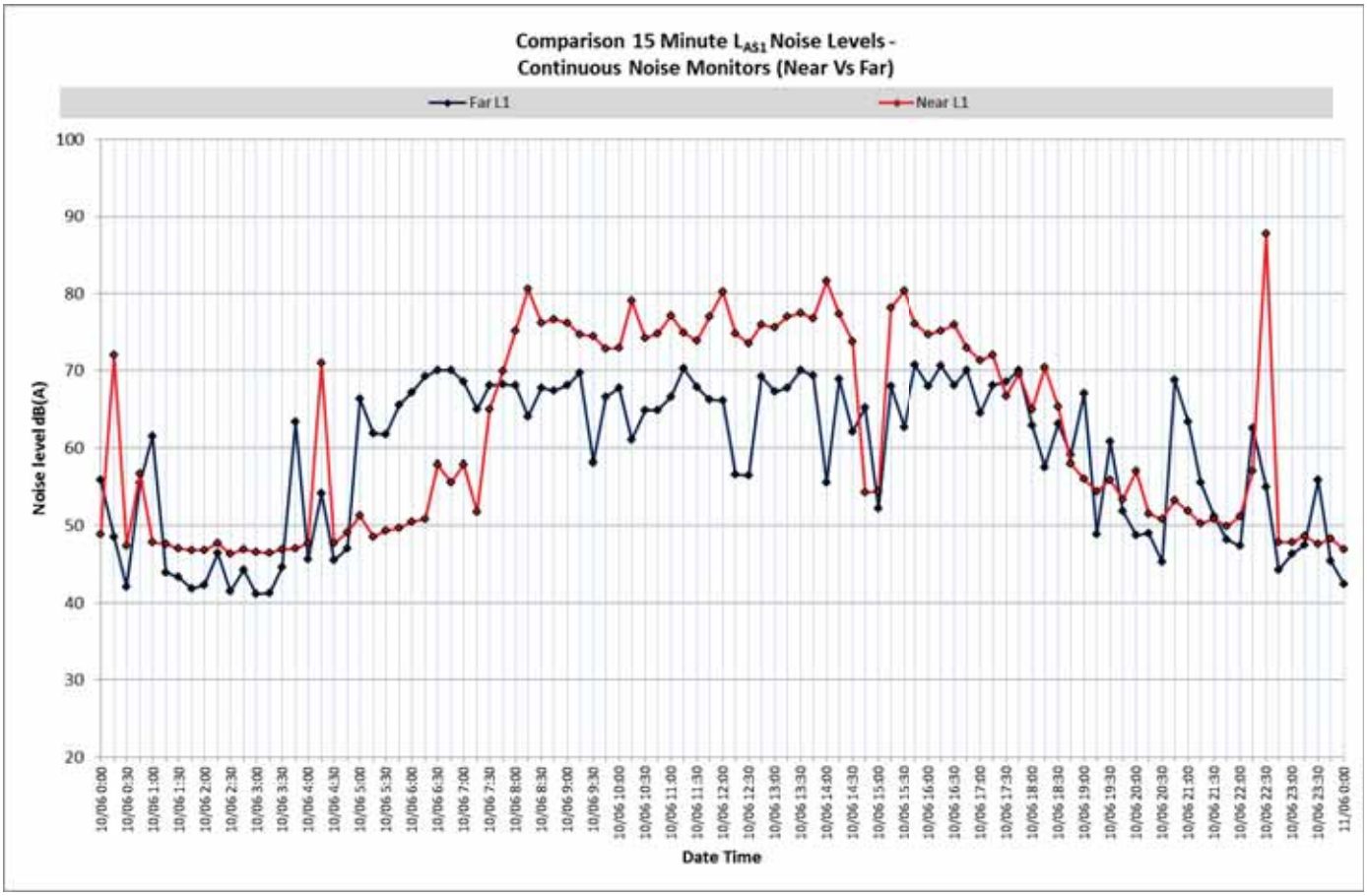

Comparison 15 Minute L_{ASmax} Noise Levels -
Continuous Noise Monitors (Near Vs Far)
Far Lmax
Near Lmax
Noise level dB(A)
100
90
80
70
60
50
40
30
20
Date Time

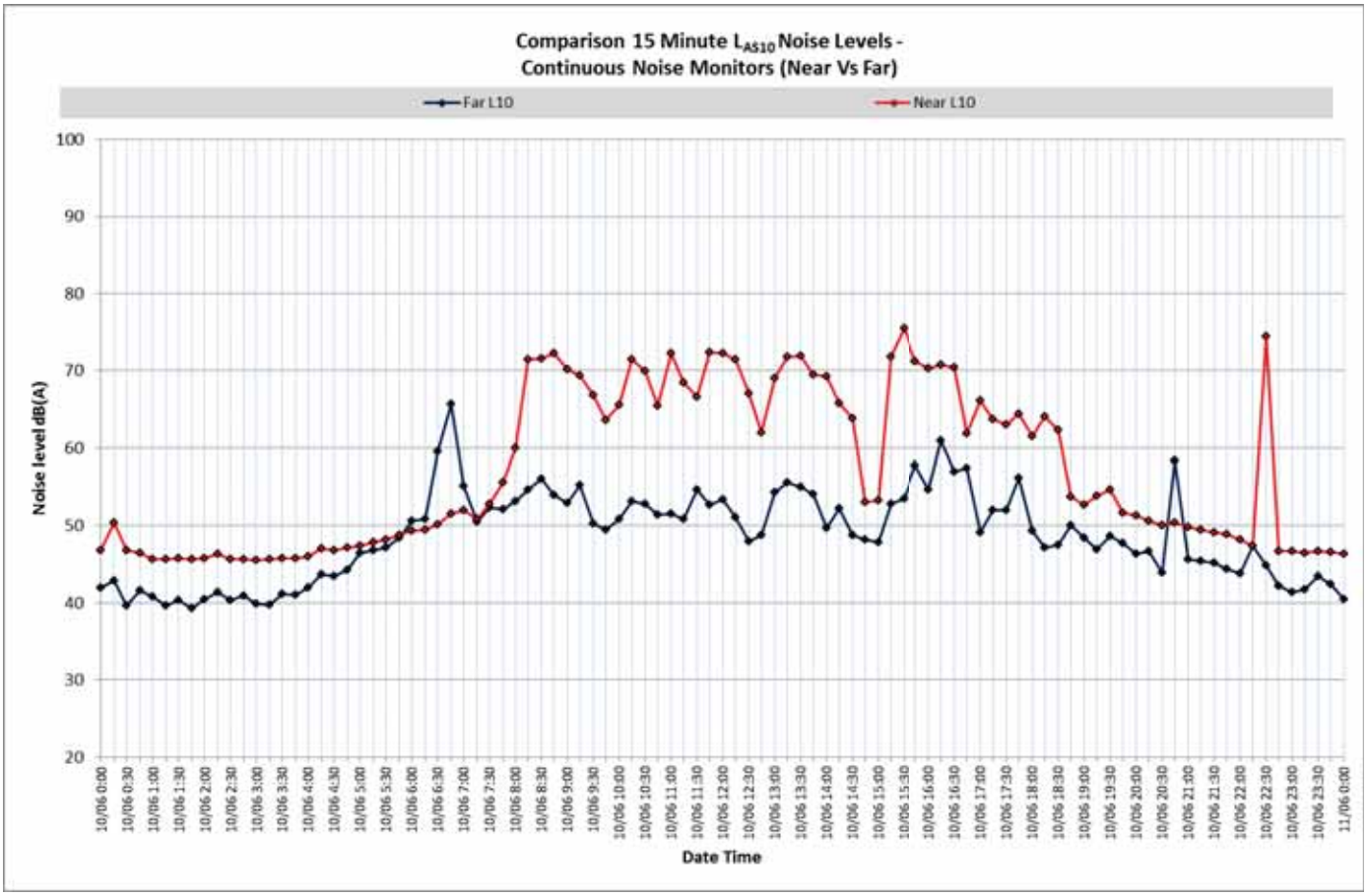

Comparison 15 Minute L_{A51} Noise Levels -
Continuous Noise Monitors (Near Vs Far)
Far L1
Near L1
Noise level dB(A)
100
90
80
70
60
50
40
30
20
Date Time


Comparison 15 Minute L_{A10} Noise Levels -
Continuous Noise Monitors (Near Vs Far)
Far L10
Near L10
Noise level dB(A)
100
90
80
70
60
50
40
30
20
Date Time


Comparison 15 Minute Noise Levels -
Continuous Noise Monitors (Near Vs Far)
Far Leq
Far Lmax
Far L1
Far L10
Far L90
Far Lmin
Near Leq
Near Lmax
Near L1
Near L10
Near L90
Near Lmin
Noise level dB(A)
100
90
80
70
60
50
40
30
20
10/06 0:00
10/06 3:00
10/06 6:00
10/06 9:00
10/06 12:00
10/06 15:00
10/06 18:00
10/06 21:00
11/06 0:00
Date Time

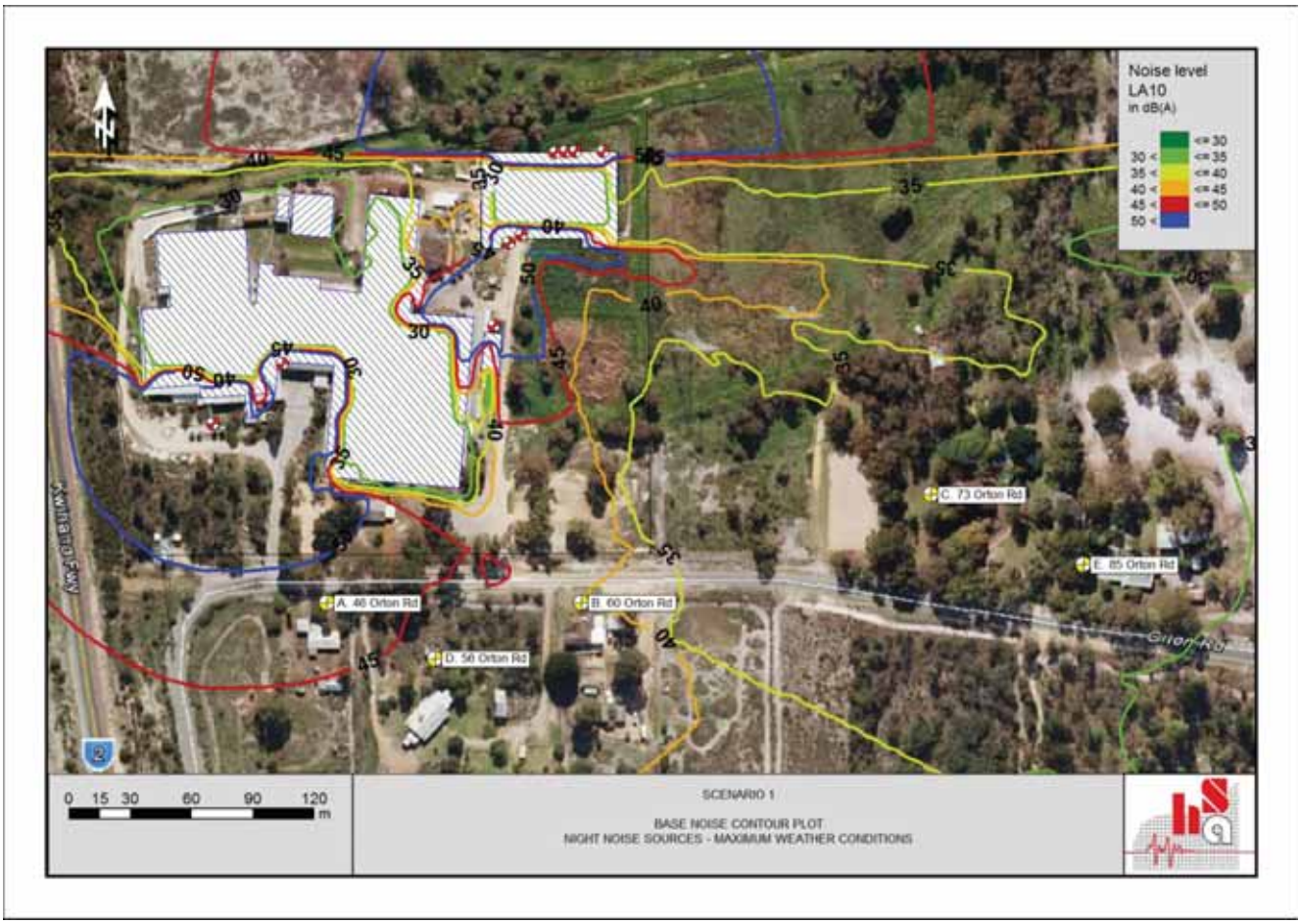

Comparison 15 Minute L_{ASmax} Noise Levels -
Continuous Noise Monitors (Near Vs Far)
Far Lmax
Near Lmax
Noise level dB(A)
100
90
80
70
60
50
40
30
20
Date Time

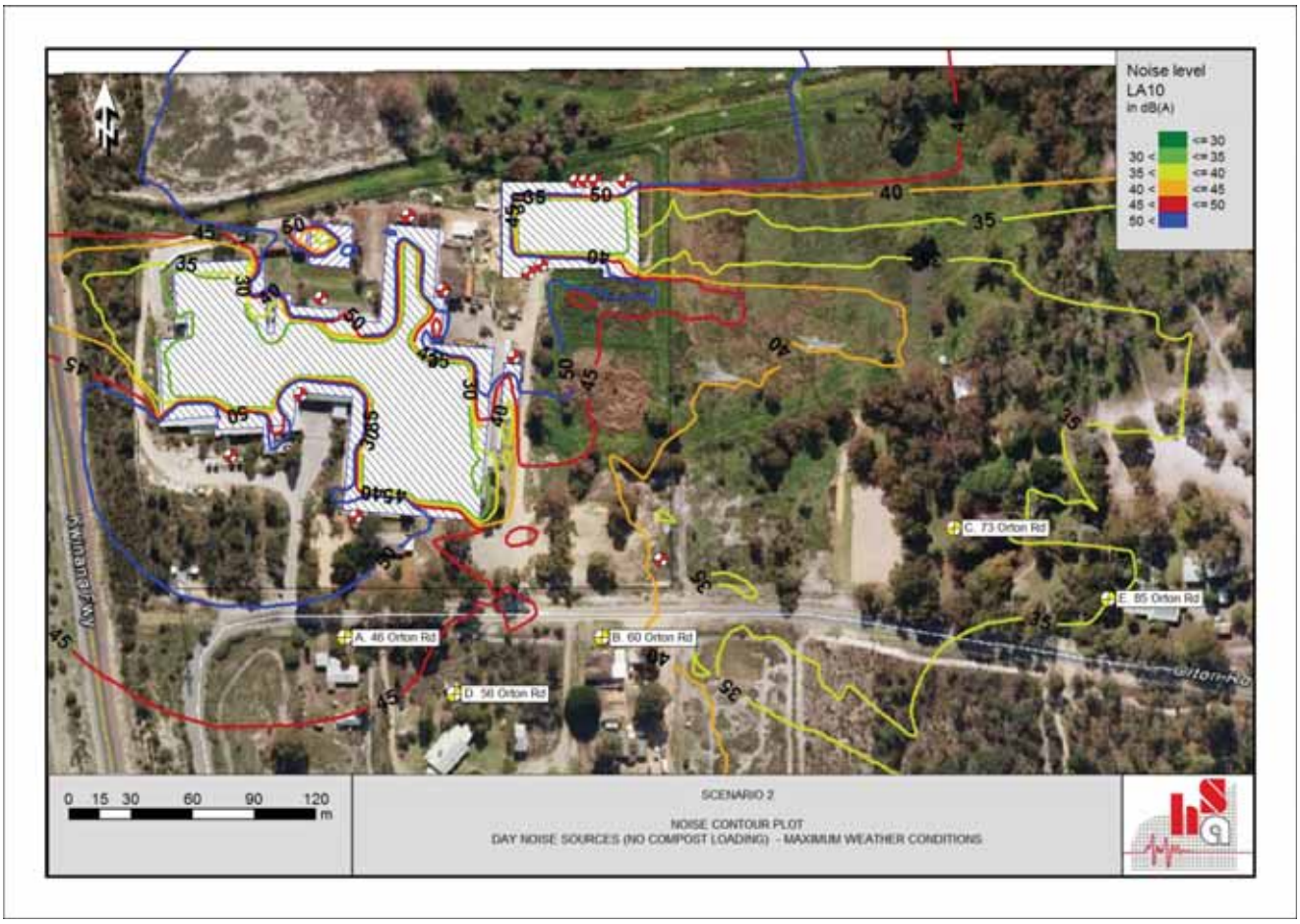

Comparison 15 Minute L_{A51} Noise Levels -
Continuous Noise Monitors (Near Vs Far)
Far L1
Near L1
Noise level dB(A)
100
90
80
70
60
50
40
30
20
Date Time


Comparison 15 Minute L_{A10} Noise Levels -
Continuous Noise Monitors (Near Vs Far)
Far L10
Near L10
Noise level dB(A)
100
90
80
70
60
50
40
30
20
Date Time

APPENDIX C

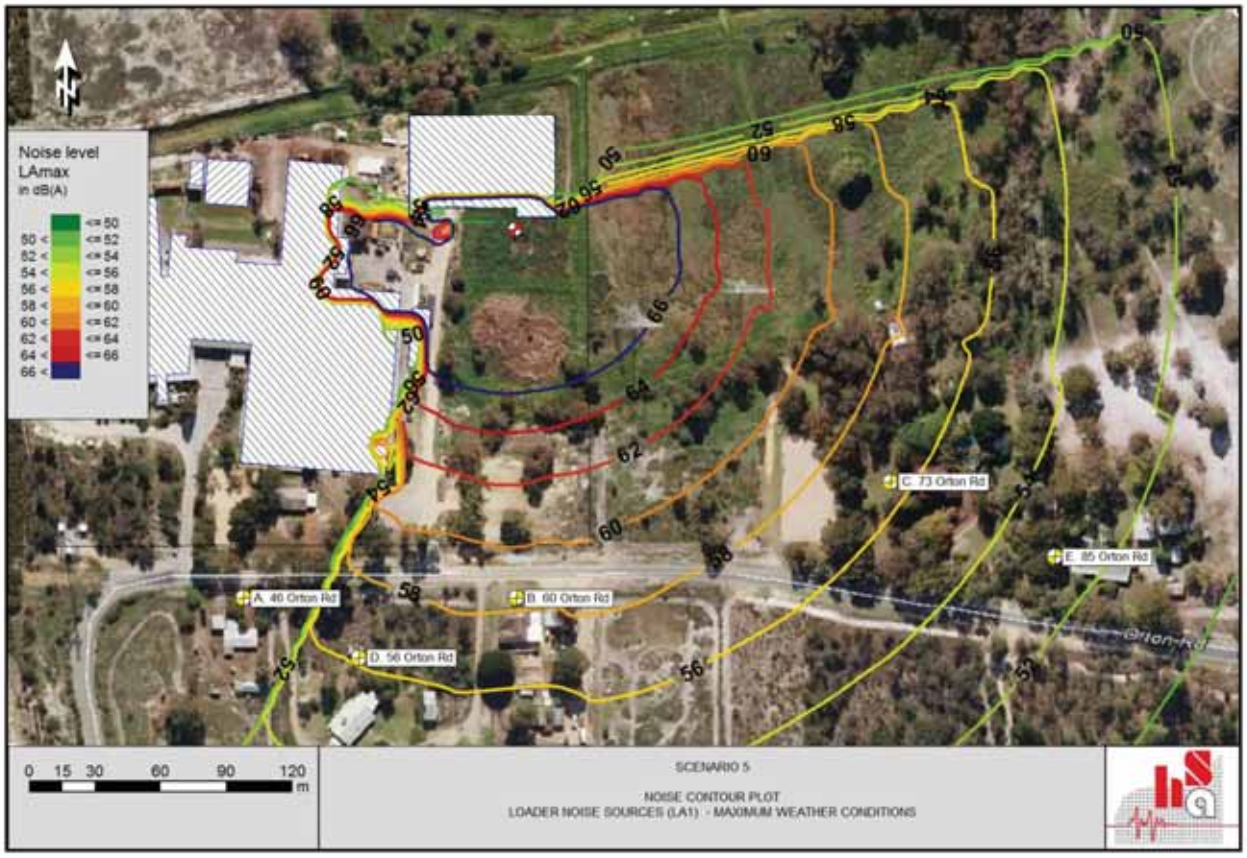
NOISE CONTOUR PLOT


Noise level
LA10
in dB(A)
<= 30
30 < <= 35
35 < <= 40
40 < <= 45
45 < <= 50
50 <
N
A. 46 Orton Rd
B. 60 Orton Rd
C. 73 Orton Rd
D. 56 Orton Rd
E. 85 Orton Rd
Princes Hwy
Green Rd
0 15 30 60 90 120
m
SCENARIO 1
BASE NOISE CONTOUR PLOT
NIGHT NOISE SOURCES - MAXIMUM WEATHER CONDITIONS


Noise level
LA10
in dB(A)
<= 30
30 < <= 35
35 < <= 40
40 < <= 45
45 < <= 50
50 <
A. 46 Orton Rd
B. 60 Orton Rd
C. 73 Orton Rd
D. 56 Orton Rd
E. 85 Orton Rd
0 15 30 60 90 120
m
SCENARIO 2
NOISE CONTOUR PLOT
DAY NOISE SOURCES (NO COMPOST LOADING) - MAXIMUM WEATHER CONDITIONS

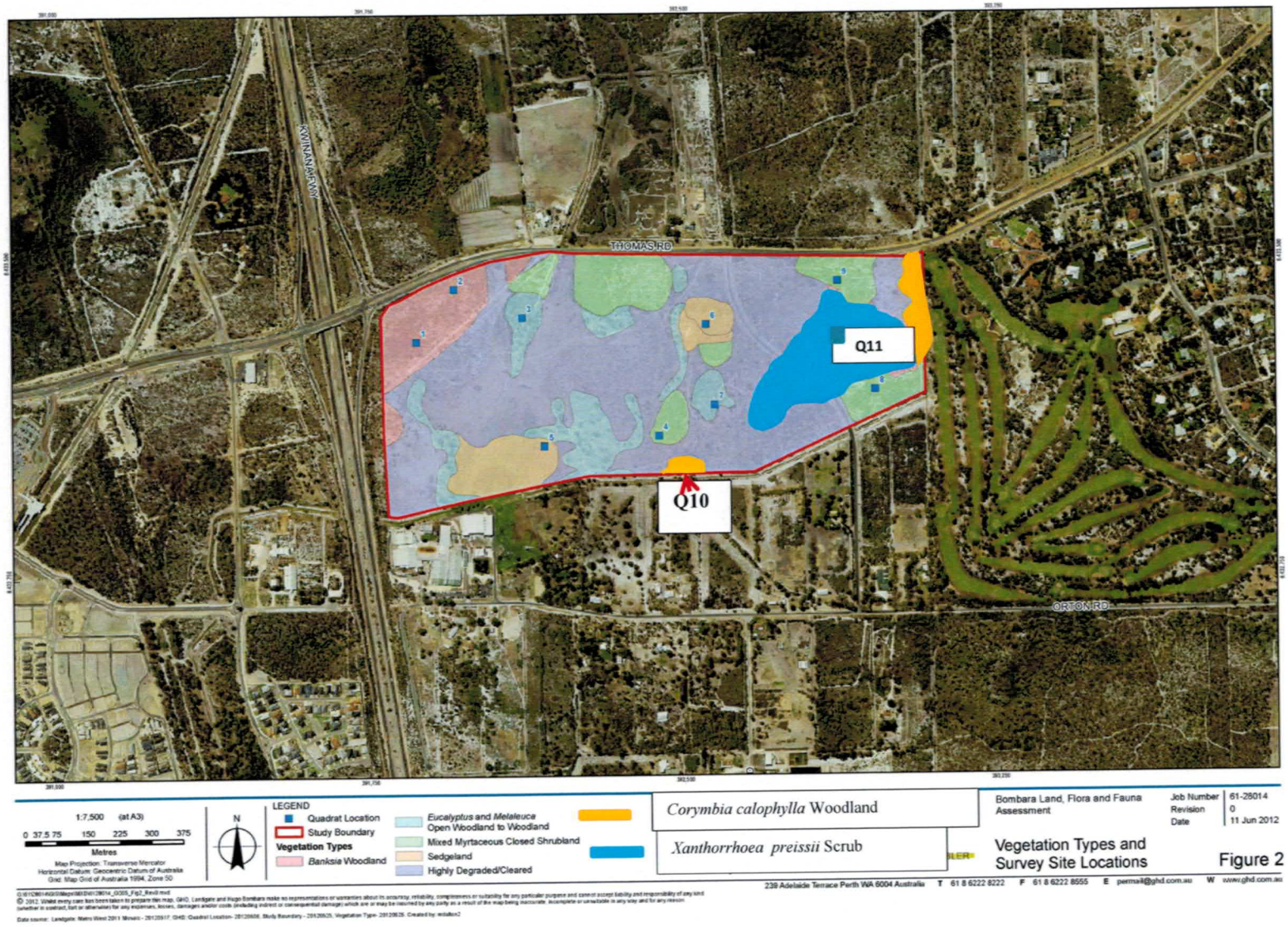

Noise level
LA10
in dB(A)
<= 30
30 < <= 35
35 < <= 40
40 < <= 45
45 < <= 50
50 <
A_46 Orton Rd
B_60 Orton Rd
C_73 Orton Rd
D_56 Orton Rd
E_85 Orton Rd
0 15 30 60 90 120
m
SCENARIO 3
NOISE CONTOUR PLOT
DAY NOISE SOURCES (WITH COMPOST LOADING) - MAXIMUM WEATHER CONDITIONS


Noise level
LA1
in dB(A)
<= 40
40 < <= 45
45 < <= 50
50 < <= 55
55 < <= 60
60 < <= 65
65 < <= 70
70 < <= 75
75 < <= 80
80 <
40
45
50
55
60
C. 73 Orton Rd
E. 85 Orton Rd
A. 46 Orton Rd
B. 60 Orton Rd
D. 56 Orton Rd
0 15 30 60 90 120
m
SCENARIO 4
NOISE CONTOUR PLOT
TRUCK NOISE SOURCE (LA1) - MAXIMUM WEATHER CONDITIONS


Noise level
LAmax
in dB(A)
<= 50
50 < <= 52
52 < <= 54
54 < <= 56
56 < <= 58
58 < <= 60
60 < <= 62
62 < <= 64
64 < <= 66
66 <
A 40 Orton Rd
B 60 Orton Rd
C 73 Orton Rd
D 56 Orton Rd
E 85 Orton Rd
Orton Rd
0 15 30 60 90 120
m
SCENARIO 5
NOISE CONTOUR PLOT
LOADER NOISE SOURCES (LA1) - MAXIMUM WEATHER CONDITIONS

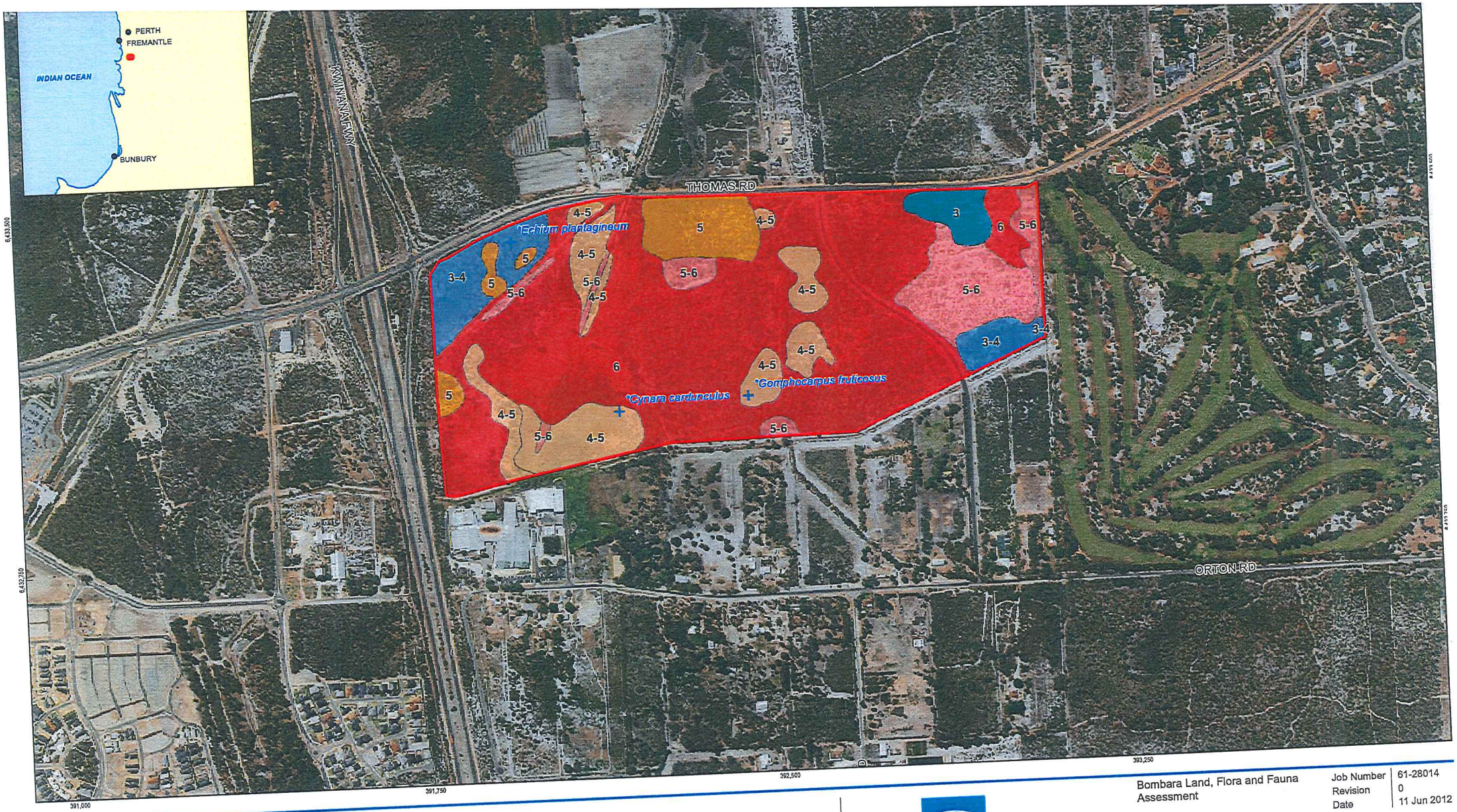
APPENDIX 5

Vegetation Type Mapping


THOMAS RD
KWINANA FWY
ORTON RD
Q10
Q11
1:7,500 (at A3)
0 37.5 75 150 225 300 375
Metres
Map Projection: Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia
Grid: Map Grid of Australia 1994, Zone 50
N
LEGEND
Quadrat Location
Study Boundary
Vegetation Types
Banksia Woodland
Eucalyptus and Melaleuca Open Woodland to Woodland
Mixed Myrtaceous Closed Shrubland
Sedgeland
Highly Degraded/Cleared
Corymbia calophylla Woodland
Xanthorrhoea preissii Scrub
Bombara Land, Flora and Fauna Assessment
Job Number 61-28014
Revision 0
Date 11 Jun 2012
Vegetation Types and Survey Site Locations
Figure 2
239 Adelaide Terrace Perth WA 6004 Australia T 61 8 6222 8222 F 61 8 6222 8555 E permail@ghd.com.au W www.ghd.com.au

APPENDIX 6

Vegetation Condition Mapping



LEGEND

- Declared Weeds
- Study Boundary

Vegetation Condition

- 1. Pristine or Nearly so
- 1-2
- 2. Excellent
- 2-3
- 3. Very Good
- 3-4
- 4. Good
- 4-5
- 5. Degraded
- 5-6
- 6. Completely Degraded

1:7,500 (at A3)

0 37.5 75 150 225 300 375

Metres

Map Projection: Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia
Grid: Map Grid of Australia 1994, Zone 50

N

Bombara Land, Flora and Fauna Assessment

Job Number 61-28014
Revision 0
Date 11 Jun 2012

Vegetation Condition and Declared Flora Species

Figure 3

239 Adelaide Terrace Perth WA 6004 Australia T 61 8 6222 8222 F 61 8 6222 8555 E permail@ghd.com.au W www.ghd.com.au

APPENDIX 7

Aboriginal Heritage Inquiry System Reports

Aboriginal Heritage Inquiry System

List of Registered Aboriginal Sites

Search Criteria

No Registered Aboriginal Sites in Custom search area - Polygon - 115.848677902975°E, 32.2356459800142°S (GDA94) : 115.848677902975°E, 32.2297469675972°S (GDA94) : 115.865908413687°E, 32.2297469675972°S (GDA94) : 115.865908413687°E, 32.2356459800142°S (GDA94) : 115.848677902975°E, 32.2356459800142°S (GDA94)

Disclaimer

The *Aboriginal Heritage Act 1972* preserves all Aboriginal sites in Western Australia whether or not they are registered. Aboriginal sites exist that are not recorded on the Register of Aboriginal Sites, and some registered sites may no longer exist.

The information provided is made available in good faith and is predominately based on the information provided to the Department of Aboriginal Affairs by third parties. The information is provided solely on the basis that readers will be responsible for making their own assessment as to the accuracy of the information. If you find any errors or omissions in our records, including our maps, it would be appreciated if you email the details to the Department at heritageenquiries@daa.wa.gov.au and we will make every effort to rectify it as soon as possible.

South West Settlement ILUA Disclaimer

Your heritage enquiry is on land within or adjacent to the following Indigenous Land Use Agreement(s): Gnaala Karla Booja People ILUA.

On 8 June 2015, six identical Indigenous Land Use Agreements (ILUAs) were executed across the South West by the Western Australian Government and, respectively, the Yued, Whadjuk People, Gnaala Karla Booja, Ballardong People, South West Boojarah #2 and Wagyl Kaip & Southern Noongar groups, and the South West Aboriginal Land and Sea Council (SWALSC).

The ILUAs bind the parties (including 'the State', which encompasses all State Government Departments and certain State Government agencies) to enter into a Noongar Standard Heritage Agreement (NSHA) when conducting Aboriginal Heritage Surveys in the ILUA areas, unless they have an existing heritage agreement. It is also intended that other State agencies and instrumentalities enter into the NSHA when conducting Aboriginal Heritage Surveys in the ILUA areas. It is recommended a NSHA is entered into, and an 'Activity Notice' issued under the NSHA, if there is a risk that an activity will ‘impact’ (i.e. by excavating, damaging, destroying or altering in any way) an Aboriginal heritage site. The Aboriginal Heritage Due Diligence Guidelines, which are referenced by the NSHA, provide guidance on how to assess the potential risk to Aboriginal heritage.

Likewise, from 8 June 2015 the Department of Mines and Petroleum (DMP) in granting Mineral, Petroleum and related Access Authority tenures within the South West Settlement ILUA areas, will place a condition on these tenures requiring a heritage agreement or a NSHA before any rights can be exercised.

If you are a State Government Department, Agency or Instrumentality, or have a heritage condition placed on your mineral or petroleum title by DMP, you should seek advice as to the requirement to use the NSHA for your proposed activity. The full ILUA documents, maps of the ILUA areas and the NSHA template can be found at https://www.dpc.wa.gov.au/lantu/Claims/Pages/SouthWestSettlement.aspx.

Further advice can also be sought from the Department of Aboriginal Affairs (DAA) at heritageenquiries@daa.wa.gov.au.

Copyright

Coordinate Accuracy

Coordinates (Easting/Northing metres) are based on the GDA 94 Datum. Accuracy is shown as a code in brackets following the coordinates.

Department of **Planning, Lands and Heritage**

GOVERNMENT OF WESTERN AUSTRALIA

Aboriginal Heritage Inquiry System

Map of Registered Aboriginal Sites

For further important information on using this information please see the Department of Aboriginal Affairs' Terms of Use statement at http://www.daa.wa.gov.au/Terms-Of-Use/

Legend

- Registered Aboriginal Site
- Search Area
- Town
- Road
- River
- Local Government Authority

0.61 kilometres

Map Scale 1 : 18,600

MGA Zone 50 (GDA94)

Aboriginal Heritage Inquiry System

List of Other Heritage Places

Search Criteria

No Other Heritage Places in Custom search area - Polygon - 115.849579125204°E, 32.2357185808583°S (GDA94) : 115.849579125204°E, 32.2298377245348°S (GDA94) : 115.865522175589°E, 32.2298377245348°S (GDA94) : 115.865522175589°E, 32.2357185808583°S (GDA94) : 115.849579125204°E, 32.2357185808583°S (GDA94)

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If you are a State Government Department, Agency or Instrumentality, or have a heritage condition placed on your mineral or petroleum title by DMP, you should seek advice as to the requirement to use the NSHA for your proposed activity. The full ILUA documents, maps of the ILUA areas and the NSHA template can be found at https://www.dpc.wa.gov.au/lantu/Claims/Pages/SouthWestSettlement.aspx.

Further advice can also be sought from the Department of Aboriginal Affairs (DAA) at heritageenquiries@daa.wa.gov.au.

Copyright

Coordinate Accuracy

Coordinates (Easting/Northing metres) are based on the GDA 94 Datum. Accuracy is shown as a code in brackets following the coordinates.

Department of **Planning, Lands and Heritage**

GOVERNMENT OF WESTERN AUSTRALIA

Aboriginal Heritage Inquiry System

Map of Other Heritage Places

For further important information on using this information please see the Department of Aboriginal Affairs' Terms of Use statement at http://www.daa.wa.gov.au/Terms-Of-Use/

Legend

- Other Heritage Place
- Search Area
- Town
- Road
- River
- Local Government Authority

0.57 kilometres

Map Scale 1 : 17,200

MGA Zone 50 (GDA94)

Appendix C

Local Water Management Strategy

Prepared for:

AIGLE ROYAL DEVELOPMENTS

Lots 9011, 9012, 9013, 1199 & 3 Thomas Rd, Casuarina

Local Water Management Strategy

December 2017

Suite 1/27 York St, Subiaco WA 6008 | PO Box 117, Subiaco WA 6904

T +61 (08) 9388 2436 **F** +61 (08) 9381 9279 **W** jdahydro.com.au

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Document Version No.	Issue Date	Author	Checked	Approved
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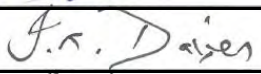
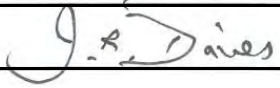
J6447b	13 December 2017	ADR	JRD	JRD

	Name	Signature	Date
Author	Alex Rogers		13 December 2017
Reviewed & Edited by	Jim Davies		13 December 2017
Final Review & Approved by	Jim Davies		13 December 2017

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APPENDICES

1. EXECUTIVE SUMMARY

This Local Water Management Strategy (LWMS) has been prepared in support of the Lots 9011, 9012, 9013, 1199 & 3 Thomas Rd Structure Plan. The LWMS provides the framework for the application of total water cycle management to the proposed urban structure within the Structure Plan, consistent with the District Water Management Strategy (DWMS) and Department of Water (DoW) principles of Water Sensitive Urban Design (WSUD) described in the Stormwater Management Manual (DoW, 2007).

A summary of the LWMS design principles and objectives is presented in Table 1, and includes the overarching DWMS objectives (JDA, 2013) and LWMS criteria. The checklist for developers for an LWMS is provided in Appendix A.

Australian Rainfall and Runoff (ARR) 1987 (IEAust, 1987) was used in the stormwater modelling for this report rather than the recently released Australian Rainfall and Runoff 2016 (Ball et al., 2016), as flows and levels from the Jandakot District Water Management Plan (DWMP) (DoW, 2009) were used in the JDA modelling in this report. The DWMP used ARR1987 in its preparation.

TABLE 1: SUMMARY OF LWMS DESIGN PRINCIPLES AND CRITERIA

Key Guiding Principles		
• Facilitate implementation of sustainable best practice in urban water management • Provide integration with planning processes and clarity for agencies involved with implementation • To minimise public risk, including risk of injury or loss of life. • Protection of infrastructure and assets from flooding and inundation • Encourage environmentally responsible development. • Facilitate adaptive management responses to the monitored outcomes of development		
Category	**DWMS Objectives**	**LWMS Criteria**
Surface Water Management	• Minimise changes in hydrology to prevent impacts on receiving environments. • Manage water flows from major events to protect infrastructure and assets. • Apply the principles of WSUD. • Adopt nutrient load reduction design objectives for stormwater runoff. • Floodplain management and urban drainage.	• Post-development critical 10yr ARI and 100yr ARI peak flow shall be consistent with pre-development peak flow at the discharge point of each catchment where possible and at all discharge points of all subdivisions into waterways. • All 1yr 1hr ARI event runoff to be infiltrated at source where possible. • Maintain the hydraulic capacity of the Peel Sub P Drain, as specified in the Jandakot DWMP. Within the Study Area redefine the profile of the drain to an urban standard. • Manage surface water flows from major events to protect infrastructure and assets from flooding and inundation.
Groundwater Management	• Manage groundwater levels to protect infrastructure and assets • Maintain groundwater regimes for the protection of groundwater-dependent ecosystems • Protect the value of groundwater resources. • Adopt nutrient load reduction design objectives for discharges to groundwater.	• Manage and minimise changes in groundwater levels and groundwater quality following development. • Subsurface drainage (sub-soils) and drainage infrastructure set at or above the pre-development MGL, although existing inverts below this level may remain. • Subsoil drainage outlets to be free draining.
Monitoring and Implementation	• Adopt an adaptive management approach. • Maintain drainage and treatment structures.	• Design based on methodology in Stormwater Management Manual of adopting a treatment train including: • Retention of 1yr ARI 1hr events, • Structural treatment measures (infiltration storages, plus bio-retention/ treatment structures sized to min 2% of connected impervious area) • Non-structural measures to reduce applied nutrient loads. • Maintain groundwater quality at pre-development levels (median winter concentrations) and, if possible, improve the quality of water leaving the development area to maintain and restore ecological systems.
Water Conservation	• Minimise the use of potable water where drinking water is not essential by considering all potential water sources and water demand requirements in water supply and land use planning. • Water efficiency initiatives include waterwise landscaping packages, public POS area to be at least 50% native vegetation. • Buildings are to comply with water efficiency standards introduced into the building code.	• Aim to achieve the State Water Plan target for water use of 100 kL/person/yr. • Consider alternative fit for purpose water sources where appropriate and cost-effective. • POS areas to be at least 50% native plants.

2. INTRODUCTION

2.1 Background

This Local Water Management Strategy (LWMS) has been prepared by JDA Consultant Hydrologists on behalf of Aigle Royal Developments in support of the Lot 9011, 9012, 9013, 1199 and 3 Thomas Rd, Casuarina Structure Plan, totalling approximately 25.76 ha. The Structure Plan covers the mixed use zoned land within the Study Area, Figure 2.

The LWMS provides the framework for the application of total water cycle management to the proposed urban structure, consistent with the Casuarina District Water Management Strategy (JDA, 2013) and Department of Water (DoW) principles of Water Sensitive Urban Design (WSUD) described in the Stormwater Management Manual (DoW, 2007).

The LWMS was prepared following feedback from the Department of Water and Environmental Regulation (DoWER), City of Kwinana (CoK), Water Corporation (WC), and Western Power. The agencies advised the following design constraints:

- Maximum groundwater level (MGL) should be used for setting of controlled groundwater levels (CGL) and for basin inverts;
- If realigning the Sub P Drain, then it should be designed and built as a Living Stream, consistent with DoWER, WC and CoK requirements;
- WC advise that, consistent with the Jandakot DWMP, the Sub P Drain ownership will be transferred from WC to CoK;
- Implementation of infiltration within the catchment, using features such as roadside swales, tree pits, rain gardens, bioretention areas, etc.; and
- Western Power requires that there are no surface drainage features within 30 m of the tower bases, and that any vegetation within the HV transmission corridor will need to be height restricted.

2.2 Statutory Framework

2.2.1 District Planning

The Casuarina DWMS (JDA, 2013) provides guidance on water reuse options, stormwater detention basins, monitoring requirements and structural and non-structural controls for stormwater treatment. The DWMS was approved by City of Kwinana and Department of Water (DoW). The DWMS refines the overarching Jandakot DWMP (DoW, 2009). The larger DWMS and DWMP areas are shown on Figure 3.

2.2.2 Local Structure Plan

This LWMS is presented in support of the Lot 9011, 9012, 9013, 1199 and 3 Thomas Rd, Casuarina Structure Plan) as part of the Better Urban Water Management Framework.

The LWMS addresses the proposed urban structure plan for the Study Area and provides a refinement of the flood modelling, surface water management strategy and groundwater management strategy.

2.3 Key Design Principles and Objectives

The LWMS employs the following key documents to define its content, key principles and objectives:

- Peel Harvey WSUD Local Planning Policy (EPA, 2006);
- Stormwater Management Manual for Western Australia (DoW, 2007);
- Better Urban Water Management (WAPC, 2008);
- Guidelines for Subdivision Development (City of Kwinana, 2008);
- Jandakot Drainage and Water Management Plan – Peel Main Drain Catchment (DoW, 2009); and
- Casuarina District Water Management Strategy (JDA, 2013)

A summary of the key design principles and objectives from these documents is provided in Table 1 and summarised below.

2.3.1 Peel Harvey WSUD Local Planning Policy (2006)

The Peel Harvey WSUD Local Planning Policy (Peel Development Commission, 2006) was developed through the Federal Governments Coastal Catchments Initiative and endorsed by the Environmental Protection Authority (EPA). It aims to assist local government to help integrate catchment management objectives with land and resource planning in urban landscapes.

The policy identifies broad policy objectives against which strategic and statutory proposals can be assessed.

Water quantity management principles and objectives are provided based on post-development discharges being maintained relative to predevelopment levels. Criteria are provided for both ecological protection (1 in 1 year ARI events), and flood protection (1 in 100 year ARI, or 1% AEP events). Water quality management principles and objectives are based on maintaining or improving water quality relative to existing conditions.

Specific water quality guidelines are provided in the document including limitations on developments where average input rates of nutrients exceed 15 kg/phosphorus/ha per annum or 150 kg/nitrogen/ha per annum.

The policy is consistent with the *Decision Process for Stormwater Management in WA* (DoE and Swan River Trust, 2005) which is appended to the policy and is consistent with the objectives of the Environmental Protection Policy (Peel Inlet – Harvey Estuary) 1992.

This policy is stated as holding no legal standing and envisages each local government in the Peel Harvey catchment will customise the model policy to suite its own specific requirements.

2.3.2 Stormwater Management Manual for Western Australia (DoW, 2007)

The Water and Rivers Commission (now Department of Water, DoW) released *A Manual for Managing Urban Stormwater Quality in Western Australia* in 1998 to define and practically describe Best Management Practices (BMP's) to reduce pollutant and nutrient inputs to stormwater drainage systems. The Manual also

aims to provide guidelines for the incorporation of water sensitive design principles into urban planning and design, which would enable the achievement of improved water quality from urban development.

The document was released to provide a guideline for best planning and management practices and was intended for use by Water and Rivers Commission, but also by other State and Local Government Authorities and sectors of the urban development industry.

DoW completed a major review of the Manual in consultation with a working team comprising industry and government representatives, published in August 2007.

Principle objectives for managing urban water in WA are stated as:

- Water Quality: To maintain or improve the surface and groundwater quality within development areas relative to pre-development conditions;
- Water Quantity: To maintain the total water cycle balance within development areas relative to the pre-development conditions;
- Water Conservation: To maximise the reuse of stormwater;
- Ecosystem Health: To retain natural drainage systems and protect ecosystem health;
- Economic Viability: To implement stormwater systems that are economically viable in the long term;
- Public Health: To minimise the public risk, including risk of injury or loss of life to the community;
- Protection of Property: To protect the built environment from flooding and waterlogging;
- Social Values: To ensure that social aesthetic and cultural values are recognised and maintained when managing stormwater; and
- Development: To ensure the delivery of best practice stormwater management through planning and development of high quality developed areas in accordance with sustainability and precautionary principles.

2.3.3 Better Urban Water Management (WAPC, 2008)

The guideline document Better Urban Water Management (WAPC, 2008), focuses on the process of integration between land use and water planning and specifying the level of investigations and documentations required at various decision points in the planning process, rather than the provision of any specific design objectives and criteria for urban water management.

This LWMS complies with the BUWM process.

2.3.4 Guidelines for Subdivision Development (City of Kwinana, 2010)

The City of Kwinana (CoK) Guidelines for Subdivision Development (CoK, 2010) provides details of the City's requirements regarding stormwater drainage management. The document provides both general guidelines at the strategic conceptual design level and also more specific detailed criteria for design of drainage systems (grades, subsoil drainage).

At the strategic level key design guidelines are cited as follows:

- Australian Rainfall and Runoff (Institution of Engineers Australia, 1987);
- Stormwater Drainage Design in Small Urban Catchments (J Argue, ARRB Special Report No 34);
- Subsurface Drainage of Road Structures (RJ Gerke, ARRB Special Report No 35);
- Water Sensitive Urban (Residential) Design Guidelines for the Perth Metropolitan Region (Whelans et al, 1993); and
- Stormwater Quality Management Manual (Water and Rivers Commission, 1998).

Specific criteria in relation to stormwater/groundwater are detailed as:

- Examine the total drainage catchment area and ensure that any upstream drainage is able to pass through the subdivision;
- Drainage network is designed to 10 year ARI except for arterial drainage and compensating storages to be designed to a 20 year AR;
- Floor levels minimum 500 mm above 100 year ARI flood level in storages, main drains and watercourses;
- The pre-development AAMGL generally be maintained following development. Where AAMGL is within 1.2 m of the design surface level, subsoils will be installed at AAMGL and fill imported. Subsoils are generally provided as a separate system;
- Water Sensitive Urban Design principles incorporated into the design;
- Open Drainage facilities have 1:6 side slopes; and
- Nutrient filtration to occur prior to drainage water being released to a Water Corporation Main Drain.

2.3.5 Jandakot Drainage and Water Management Plan (DoW, 2009)

The Jandakot Drainage and Water Management Plan (DWMP) provides guidance on the management of stormwater in the Peel Main Drain Catchment and was prepared by DoW to support the Jandakot Structure Plan (WAPC, 2007)

The scope of the DWMP is to cover aspects of total water cycle management, including:

- Protection of significant environmental assets within the local structure plan, including meeting their water requirements, managing potential impacts from development and protecting their cultural value;
- Alternative water supply options, opportunities for conservation and demand management measures, and wastewater management;
- Surface runoff, including both peak event (flood) management and the application of water sensitive urban design principles to frequent events;

- Groundwater, including the impact of urbanisation, variation in climate, installation of drainage to manage groundwater levels, potential impacts on the environment and the potential to use groundwater as a resource; and
- Water quality management, which includes source control of pollution inputs by catchment management, acid sulphate soil management, control of contaminated discharges from industrial areas and management of nutrient exports from surface runoff and groundwater through structural measures.

2.3.6 Casuarina District Water Management Strategy (JDA, 2013)

The DWMS was prepared to support rezoning within the Casuarina Cell of the DWMP and demonstrate that the area was capable of supporting the proposed urban zoning.

The aims of the DWMS are to:

1. Define land area requirements for conveyance of flood flows and protection of future development from peak flood events;
2. Propose a drainage design strategy appropriate for local conditions in the strategy area that incorporates best practice water sensitive urban design measures. This strategy identifies Water Sensitive Urban Design (WSUD) practices to be implemented within both private allotments and the public domain, and the legal mechanisms by which all identified practices will be implemented;
3. Prescribe the design criteria for water quantity and water quality for each catchment;
4. Outline the hydrologic and hydraulic framework parameters and subsequently develop the overall drainage network concept;
5. Define an implementation framework for the drainage design objectives; and
6. Recommend monitoring programs for water quantity and water quality pre, during and post development as well as for ensuring hydraulic performance over the lifetime of the drainage structures.

The design objectives and compliance items from the DWMS are reproduced as Table 2 below.

TABLE 2: SUMMARY OF DWMS DESIGN OBJECTIVES & COMPLIANCE

District Water Management Strategy (DWMS) Item	Design Objectives & Compliance
Design and Management Objectives • Design objectives for potable water use, stormwater quality and quantity (including flood management), groundwater quality and quantity, wastewater and water re-use.	• Implement sustainable best practice in urban water management by integration of water and land use planning. • Minimise the use of potable water where drinking water is not essential by considering all potential water sources and water demand requirements in water supply and land use planning. • Identify site constraints and opportunities by performing environmental assessments. • Retain natural drainage systems and protect ecosystem health by creating living streams and ephemeral storage areas. • Provide protection from flooding by provision of suitable drainage areas and flow paths. • Maintain surface water and groundwater hydrological regimes where possible through appropriate design practice. • Maintain and/or improve surface water and groundwater quality by implementing water sensitive urban design techniques to meet WQIP targets. • Flood management and discharge objectives consistent with the DWMP (DoW, 2009) and the Stormwater Management Manual (DoW, 2007).
Pre-Development Environment • Site characteristics – opportunities and constraints • Hydrologic information	• Environmental Assessment Report including identification of Wetlands, Vegetation Survey, Fauna Habitat Assessment and existing land uses to be incorporated into land use planning to identify areas not suitable for development. • Wetland Management Plan to be prepared defining wetland and buffer areas to be retained, plus areas of upland vegetation to be retained. • Detailed mapping of pre-development catchments to determine surface water flow paths at Local Structure Planning Stage and presented in LWMS. • In support of the LSP the LWMS will include the necessary site investigations to adequately characterise the existing hydrological regime of wetlands to be retained and inform the groundwater and surface water management strategies for the site. • A preliminary Site Contamination and ASS Assessment to be prepared. Detailed Site Investigation to be conducted prior to development. Further ASS investigations to occur during detailed planning of the site, when cut and fill and depths of underground services are known. • Regional surface water quality snapshots were presented in the DWMP. In addition, 3 years of pre-development water quality and level monitoring plus Peel Main Drain surface monitoring site has been completed for the Casuarina area and reported to DoW (JDA, 2009) • Refined groundwater investigation and contour mapping performed at a local scale consistent with regional DWMP CGL contour mapping.
Fit-for-Purpose Water Source Planning • Allocation of water • Required infrastructure	• Landscaped and POS areas minimised where possible during land use planning, and a minimum 50% of plants to be native vegetation. • Waterwise landscape packages provided to each lot purchaser. • Buildings are to comply with water efficiency standards introduced into the building code. • The superficial aquifer is not yet fully allocated and water is available to apply for irrigation of POS areas. • Alternatively, existing superficial water allocations may be transferred POS irrigation if completed within the DoW required timeframe. • Required infrastructure for abstracting superficial groundwater will be via production bores proposed to be constructed within POS areas.

District Water Management Strategy (DWMS) Item	Design Objectives & Compliance
Water Management Strategy • Drinking water conservation and efficiency of water use • Surface water management strategy • Groundwater management strategy • Wastewater management strategy	• Water Efficiency initiatives includes waterwise landscaping packages, public POS areas to be at least 50% native vegetation. (Note large areas of the development in wetlands, buffers and uplands vegetation are all retaining existing native vegetation.) • Buildings are to comply with water efficiency standards introduced into the building code. • The surface water management strategy to be guided by the DWMP, Stormwater Management Manual and follows Water Sensitive Urban Design principles. • Drainage areas required for flood management to be determined based stormwater modelling for the 100yr ARI. These areas will be allocated in the local structure plan. • Channel realignments and profile modifications to the Peel R Sub-Drain may occur if pre-development cross-sectional area is maintained, consistent with the DWMP. • All minor rainfall events will be infiltrated at source (via soakwells, Rd pits) where possible, consistent with DWMP design criteria. Existing soils in the Casuarina area have been confirmed to exhibit high infiltration rates and areas of fill is to have a minimum specified conductivity to allow infiltration from soakwells. • Stormwater modelling for surface water/flood management for the Casuarina development performed with discharge criteria consistent with the DWMP. • Groundwater management at the district level is covered in detailed in the DWMP. It specifies a CGL which will be achieved by installation of subsoil drainage with areas requiring CGL determined by refined groundwater mapping presented in the LWMS.
Implementation Framework • Consideration and requirements for local planning • Monitoring	• The water management strategy will be refined at further planning levels (LWMS, UWMP) consistent with Better Urban Water Management, the DWMP, Liveable Neighbourhoods (WAPC, 2007), Stormwater Management Manual, and developed in consultation with the Town of Kwinana and other relevant agencies. • The developer is committed to and responsible for post-development monitoring, details to be outlined in the LWMS at Local Structure Planning Stage.

3. PROPOSED DEVELOPMENT

The Study Area is approximately 25.76 ha (shown on Figure 1) and is situated within the southern corridor of the Perth Metropolitan Region, approximately 31 km south of the Perth CBD.

The Study Area is bounded by Thomas Rd to the north, Kwinana Fwy to the west and the Peel Sub P and P1 Drains to the south. The Sub P Drain also bisects the Study Area approximately north to south.

The proposed land use is for Mixed Business development consistent with regional planning. The Local Structure Plan for the Study Area is shown on Figure 2.

Key elements of the Local Structure Plan related to urban water management include:

- Realignment of the Sub P Drain and conversion to a Living Stream, from Thomas Road south to the confluence with the Sub P1 Drain. The realigned Living Stream will maintain existing hydraulic capacity while redefining the drain to an urban standard;
- Use of a central median swale within the main connector roads for treatment and infiltration of the first 15 mm of rainfall;
- The Mixed Business development lots will retain the first 15 mm of rainfall onsite, using a combination of rainwater tanks for reuse, and infiltration;
- Flood attenuation basins will be located in downstream areas prior to discharge to the Sub P Drain, consistent with the DWMP requirements; and
- Reduction in landscape nutrient input as a result of Mixed Business land use (ie. less lawn and garden area corresponds to lower fertiliser application), compared to standard residential land use.

A breakdown of the land use within the Study Area is presented in Table 3 below.

TABLE 3: STUDY AREA LAND USE BREAKDOWN

Land Use Description	Area (ha)
Mixed Business Lots	17.75
Roads	3.07
Drainage	2.11
Sub P Living Stream	0.93
HV Transmission Easement	1.90
Total	25.76

4. PRE-DEVELOPMENT ENVIRONMENT

4.1 Existing Land Use

The Study Area is currently largely rural land use with large area of the site extensively cleared of native vegetation. There are pockets of native vegetation along the northern boundary (Figure 4). A High Voltage (HV) transmission corridor transverses the site from north to south.

4.2 Topography

The topography of the Study Area is shown on Figure 5, generally slopes from north to south, and from west and east towards the centrally located Peel Sub P Drain. A sand ridge along the western boundary of the site is the highest area of the site (~21 mAHD), with the Sub P Drain forming the lowest areas of the site (~14 mAHD), located on the southern boundary, at the confluence with the Peel Sub P1 Drain.

4.3 Climate

The Casuarina area is characterised by a Mediterranean climate with warm dry summers and cool wet winters.

Rainfall data is provided by two nearby Bureau of Meteorology gauges – Anketell (Site No. 9258) and Medina Research Station (Site No. 9194). While the Anketell gauge is slightly closer (Figure 6), the length of record is shorter (15 years compared to 34 years at Medina Research Station).

The average annual rainfall for Anketell is 787 mm (2002 to 2016), while the average for Medina Research Station is 745 mm (1983 to 2016). Over the period of joint record, Anketell records, on average, 115 mm more rainfall than the Medina Research Station.

The Medina Research Station average has decreased between 2000 to present, to an average annual rainfall of 672 mm, reflecting a 10% reduction compared to the full record average – this is consistent with decreasing rainfall across south west Western Australia. The seasonal rainfall distribution has also altered since 2000, with a reduction of average monthly totals in the winter months, but no reduction in summer months.

The average annual pan evaporation from BoM is approximately 1,700 mm (BoM, 2017).

4.4 Geology and Soils

Surface geology mapping by Gozzard (1983) is shown on Figure 7.

The Study Area is situated within the Bassendean Sand system (S8 and S10). The thickness of the Bassendean Sand varies and overlies clays of the Guildford Formation. The Bassendean Sands are characterised as “very light at surface, yellow at depth, fine to medium grained, sub-rounded quartz moderately well sorted of Aeolian origin” (Gozzard, 1983).

A geotechnical investigation was carried out across the Study Area by CMW Geosciences (2014) with results generally in accordance with Gozzard (1983) mapping:

- Topsoil – sand/silty sand, fine to medium grained, grey, containing roots and organic matter, extending from the surface to between about 0.05 and 0.6 m; overlying

- Sand, fine to medium grained, loose to medium dense, generally loose at the surface, silty in parts, brown/dark grey/pale grey, generally dry to moist, becoming saturated, extending up to the maximum depth investigated of 3 m.

Variation to the generalised profile exists in two locations shown on Figure 8 (Areas B and D – named in CMW, 2014), where sandy clay was encountered in generally lower lying areas. The profile in these areas is:

- Topsoil – sand/silty sand, fine to medium grained, grey, containing roots and organic matter, extending from the surface to between about 0.05 and 0.6 m; overlying
- Clayey sand, medium to high plasticity clay, fine to medium grained sand, brown/grey, extending from the surface to depths of up to 1.75 m; overlying
- Sand, fine to medium grained, loose to medium dense, generally loose at the surface, silty in parts, brown/dark grey/pale grey, generally dry to moist, becoming saturated, extending up to the maximum depth investigated of 3 m.

A copy of the geotechnical report is provided in Appendix B. A review of the CMW Geoscience report by Douglas Partners (2016) is provided in Appendix C. The Douglas Partners review provides comments relating to frequency and location of tests sites, classification and site preparation in relation to very loose to loose sand areas, sand fill thicknesses for site classification and the impact of use of material with up to 12% fines on site drainage.

4.5 Acid Sulphate Soils

According to regional acid sulphate soil mapping (Figure 8) published by the DEC (2010), the Study Area is Class 2, having moderate to low risk of ASS occurring less than 3m from surface.

Detailed ASS investigations will be undertaken at the time of subdivision. In the event that any ASS is encountered an Acid Sulphate Soil Management Plan will be prepared and implemented as part of the subdivision process in accordance with WAPC (2003).

4.6 Wetlands

The Department of Environment and Conservation Geomorphic Wetlands of the Swan Coastal Plain Wetland mapping shows the boundaries and locations of wetlands in the Study Area (Figure 9).

The western portion of the Study Area is not mapped as wetland. The majority of the eastern portion is classified as Multiple Use Sumpland, which does not preclude development. There is also a small section in the east that is classified as Resource Enhancement Dampland.

To the north of the Study Area (north of Thomas Rd, and between Kwinana Freeway and the Sub P Drain) is a Conservation Category Sumpland.

4.7 Surface Water Hydrology

4.7.1 Existing Surface Drainage

The existing Peel Sub P Drain local drainage network to downstream of Kwinana Freeway is shown on Figure 10. Catchment C1 drains the area north of Thomas Rd, with discharge point at the culverts under Thomas Rd into the Study Area. Catchments C2 and C3 are internally draining. Catchment C4 drains the majority of the Study Area itself.

The Peel Sub P and Sub P1 Drains run through or adjacent to the Study Area, discharging to the west. The Sub P Drain originates north of Thomas Rd and conveys flow in a SSW direction until the confluence with the Sub P1 Drain, whereupon it flows westward. The Sub P1 originates east of the Study Area, and discharges flow in a westerly direction. West of the Study Area the Sub P Drain discharges under the Kwinana Fwy via a culvert.

The Peel Main Drain and Sub Drains were modelled by DoW in the Jandakot DWMP (DoW, 2009). Long sections of the existing Sub P and P1 drains from the DWMP have been reproduced in Figure 11.

An XP-STORM model for the Sub P Drain system was created by JDA to simulate the existing drainage system and compare against the INFOWORKS model reported in the DWMP. The XP-STORM model was developed based on information provided in the DWMP, and supplemented by LiDAR and other survey data. Flow inputs for the Sub P1 and Sub P1a and downstream water level boundary (at PP6) were taken from Figure 4.3 of the DWMP (location also shown in lower panel of Figure 11). Storage areas for Treeby and Sandy Lakes were based on available survey data. Information for the low lying area at the confluence of the Sub P and P1 drains was derived from LiDAR. Some areas channel lengths and widths in the DWMP appear to be inconsistent with available survey information.

The XP-STORM model was calibrated to the DWMP 1% AEP (100 year ARI) flow in the Sub P Thomas Rd culverts and levels in the drain system by adjusting catchment loss model. Table 4 presents levels and flows from the DWMP and calibrated XP-STORM model, with very similar flows for both the 10% and 1% AEP events. Flows are within 1% for the 1% AEP event, and water levels are within ± 0.15 m.

TABLE 4: COMPARISON OF DWMP AND XP-STORM HYDRAULIC MODELS

Node (see Fig 11)	Invert (mAHD)	DWMP (INFOWORKS)				XP-STORM			
		1% AEP (100yr ARI)		10% AEP (10yr ARI)		1% AEP (100yr ARI)		10% AEP (10yr ARI)	
		Level (mAHD)	Flow D/S (m^3/s)	Level (mAHD)	Flow D/S (m^3/s)	Level (mAHD)	Flow D/S (m^3/s)	Level (mAHD)	Flow D/S (m^3/s)
Sub P									
PPCB2	15.30	15.82	0.36	15.67	0.18	15.77	0.36	15.60	0.18
PPCB2a	15.25	15.81	0.35	15.66	0.19	15.74	0.36	15.58	0.18
PPCB1	14.85	15.29		15.19		15.21		15.06	
Sub P1/P									
PP1/2	15.88	16.40	0.91	16.32	0.64	16.27	0.91	16.18	0.54
PP1/1	15.22	15.96	1.17	15.82	0.75	16.01	1.18	15.88	0.80
PPCB1	14.85	15.29	1.46	15.19	0.96	15.21	1.45	15.06	0.89
PP9	13.5	14.33		14.13		14.33		14.12	

The peak flow being discharged from the southerly Sub P Drain to its confluence with the Sub P1 Drain is 0.48 m^3/s for the 1% AEP (100 year ARI) and 0.23 m^3/s for the 10% AEP (10 year ARI) events.

4.7.2 Surface Water Quality

Surface water quality in the Sub P Drain entering the Study Area was measured by 360 Environmental (unpublished) as part of pre-development monitoring from September 2014 to October 2015. The single monitoring location was located immediately downstream of the Thomas Rd culvert, at the upstream end of the Study Area. Results are provided in Table 5 below and Appendix D.

The results indicate that the Sub P Drain has highly variable salinity / EC, with high nutrient concentrations, generally consistent with other drains in the area and historic land use. Metals are generally below detection limits.

TABLE 5: SURFACE WATER QUALITY MONITORING (BY 360 ENVIRONMENTAL)

Parameters	Units	LOR	Wetlands ANZECC & ARMCANZ (2000)	3/09/14	26/09/14	23/07/15	26/10/15
Physico-Chemical							
Temperature	°C	0.1		17.9	16.9	11.4	13.5
Dissolved Oxygen	%	0.1		2.0	0.4	78.0	8.6
Dissolved Oxygen	mg/L	0.01		21.5	4.0	8.5	82.8
Electrical Conductivity	µS/cm	1		1281	1569	52.6	767
Total Suspended Solids	mg/L	1	----	120	----	13	26
Salinity	ppt	0.01		1	0.95	0.03	0.49
pH	unit	0.01	7-8.5	6.85	7.06	6.61	8.54
Redox Potential	mV	1		96	-87	92.7	-107.7
Nutrients							
Ammonia as N	mg/L	0.01	0.04	0.24	0.12	0.13	0.06
Kjeldahl Nitrogen Total	mg/L	0.2	----	4.10	3.70	0.30	1.60
Nitrate and Nitrite (as N)	mg/L	0.05	0.1	0.28	<0.05	0.17	<0.05
Nitrogen (Total)	mg/L	0.2	1.5	4.4	3.7	0.4	1.6
Phosphate Total (P)	mg/L	0.05	0.06	4.20	0.55	0.17	0.09
Phosphorus	mg/L	0.5	----	<0.5	<0.5	<0.5	<0.5
Metals							
Arsenic	mg/L	0.001	0.013	----	----	< 0.001	----
Boron	mg/L	0.05	0.37	----	----	< 0.05	----
Cadmium	mg/L	0.0002	0.0002	----	----	< 0.0002	----
Calcium	mg/L	0.5	----	----	----	4.2	----
Chromium (III+VI)	mg/L	0.001	----	----	----	< 0.001	----
Cobalt	mg/L	0.001	----	----	----	< 0.001	----
Copper	mg/L	0.001	0.0014	----	----	0.01	----
Lead	mg/L	0.001	0.0034	----	----	< 0.001	----
Manganese	mg/L	0.005	1.9	----	----	0.006	----
Mercury	mg/L	0.0001	0.0006	----	----	< 0.0001	----
Molybdenum	mg/L	0.005	----	----	----	< 0.005	----
Nickel	mg/L	0.001	0.011	----	----	< 0.001	----
Selenium	mg/L	0.001	0.011	----	----	< 0.001	----
Zinc	mg/L	0.001	0.008	----	----	0.055	----

4.8 Groundwater Hydrology

There are two aquifers of significance underlying the Study Area; each assigned the name of the major geological unit in which the aquifer occurs. In descending order of depth from natural surface they are:

- Superficial Aquifer (unconfined, +15 to -20 mAHD); and
- Leederville Aquifer (confined, -20 to -340 mAHD).

4.8.1 Superficial Aquifer

The Superficial Formation is of quaternary age and consists of a thin veneer of sand (Bassendean Sand) overlying sandy clay and clay (Guildford Formation). The Superficial Formation forms an unconfined aquifer containing generally fresh groundwater (250 to 500 mg/L Total Dissolved Solids), with slightly acid to neutral pH (5 to 7) (Davidson, 1995). The water table is shallow (<5 m) across much of the site, rising to the surface during winter in some places, depending on surface elevation.

4.8.1.1 Groundwater Levels

Pre-development groundwater monitoring was completed between May 2014 and January 2016 by 360 Environmental in 10 bores installed east of the Kwinana Freeway to Marri Park Golf Course (Figure 12). Bores TR1 to TR5 are located within (or close to) the Study Area. Bore details are presented in Table 6 (based on 360 Environmental data), and time series data for the bores are shown in Figure 13.

DoWER monitoring bore T200(O) is located approximately 2 km ESE from the Study Area, on Orton Rd (see Figure 12). The monitoring bore is screened over the depth of the superficial aquifer, and therefore is a suitable comparison bore for local groundwater levels. T200(O) has a water level time series record from 1975 to present (2017). Details are shown in Table 6 and time series plot in Figure 14.

TABLE 6: DETAILS OF GROUNDWATER MONITORING BORES

Bore ID	GDA Coordinates		Natural Surface (mAHD)	Total Depth (mBNS)	Top of Casing (mAHD)	Winter 2014 (mAHD)	JDA Estimated MGL (mAHD)	JDA Depth to MGL (mBNS)
	Easting	Northing						
TR01	391,818	6,432,918	16.17	4.79	16.73	13.86	15.49	0.68
TR02	391,803	6,433,212	17.10	6.61	17.71	13.74	15.29	1.81
TR03	392,021	6,433,401	17.63	6.63	18.22	14.33	15.82	1.81
TR04	392,189	6,433,151	15.80	5.16	16.41	14.38	15.76	0.04
TR05	392,357	6,433,340	16.50	-	17.15	14.74	16.17	0.33
TR06	392,426	6,433,032	16.55	4.80	17.19	15.25	16.58	-0.03
TR07	392,564	6,433,474	18.20	6.35	18.78	15.74	17.16	1.04
TR08	392,748	6,433,214	17.93	5.03	18.63	16.35	17.71	0.22
TR09	393,049	6,433,477	19.90	6.50	20.52	16.51	17.81	2.09
TR10	393,066	6,433,183	19.91	6.08	19.73	16.30	17.64	1.46
T200(O)	393,822	6,432,664	21.29	39.5	21.85	18.79	20.16	1.13

Notes: m BNS = metres below natural surface; m AHD = metres Australian Height Datum
All data provided by 360 Environmental, except Estimated MGL and Depth to MGL.

DoWER bore T200(O) has a maximum groundwater level (MGL) of 20.16 mAHD in 1991, and an average annual groundwater level (AAMGL) of 19.54 mAHD (calculated as the average of the winter peak levels over the period of record, 1975-2016), with declining groundwater levels since approximately 2000. The peak level recorded in 2016 (18.75 mAHD) was 0.79 m below the AAMGL and 1.41 m below the MGL.

Groundwater mapping of historical maximums from the online DoWER Groundwater Atlas is shown in Figure 15. This shows a groundwater contour of 17 mAHD to the east along Bombay Blvd, falling to 14 mAHD near the Study Area eastern boundary and 13 – 14 mAHD along the western boundary.

There were 14 occasions between October 2014 and January 2016 when 360 Environmental measured groundwater levels in the TR series bores and in T200(O), so that levels could be correlated.

For the T200(O) monitoring bore, the difference between the measured water level and the MGL was calculated by JDA for each monitoring occasion. This difference was then applied to the TR series for each month of measurement, to estimate MGL for TR bores for each of the 14 dates. The average of these 14 estimates was used to set the MGL for each bore. These values are presented in Table 6, along with the estimated depth to MGL from natural surface. The depth to MGL ranges between -0.03 and 2.09 m The estimated MGL values are between 1.3 and 1.6 m higher than the winter 2014 recorded groundwater levels.

The estimated MGL values were used by JDA to create MGL contours across the Study Area (Figure 16). The contours have been adjusted to natural surface and drain inverts where necessary. Depth to MGL from natural surface is shown in Figure 17.

The change in land-use from rural to commercial will cause a rise in groundwater levels, due to the reduction in evapotranspirative loss.

4.8.1.2 Groundwater Quality

Groundwater quality monitoring of all TR series bores was completed by 360 Environmental from May 2014 to November 2015. Samples were analysed for physical parameters, nutrients and metals. Groundwater quality results are attached as Appendix E. Water quality summary statistics of the 5 bores within (or close to) the Study Area are presented in Table 7.

ANZECC 95% guideline values for wetlands of South West Australia (ANZECC, 2000) have been used by JDA for water quality comparison where no local reference data is available. The Peel Harvey Water Quality Improvement Plan (Peel Harvey WQIP) (EPA, 2008) total phosphorus targets for the rivers and estuary of the Peel-Harvey System have been used in preference to ANZECC 2000 guideline values.

A summary of the monitoring results are as follows:

- Average Total Nitrogen (TN) concentrations for all bores were above the ANZECC (2000) TN guideline of 1.2 mg/L. TR4 and TR5 concentrations near the eastern Study Area boundary (Figure 12) were higher than the other bores.
- Average Total Phosphorus (TP) concentrations varied between bores, with the western bores (TR1, 2) generally lower than the eastern bores (TR4, 5). All bores were above the Peel-Harvey WQIP TP target value of 0.1 mg/L, although TR3 was only slightly above the target.

- The limit of detection (or record – LOR) for Phosphorus PO_4 was 0.5 mg/L, which is high, and therefore most samples recorded "<0.5 mg/L" – the statistics are therefore skewed by this data and actual values less than 0.5 mg/L.
- pH is generally acidic to neutral (3.8 to 7.5) and generally below ANZECC guideline minimum values of 6.5.

The Study Area is characterised by high nutrient concentrations and low pH levels. Groundwater quality at the water table, within the Bassendean Sand, is generally acidic due to organic acids generated by decomposition of vegetation in swampy environments (Davidson, 1995).

TABLE 7: DETAILS OF GROUNDWATER MONITORING BORE WATER QUALITY

Parameter	Mean	Median	Min	Max	25th Percentile	75th Percentile	# Samples	Guideline
Temperature (degrees C)	20.5	19.9	17.4	25.4	18.9	21.9	29	
DO (%)	20.6	22.6	0.8	47.1	13.5	29.0	29	
DO (mg/L)	1.78	2.07	0.07	4.35	0.88	2.50	29	
EC (µS/cm)	708	623	13	2902	230	900	29	<300
Salinity (ppt)	0.38	0.37	0.01	1.51	0.13	0.49	24	
pH	5.71	5.95	3.84	7.48	5.28	6.16	29	6.5-8
Redox Potential (rV)	35.6	32.1	-136.6	340.0	-58.7	100.7	29	
Nitrogen Total Oxidised – NO_x (mg/L)	1.21	0.07	0.05	17.0	0.05	0.17	29	0.15
Total Nitrogen (mg/L)	2.63	2.10	0.80	5.90	1.40	3.55	19	1.2
Ammonia as N (mg/L)	0.67	0.38	0.01	2.30	0.17	0.86	29	0.08
Total Kjeldahl Nitrogen (mg/L)	2.33	1.80	0.20	5.80	1.30	3.10	29	
Phosphorus PO_4 (mg/L)	0.52	0.50	0.50	1.10	0.50	0.50	25	0.04
Total Phosphorus (mg/L)	0.66	0.28	0.05	4.80	0.12	0.53	29	0.1

Notes: 1. Data for bores TR1, 2, 3, 4, 5, see Figure 5.

4.8.2 Leederville Aquifer

The Leederville Aquifer is of Cretaceous age and consists of interbedded sandstone, siltstone and shales made up by the Mariginiup, Wanneroo and Pinjar members and the Henley Sandstone Formation. The Leederville Aquifer is a major regional aquifer from which large yields of fresh groundwater can be obtained. The groundwater in the Leederville Formation is confined with the potentiometric surface in this area at approximately ground level (Davidson, 1995). The South Perth Shale is present from -260 to -310 mAHD and forms the confining layer between the Leederville Aquifer and Yarragadee Aquifer.

4.8.3 Groundwater Resources for Irrigation

The Superficial Aquifer is probably the most cost effective groundwater source for irrigation of streetscapes and establishment of vegetation within flood attenuation basins for the development of the Study Area.

The Study Area is located within the Serpentine Groundwater Management Area, in the Jandakot Mound 1 Groundwater Sub-area. As of 4 September 2017 DoWER reported 192,140 kL/yr available for allocation in the Superficial Aquifer. There is no allocation available in the Leederville or Yarragadee North Aquifers.

At this stage the landscaping requirements and irrigation demand have not yet been determined. A licence application for groundwater supply will be submitted once the irrigation area has been determined.

5. LOCAL WATER MANAGEMENT STRATEGY

5.1 Water Balance

The water balance of the Study Area will be influenced by the frequency and intensity of rainfall and evapotranspiration. As the most reliable estimates of rainfall, evaporation, transpiration and recharge are at a regional scale, for the purpose of this water balance assessment, average annual values have been assumed and the site has been considered as a whole.

Pre-development Water Balance

For the pre-development water balance assumptions are as follows;

- Rainfall based on the long term annual average for Anketell Station of 787 mm.
- Recharge is 20% of rainfall as estimated by Davidson and Yu (2008).
- The balance of inputs is discharged as surface runoff to the Peel Sub P Drain.

Post-development Water Balance

Assumptions for the post-development water balance are as follows;

- Water supply for all POS irrigation will be met by local groundwater supplies. Irrigation rate of 7,500 kL/ha/yr is assumed consistent with DoWER allocation.
- Recharge is maintained at the pre-development volume.
- Surface runoff assumed to mostly infiltrate into the minor drainage network to be discharged via subsoil drainage.
- The balance of inputs will be discharged via subsoil drainage.

Results of the water balance are presented in Table 8.

TABLE 8: STUDY AREA WATER BALANCE

Pre Development		Use	Area (ha)	Quantity mm/yr		Total kl/yr	% (Approx)
Inputs	Rainfall		25.76	787		202,731	100
					Input total	202,731	
Outputs							
	Evapotranspiration	*Bush*	8.86	400		35,440	18
		Cleared Pasture	16.90	600		101,400	50
	Superficial aquifer recharge					40,546	20
	Surface Runoff					25,345	12
					Output total	202,731	100
					Balance	0	
Post Development		**Use**	**Area (ha)**	**Quantity mm/yr**		**Total kl/yr**	
Inputs	Rainfall		25.76	787		202,731	96
	Water supply						
	Groundwater abstraction	*Irrigation*	1.00			7,500	4
					Input total	210,231	100
Outputs							
	Evapotranspiration	*Living Stream*	0.93	1,200		11,160	5
		Drainage	2.11	1,200		25,320	12
	Superficial aquifer recharge					126,139	60
	Surface Runoff					24,760	12
	Subsoil Discharge					22,852	11
					Output total	210,231	100
					Balance	0	

5.2 Water Supply and Wastewater

5.2.1 Public Open Spaces

Considering the fit for purpose strategy, the water supply for irrigation of streetscapes and establishment of vegetation within drainage areas is proposed to be from local groundwater resources.

While irrigation areas are yet to be determined, the required demand is likely to be low. As detailed in Section 4.8.3, there is currently allocation available in the Superficial Aquifer. Licencing to provide water for construction will be also be required, to be sourced from the unconfined groundwater reserves consistent with a fit for purpose strategy.

5.2.2 Lot Water Supply

Water supply to lots is to be via extension of the scheme water system. The project civil engineer will negotiate the extension of the system with Water Corporation. There is currently a DN250 main water pipeline through the Study Area which can be used to provide reticulation.

To achieve water efficiency targets, households are to be built consistent with current Building Code of Australia (BCA) water efficiency standards.

5.2.3 Lot Sewerage Reticulation

Wastewater from households will be removed via extension of Water Corporation's Sewer System. The sewer strategy will involve grading to the future Kwinana Type 90 Wastewater Pump Station (WWPS) 'L' which is planned to be located 100 m south of the Study Area.

5.3 Stormwater Management

Stormwater management encompasses local stormwater, as well as regional runoff in the Peel Sub P Drain. The site discharges to the Sub P Drain in its existing state, and these discharge points will be maintained in the proposed stormwater management for the development.

Discharge in, and to, the Peel Sub P Drain in pre and post development conditions is described in the DWMP (DoW, 2009). For post development, storage volumes and maximum discharge rates for each catchment have been provided for the 10 year (10% AEP) and 100 year (1% AEP) ARI events (DoW, 2009).

5.3.1 Peel Sub P Drain

The Structure Plan proposes realigning the Sub P Drain to maximise drainage storage within the HV transmission corridor (Figure 2). The DNMP (DoW, 2009) and advice from DoWER and Water Corporation indicates that the realigned drain must be redesigned as a Living Stream. The realigned drain must also maintain the cross sectional area of the existing drain, and maintain the hydraulic capacity of the existing drain such that flow rates and levels are unchanged, minimising impact on upstream and downstream areas, consistent with Table 4.

The proposed alignment is shown in Figure 18.

The realignment commences at the Thomas Rd culverts, with a 120 m east-west length proposed to be piped until the HC transmission corridor is reached. It is proposed to pipe this section as Thomas Rd elevation is rising to the west, which would result in any open channel being very deep (>2m) at its western extent, with subsequent drain width exceeding 30m.

The proposed living stream design allows for a 4.5 m base width, with 1 in 6 side slopes. A base flow channel of 0.2 m deep and 1.5 m width is included in the design. Figure 19 presents a conceptual cross section of the Living Stream.

A central section of the north-south alignment is also proposed to be piped – this is due to Western Power constraints requiring no open drainage within 30 m of the base of the HV towers (shown in Figure 18). Box culverts are proposed for the two piped sections for flow conveyance.

5.3.2 Local Stormwater Management

Local stormwater management is proposed to be consistent with water sensitive design practices and to meet key objectives and criteria as detailed in Table 1. The local stormwater management system will consist of treatment swales within the central median areas of the roads and ephemeral water storage areas to attenuate and infiltrate peak surface water flows, and to provide water quality treatment for the proposed development prior to discharge to the Sub P Drain.

Stormwater management has been designed according based on small events, minor drainage and major drainage.

Small event management concentrates on the first 15 mm of rainfall (approximately the 1 EY 1 hour event). Small event management will consist of lot retention and vegetated treatment swales for road runoff.

The minor drainage system is defined as the system of underground pipes, swales, kerbs, gutters etc. designed to convey or infiltrate runoff generated by low frequency storms, typically less than the 0.2 EY (5 year ARI) or 10% AEP (10 year ARI) events.

The major drainage system is defined as the arrangement of roads, drainage reserves, and attenuation/infiltration areas planned to provide safe passage of stormwater runoff from extreme events which exceeds the capacity of the minor system.

The drainage system is described in more detail below with the key elements of the drainage system shown in Figures 18 to 20.

5.3.2.1 Small Event Management

The following strategies are proposed to meet the criteria for small event management:

- All lots to retain the first 15 mm of rainfall within the lot. This can be achieved by means of systems such as rainwater tanks, water reuse, infiltration, or a combination of these; and
- For the road reserve areas, small events will be discharged to vegetated treatment areas within the central median strips of the roads. Roads can be graded towards the central median, with flush kerbs or kerb breaks to allow for discharge as overland flow. Treatment swales will be planted with suitable plant species (consistent with vegetation guidelines for biofilters in SW WA (Monash, 2014)). Swale outflow inverts will be located above the 1 year ARI peak flood level, so that all stormwater will infiltrate. The treatment areas may be underlain with subsoil drainage pipes to control groundwater levels (depending on soil conditions) and prevent the treatment areas from becoming water logged. Swale shapes, locations and sizes will be confirmed at UWMP stage.

5.3.2.2 Minor Drainage

To meet the design criteria for the minor drainage system (for events up to the 10% AEP event), the following strategies are proposed (in addition to those proposed for small events management):

- A pit and pipe system will connect the median treatment swales to the flood attenuation basins;
- Flood storages have been located to provide attenuation to stormwater runoff from the Study Area prior to discharge to the Sub P Drain. Storages have been sized to attenuate flow to rates consistent with the DWMS and DWMP;

- Flood storage areas to have a minimum separation of 0.5 m to CGL and a maximum side slope of 1:6 (v:h); and
- Flood storages are located within the powerline easement for the High Voltage (HV) transmission lines, and are located at least 30 m from the base of the towers.

The design strategy is consistent with the objectives provided in the DWMS (JDA, 2013).

5.3.2.3 Major Drainage

The major drainage system is designed to manage rainfall events greater than the 10% AEP (10 year ARI) event, up to the 1% AEP (100 year ARI) event. Key points of the major drainage system strategy are as follows:

- In major storm events the minor drainage structures will be full with excess stormwater bypassing the minor drainage structures (pit and pipe system) and discharging to the detention storage basins via overland flow. Each basin is located in the lowest point of the catchment;
- Discharge rates from the detention basins are controlled to rates calculated based on pro rata areas from the DWMS and DWMP;
- The minimum habitable building floor levels will comply with DoW requirements for a 0.5 m clearance above the estimated 100 year ARI flood level in the Peel Sub P Drain, and 0.3 m clearance above the 100 year ARI flood level for local stormwater infrastructure.
- Flood storage areas to have a minimum separation of 0.5 m to CGL and a maximum side slope of 1:6 (v:h); and
- All pipe outlets to the Peel Main Drain will be free flowing.

The design strategy is consistent with the objectives provided in the DWMS (JDA, 2013).

5.3.2.4 Surface Water Modelling

The XP-STORM model was used to estimate drainage basins and minor drainage structures for the Study Area. Drainage detention storage locations were modelled based on existing topographic contours, and local structure plan constraints. Storage elevations have been assumed at least 0.5 m above the MGL (Figure 16). Existing Peel Sub P Drain inverts were maintained at the upstream extent (Thomas Rd) and downstream extent (Sub P1 Drain).

Five basins are proposed (Figure 18) for the Study Area, as follows:

- Basin B1 is a large storage located west of the Sub P Living Stream – this will be used to attenuate runoff from the majority of the area west of the HV transmission corridor for minor and major rainfall events;
- Basin B2 is a small basin located between proposed roads and the 30 m HV tower buffer zones;
- Basin B3 is a swale basin locates within the HV transmission corridor between the access road and the Sub P Living Stream;
- Basin B4 is located east of the Sub P Living Stream and will drain the eastern part of the Study Area;
- Basin B5 is located east of the Sub P Living Stream immediately north of the HV towers.

The design storms modelled were according to the methodology in Australian Rainfall & Runoff (AR&R) (Institution of Engineers Australia, 1987). The rainfall temporal pattern was assumed to be spatially uniform across the catchment with storm durations from 10 minutes to 72 hours.

Australian Rainfall and Runoff (ARR) 1987 (IEAust, 1987) was used in the stormwater modelling for this report rather than the recently released Australian Rainfall and Runoff 2016 (Ball et al., 2016), as flows and levels from the Jandakot District Water Management Plan (DWMP) (DoW, 2009) were used in the JDA modelling in this report. The DWMP used ARR1987 in its preparation.

Allowable Flow Rates

The Study Area is located within sub-catchments CATP2 of the DWMP (DoW, 2009). The peak 100 year ARI (1% AEP) allowable flow rates from the Study Area were calculated pro-rata from the peak flows listed in the DWMP (DoW, 2009) and the DWMS (JDA, 2013) and presented in Table 9. The pro rata rate of 0.069 m^3/s will be used to calculate the peak discharge rates for the post-development catchments.

TABLE 9: PEAK 100YR ARI ALLOWABLE OUTFLOW RATES

Parameter	CATP2	Study Area (prorata)
Area (ha)	74.7	25.76
10 year ARI (10% AEP) Peak Discharge Flow (m^3/s)	0.12	0.0414
100 year ARI (1% AEP) Peak Discharge Flow (m^3/s)	0.20	0.0690
10 year ARI (10% AEP) Detention Volume (m^3)	26,000	8,970
100 year ARI (1% AEP) Detention Volume (m^3)	42,600	14,690

Catchment Runoff Parameters

Runoff coefficients applied for various land uses are presented in Table 10 for the land use areas presented in Table 3. Catchments are shown in Figure 20.

The mixed use lots will be required to retain the first 15 mm of rainfall on site. For rainfall greater than 15 mm, infiltration will be maximise where possible, particularly within carpark areas.

For the roads, it is proposed to use median swales to retain and infiltrate the first 15 mm (see Figure 18).

Drainage and the Sub P drain areas will receive almost 100% of rainfall, with only minor losses allowed.

The HV transmission easement will be a mix of car parking areas and possibly some landscape areas. These will be require to infiltrate the first 15 mm of rainfall.

TABLE 10: RUNOFF PARAMETERS FOR XP-STORM MODEL

Land Use	Initial Loss (mm)	Proportional Loss (%)
Mixed Use Lots	15	40
Roads	15	20
Drainage	-	5
Sub P Living Stream	-	5
HV Transmission Easement	15	40

Modelling parameters used in the XP-Storm modelling are provided in Appendix F.

Modelling and Results

The five proposed basins are designed to attenuate flow prior to discharge to the Sub P Drain to rates that are consistent with the DWMP (DoW, 2009).

In several basins a low level and high level outlet has been used to provide required attenuation for the 10 and 100 year ARI events. Outlet diameters are small, to achieve the required outlet discharge constraints. Orifice plates will be needed over outlet pipes, as required diameters are less than standard 225 mm diameter pipes.

XP-STORM modelling results are presented in Table 11 for the three drainage basins for the 10 and 100 year ARI (10% and 1% AEP) events.

Combined peak outflow from basins A and C is 0.066 m^3/s for the 100 year ARI, compared to the value of 0.069 m^3/s (from Table 9) required by the DWMP. Combined storage volume to achieve this rate is 17,710 m^3, compared to the 14,690 m^3 required in the DWMP.

Combined peak outflow from basins A and C is 0.037 m^3/s for the 10 year ARI, compared to the value of 0.041 m^3/s (from Table 9) required by the DWMP. Combined storage volume to achieve this rate is 11,300 m^3, compared to the 8,970 m^3 required in the DWMP.

This modelling indicates that the requirements of the DWMP for offline storage has been achieved. The storm event plan is shown in Figure 21.

The Sub P Living Stream has an upstream 1% AEP peak level of 15.74 mAHD at PPCB2a (immediately downstream of the Thomas Rd culverts) – this compares to the pre development level of 15.74 mAHD from Table 4. The 10% AEP peak level at PPCB2a is 15.56 mAHD, compared to 15.58 mAHD for pre development (Table 4).

The Sub P Living Stream has a downstream 1% AEP peak level of 15.24 mAHD at PPCB1 (confluence with Sub P1 drain on existing alignment) – this compares to the pre development level of 15.21 mAHD from Table 4. The 10% AEP peak level at PPCB2a is 15.09 mAHD, compared to 15.06 mAHD for pre development (Table 4).

The discharge from the Sub P Living Stream into the east-west Sub P / P1 Drain is 0.40 m^3/s and 0.20 m^3/s for the 1% and 10% AEP events respectively. The pre development discharge rates (from Section 4.7.1) are 0.48 m^3/s and 0.23 m^3/s for the 1% and 10% AEP events respectively.

This indicates that the redesign of the Sub P through the Study Area as a Living Stream is sufficient so that upstream and downstream impacts are negligible.

TABLE 11: MODELLING RESULTS – DRAINAGE BASINS

	Basin 1	Basin 2	Basin 3	Basin 4	Basin 5
Catchment Areas					
Mixed Use (ha)	11.22	0	1.54	3.15	1.84
Roads (ha)	1.05	0	0.58	1.44	0
Drainage (ha)	1.06	0.06	0.26	0.39	0.34
HV Transmission Easement (ha)	0	0.21	0	0.21	1.42
Basin Details					
Invert Level (mAHD)	15.30	15.50	15.80	15.30	15.80
MGL (mAHD)	14.5	14.9	15.3	14.8	15.3
Low Level Outlet Diameter (m)	0.11	0.04	0.05	0.12	0.065
Low Level Outlet Invert (mAHD)	15.30	15.50	15.80	15.30	15.80
High Level Outlet Diameter (m)	0.14	-	0.095	-	-
High Level Outlet Invert (mAHD)	16.10	-	16.60	-	-
100 year ARI					
Peak Water Level (mAHD)	16.49	16.44	16.79	16.46	16.98
Critical Duration (hours)	72	72	72	72	72
Maximum Depth (m)	1.19	0.94	0.99	1.16	1.18
Peak Water Level Area (ha)	0.997	0.028	0.292	0.387	0.317
Peak Water Storage Volume (m^3)	9830	130	1670	3250	2820
Peak Discharge – Low Level Outlet (m^3/s)	0.016	0.001	0.002	0.020	0.005
Peak Discharge – High Level Outlet (m^3/s)	0.016	-	0.006	-	-
Peak Discharge to Living Stream (m^3/s)	0.032	0.001	0.008	0.020	0.005
10 year ARI					
Peak Water Level (mAHD)	16.14	16.20	16.63	16.05	16.57
Critical Duration (hours)	72	24	72	72	72
Maximum Depth (m)	0.84	0.70	0.83	0.75	0.77
Peak Water Level Area (m^2)	0.894	0.020	0.251	0.307	0.261
Peak Water Storage Volume (m^3)	6520	70	1240	1830	1640
Peak Discharge – Low Level Outlet (m^3/s)	0.013	0.001	0.002	0.015	0.004
Peak Discharge – High Level Outlet (m^3/s)	0.001	-	0.001	-	-
Peak Discharge to Living Stream (m^3/s)	0.014	0.001	0.003	0.015	0.004

5.4 Groundwater Management

Groundwater Management for the Study Area has been prepared in line with design criteria presented in the Casuarina DWMS (JDA, 2013).

The objectives are to:

- Protection of infrastructure and assets from flooding and inundation by high seasonal groundwater levels, perching and / or soil moisture.
- Protection of groundwater-dependent ecosystems from the impacts of urban runoff.
- Managing and minimising changes in groundwater levels and groundwater quality following development.
- Adopt nutrient load reduction design objectives for discharges to groundwater.

5.4.1 Design Groundwater

As described in Section 4.8.1, the MGL for the Study Area has been estimated based on the long term record of DoWER monitoring bore T200(O). In this long term bore, current groundwater levels have been reducing over the last 15 years.

Consistent with the DWMS, the MGL has been used as the design groundwater level, with any subsoil drainage inverts set to these levels.

5.4.2 Managing Changes to Groundwater Levels

To protect infrastructure from high seasonal groundwater levels, the design groundwater level has been set to the estimated MGL, as described in Section 4.8.1 (Figure 16), consistent with DoWER requirements. The MGL has been modified slightly to reflect the realigned Sub P Living Stream. Sufficient clean, free draining sand fill will be used to provide separation between finished surface and groundwater. With reference to these contours, subsoil drainage may be required as part of the development with the following criteria adopted:

- Subsoils will discharge treated stormwater directly into the Peel Sub P Drain.
- Subsoils installed where required to ensure sufficient clearance to lot finished levels and operation of minor drainage system; and
- Subsoils will be set at or above pre-development MGL.

An indicative subsoil drainage layout is shown in Figure 22. Detailed subsoil drainage design will be addressed in the UWMP.

5.5 Water Quality Management

5.5.1 Nutrient Source Controls

The effective implementation of the structural and non-structural controls as part of the urban development will enhance water quality from the Study Area as a result of the land use change.

Non-structural source controls to reduce nutrient export from the Study Area will focus on reducing the need for nutrient inputs into the landscape. The following strategies are proposed;

- Local native plants make up a minimum 50% of the planted areas and streetscape treatments. Any non-local species will be selected for drought tolerance and low fertiliser requirements.
- Street sweeping. The UWMP will outline the schedule and cleaning requirements for street sweeping, which will be co-ordinated with the City of Kwinana.

Structural source controls are proposed to compliment the non-structural source controls and provide a complete treatment train for stormwater movement through the development. Median treatment swales will include irrigation and a minimum of 250 mm of amended soil media.

The minimum specifications for median treatment swales are presented in Table 12.

TABLE 12: MINIMUM SPECIFICATIONS FOR RAIN GARDENS

Item	Specification
Amended soil media	• Minimum 250 mm thick. • Hydraulic Conductivity (sat) 3 m/day. • PRI >10 • Light compaction only. • Infiltration testing of material prior to installation and again once construction is complete. On-going testing as per the monitoring program.
Plant selection (As per Monash (2014) guidelines)	• Tolerant of periodic inundation and extended dry periods. • Preferential selection of endemic and local native species (Monash, 2014).

The median swales should be sized to function correctly with a K (saturated) of 3 m/day. Research conducted by the Facility for Advancing Water Bio-filtration (FAWB, 2009) indicates that the desired K_{sat} is in the range of 2.5 to 7 m/day, to fulfil the drainage requirements as well as retain sufficient moisture to support the vegetation. The FAWB (2009) research also specifies that for vegetated systems some clogging will occur in the first few years until the vegetation is established. Once the plants are established, the roots and associated biological activity maintain the conductivity of the soil media over time.

Data currently guiding the design of bio-retention systems is largely based on laboratory testing. Details of plant selection, maintenance and likely nutrient uptake in the Casuarina environment are not known at this stage. The specifications provided in this document are the best available information at the time. Some flexibility in the specifications will be required as the knowledge base increases.

5.5.2 Land Use Change Nutrient Impacts

The UNDO (Urban Nutrient Decision Outcomes) decision support tool (DoW, 2016) has been used to help quantify the nutrient inputs and nutrient exports for the post-development scenario. The UNDO tool analyses inputs for Total Phosphorus and Total Nitrogen only.

Prior to the implementation of the proposed structural and non-structural controls, the total Nitrogen and Phosphorus input rates from the future urban land use are 11.1 kg/ha/yr and 2.2 kg/ha/yr respectively. When compared against the Peel Harvey WSUD Planning Policy input rates targets of 150 kg/ha/yr for Nitrogen and 15 kg/ha/yr for Phosphorus the input rates for the site are considerably less.

With the structural treatment controls in place export loads of Nitrogen and Phosphorus are reduced by 44% for Nitrogen and 25% for Phosphorus. Greater detail on the UNDO modelling inputs, exports and results are provided in Appendix G.

6. IMPLEMENTATION

6.1 Roles and Responsibilities

Table 13 details the roles and responsibilities to undertake the implementation plan.

The operation and maintenance of the stormwater management system will initially be the responsibility of the developer but will ultimately revert to the Local Authority. Preparation of the UWMP and post development monitoring will be the responsibility of the developer.

TABLE 13: IMPLEMENTION RESPONSIBILITIES

IMPLEMENTATION		RESPONSIBILITY	
LWMS Section	Action	Developer	City of Kwinana
6.2	Preparation of an Urban Water Management Plan to support subdivision	✓	
6.4	Construction of stormwater system	✓	
6.4	Stormwater system operation and maintenance Initially Following hand over	✓	✓
6.5	Monitoring Program – Post Development	✓	

6.2 Urban Water Management Plan (Subdivision)

Processes defined in Better Urban Water Management (WAPC, 2008) require an Urban Water Management Plan (UWMP) at subdivision stage. With an approved LWMS, a UWMP is required as a condition of subdivision and prior to any subdivision activities.

Further work that is identified for inclusion in the UWMP:

- Design of treatment structures, median swales and dry/ephemeral storages as outlined in the Stormwater Management Manual (DoW, 2007);
- Refine the final configuration (storage side slopes etc) and exact location of the flood detention storage areas, dependent on final earthworks, drainage and road design levels;
- Confirmation of any subsoil location and levels;
- Peel Sub P Drain works and maintenance responsibilities; and
- Lower inverts for subsoil drainage than MGL, based on declining rainfall since 1975 and future climate predictions.

6.3 Construction Management

6.3.1 Dewatering

Dewatering will be required for some elements of subdivision construction. Given the depth of construction, dewatering will only be in the Superficial Aquifer.

Prior to commencement of any dewatering, the construction contractor will apply for and obtain from DoWER a "Licence to Take Water". Dewatering will be carried out in accordance with the licence conditions. Where possible, construction will be timed to minimise impacts on groundwater and any dewatering requirement.

6.3.2 Acid Sulphate Soils

Management of Acid Sulphate Soils (ASS) will be addressed as a separate process to the urban water management document approvals process (LWMS/UWMP).

ASS will be investigated and managed in accordance with the applicable DEC Acid Sulphate Soil Guideline Series and requirements of dewatering licences as they arise.

6.4 Stormwater System Operation and Maintenance

The re-construction, operation and maintenance of the Peel Sub P Drain will initially be the responsibility of the developer, ultimately reverting to the City of Kwinana.

The surface and subsoil drainage system will require regular maintenance to ensure correct operation. It is considered the following operating and maintenance practices will be required periodically:

- Removal of debris to prevent blockages;
- Street sweeping to reduce particulate build up on road surfaces and gutters;
- Maintenance of vegetation in bio-retention systems / storages as outlined in the UWMP;
- Cleaning of sediment build up and litter layer on the bottom of storages as specified in the UWMP;
- Undertake education campaigns regarding source control practices to minimise pollution runoff into stormwater drainage system; and
- Checks on subsoil drainage function.

The operating and maintenance schedule required is presented in Table 14.

TABLE 14: MAINTENANCE SCHEDULE FOR DRAINAGE INFRASTRUCTURE

Item	Maintenance Interval		
	Quarterly	Biannually	As required
Street Drainage			
Street sweeping to reduce particulate build-up	✓		
Eduction of sediment and rubbish in manholes			✓
Removal of debris to prevent blockages	✓		
Vegetated Treatment Swales			
Inspect for erosion + sediment accumulation		✓	
Assess health of vegetation. Remove dead plants and replace where necessary.	✓		
Removal of sediment and leaf litter layer build up.			✓

6.5 Monitoring Programme and Contingency Planning

A post-development monitoring program has been designed to allow a quantitative assessment of hydrological impacts of the proposed development.

This program is designed to operate over a 3 year period. The program will be periodically reviewed to ensure suitability and practicality, and the program may need to be modified as data is collected to increase or decrease the monitoring effort in a particular area or alter the scope of the programme itself.

The post-development monitoring locations proposed are:

- Monitor groundwater levels in four (4) proposed groundwater sites (Figure 23).
- Collection of water quality information from the four (4) proposed groundwater monitoring sites for comparison with pre development data (Table 7).
- Measure discharge and water quality in the Peel Sub P Drain at sites LSWS1 and LSWS2 (Figure 23) located at the northern and southern boundaries of the Study Area respectively. This data will be used for comparison to pre-development data.
- Measure water level and water quality within the two (2) proposed drainage basins (SW3 and SW4).

A summary of the proposed monitoring program and reporting schedule is shown in Table 15, with the frequency of water quality target review and the contingency action plan detailed in Table 16.

All sampling is to be conducted according to Australian Standards and all water quality sample testing will be conducted by a NATA approved laboratory. Where the maximum guidelines value (see Table 15) is exceeded for more than two consecutive quarters the contingency actions enlisted in Table 16 should be implemented.

TABLE 15: MONITORING SCHEDULE AND REPORTING

Monitoring Type	Location	Method	Frequency, Timing & Responsibility	Parameter	Reporting
Groundwater Level	4 monitoring sites (11, 12, 14 and WAM3s)	Electrical depth probe or similar	Quarterly for 3 years by Developer (Jan, April, July, Oct)	Water Level (m AHD)	Annual reports to be provided by the developer for a period of 3 years. Reports will be submitted to DoW/CoK within 3 months of completion of the reporting period.
Surface Water Quantity	Locations S1 (eastern boundary) and S2 (western boundary) within the Sub P of the Study Area	Continuous logger	Downloaded 3 times per year	Stage (Flow inferred)	
Groundwater Quality	1 monitoring site (WAM3)	Pumped bore samples	Quarterly for 3 years by Developer (Jan, April, July, Oct)	In-situ: pH, EC, temp Lab: TN, TKN, NO_X, Ammonia, TP, FRP, selected metals	
Surface Water Quality	Locations S1 (eastern boundary) and S2 (western boundary) within the Sub P of the Study Area	Collected grab samples or rising stage sampler	3 times per year while flowing	In-situ: pH, EC, temp Lab: TN, TKN, NO_X, Ammonia, TP, FRP, selected metals, TSS	

TABLE 16: CONTINGENCY PLANNING

Monitoring Type	Criteria for Assessment	Criteria Assessment Frequency	Contingency Action
Groundwater Level	Groundwater levels not to exceed the estimated phreatic line by more than 300 mm	After monitoring occasion	1. Review design and operation of subsoil and stormwater drainage system. 2. Perform maintenance as required.
Surface Water Quantity	Flow discharging from Study Area to be within peak flows established in the LWMS	Annual review of water quantity targets	1. Confirm peak flow from upstream catchment has not increased 2. Review design and operation of detention storage areas 3. Perform maintenance as required
Groundwater Quality	Nutrient concentrations in shallow bores should not exceed 20% of the maximum recorded pre-development level.	Annual review of water quality targets	1. Identify and remove any point sources. 2. Consider reinforcement of Community Education/Awareness program. 3. Review operational and maintenance (e.g. fertilising, cleaning) practices. 4. Consider alterations to POS areas including landscape regimes and soil amendment. 5. Consider modifications to the stormwater system. 6. Consider initiation of community based projects.
Surface Water Quality	Assess performance of vegetated detention storages in nutrient reduction. (WQ discharging from the Study Area aims should not exceed 20% of the maximum recorded pre-development level.).		

7. REFERENCES

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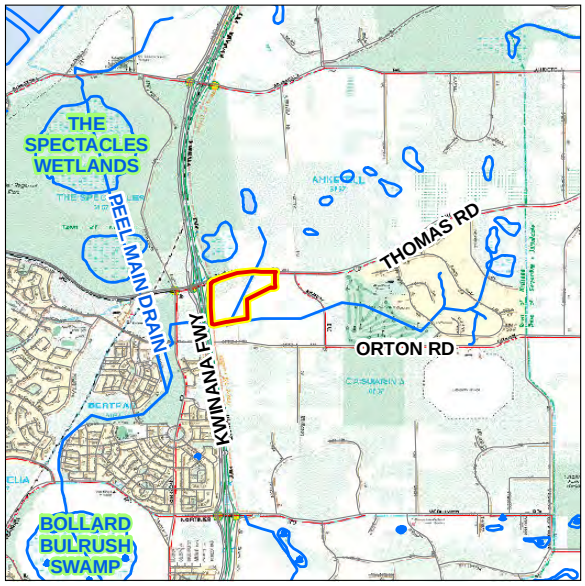
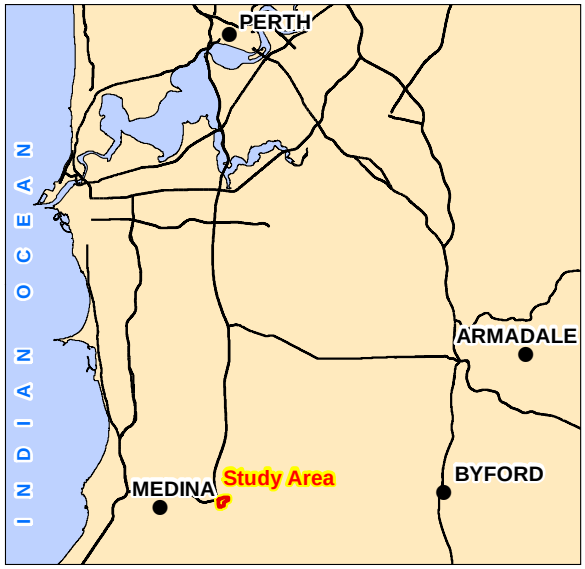
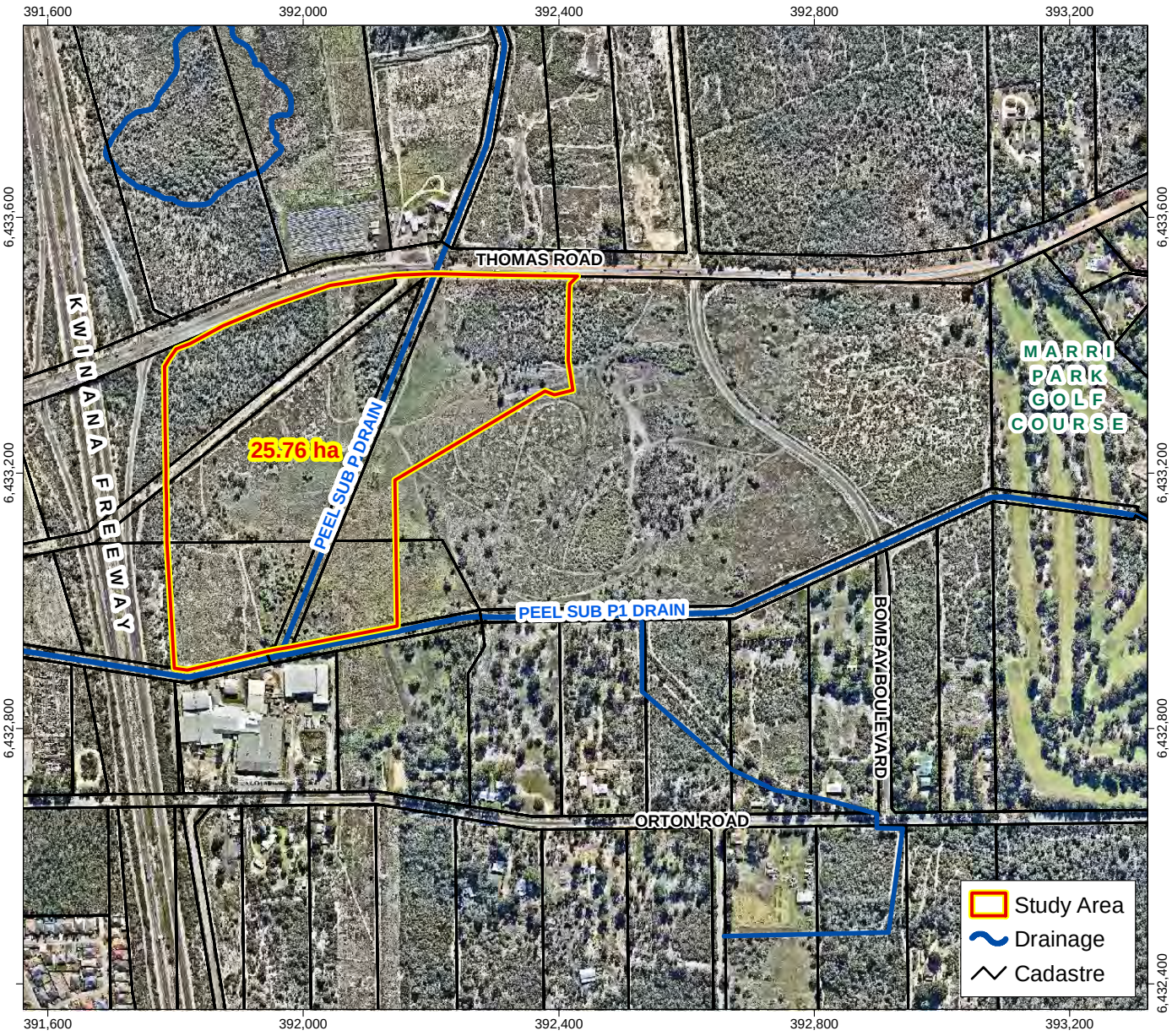
FIGURES







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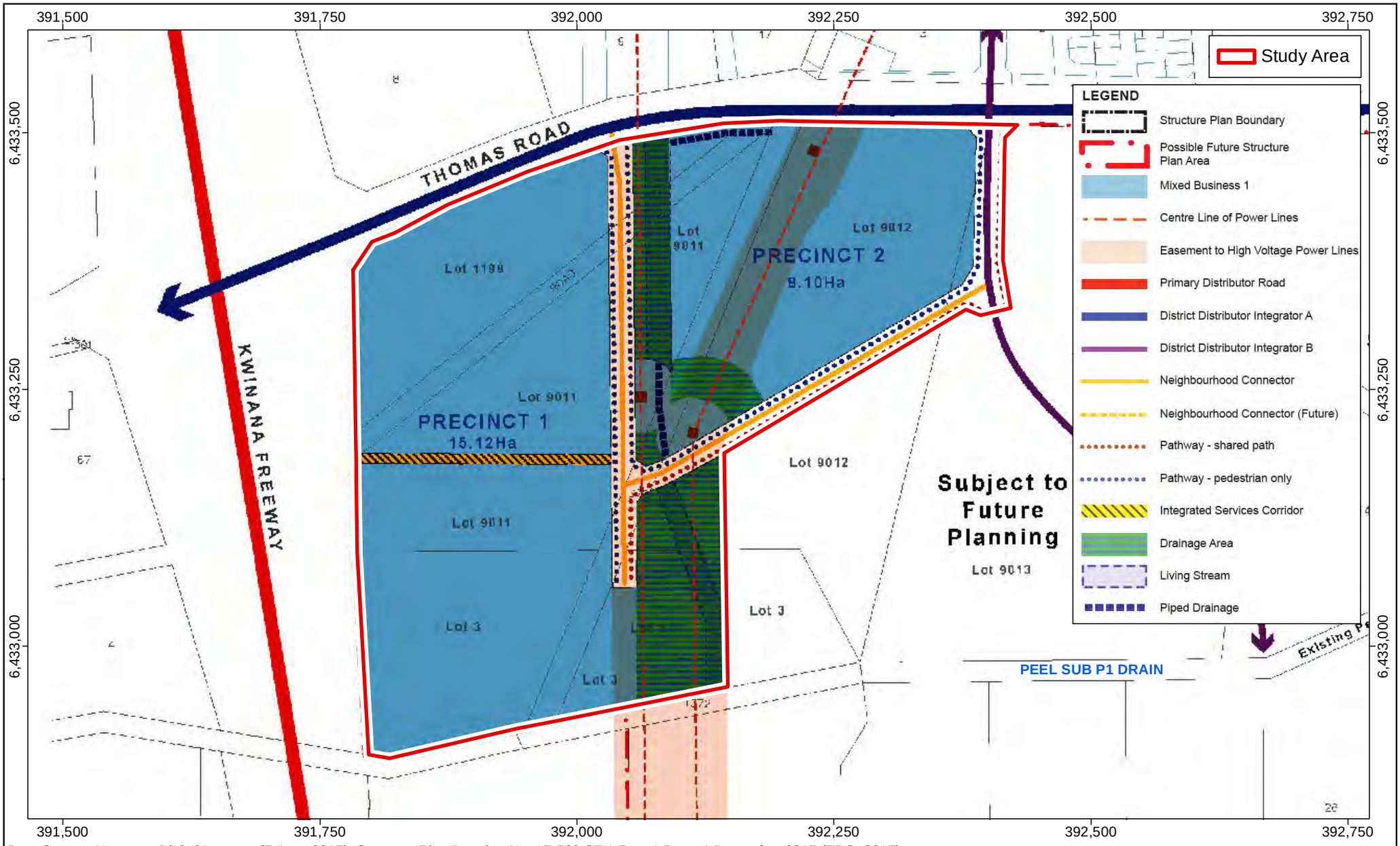
Aigle Royal Developments

Lots 9011, 9012, 9013, 1199 & 3 Thomas Road, Casuarina Structure Plan - LWMS

Figure 1: Location Plan



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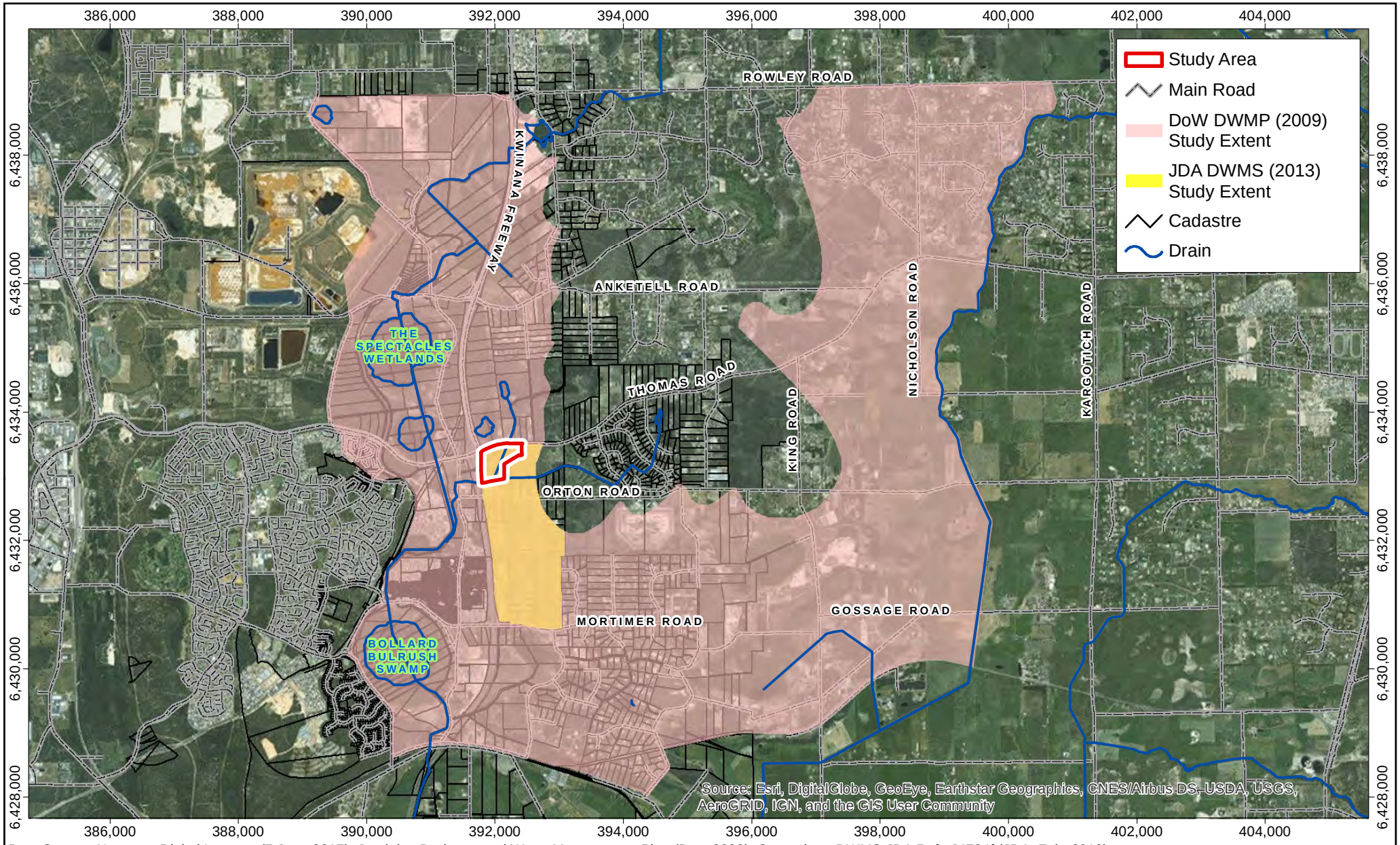
Lots 9011, 9012, 9013, 1199 & 3 Thomas Road, Casuarina Structure Plan - LWMS

Figure 2: Proposed Structure Plan



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Aigle Royal Developments
Lots 9011, 9012, 9013, 1199 & 3 Thomas Road, Casuarina Structure Plan - LWMS
Figure 3: DWMP / DWMS Locations

Data Source: Nearmap Digital Imagery (7 June 2017);

Coordinate System: GDA 94, Zone 50

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Job No. J6447

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Aigle Royal Developments

Lots 9011, 9012, 9013, 1199 & 3 Thomas Road, Casuarina Structure Plan - LWMS

Figure 4: Aerial Photography

Data Source: Nearmap Digital Imagery (7 June 2017);

Coordinate System: GDA 94, Zone 50

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Job No. J6447

Scale: 1:5,000 @A4

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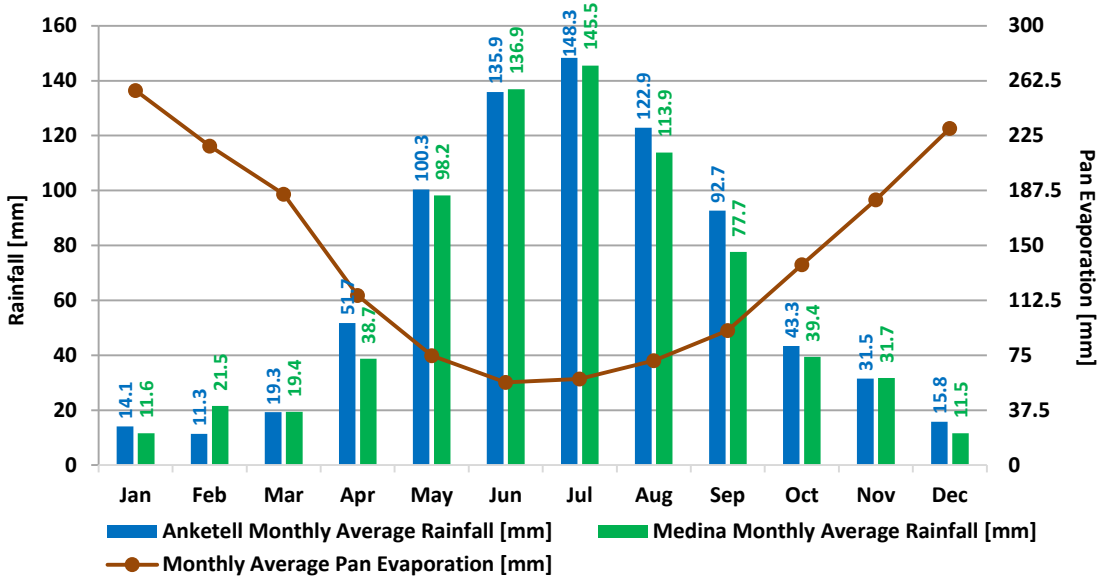
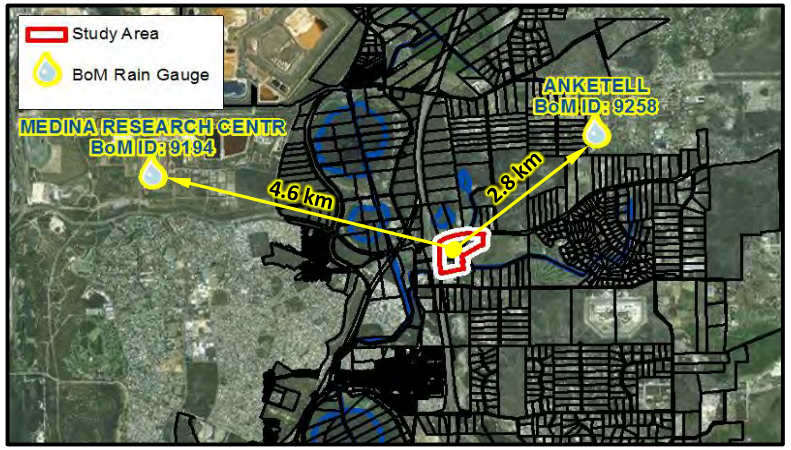
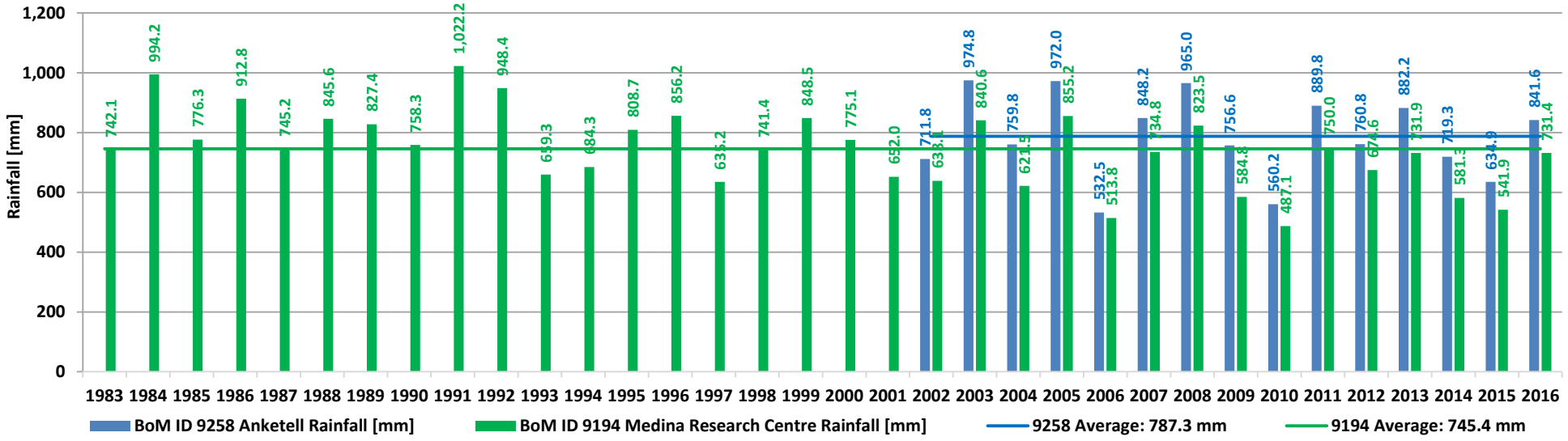
Aigle Royal Developments

Lots 9011, 9012, 9013, 1199 & 3 Thomas Road, Casuarina Structure Plan - LWMS

Figure 5: Topography







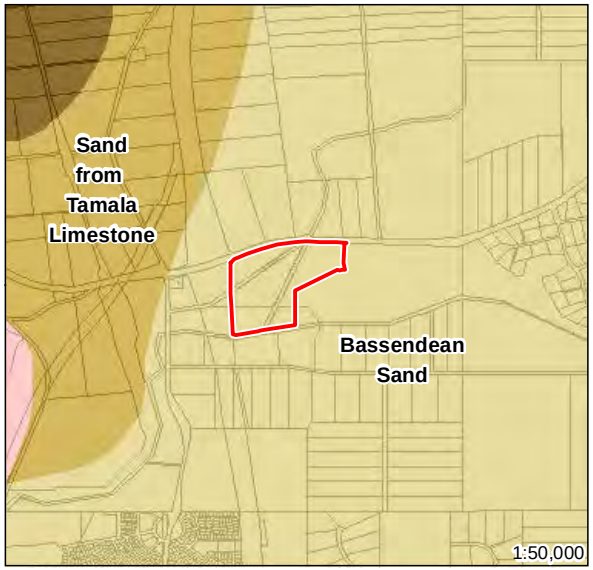
Data Source: Anketell & Medina Research Centre Rain Gauging Stations BoM ID 9258 & 9194 (BoM, 2017); 1975-2005 Average Pan Evaporation Gridded Data (BoM, 2017);

Job No. J6447

Aigle Royal Developments

Lots 9011, 9012, 9013, 1199 & 3 Thomas Road, Casuarina Structure Plan - LWMS

Figure 6: Rainfall And Evaporation



Lithological Classification

S7 - sand, pale and olive yellow, medium to coarse-grained, sub-angular to sub-rounded quartz, trace of feldspar, moderately sorted, of residual origin.

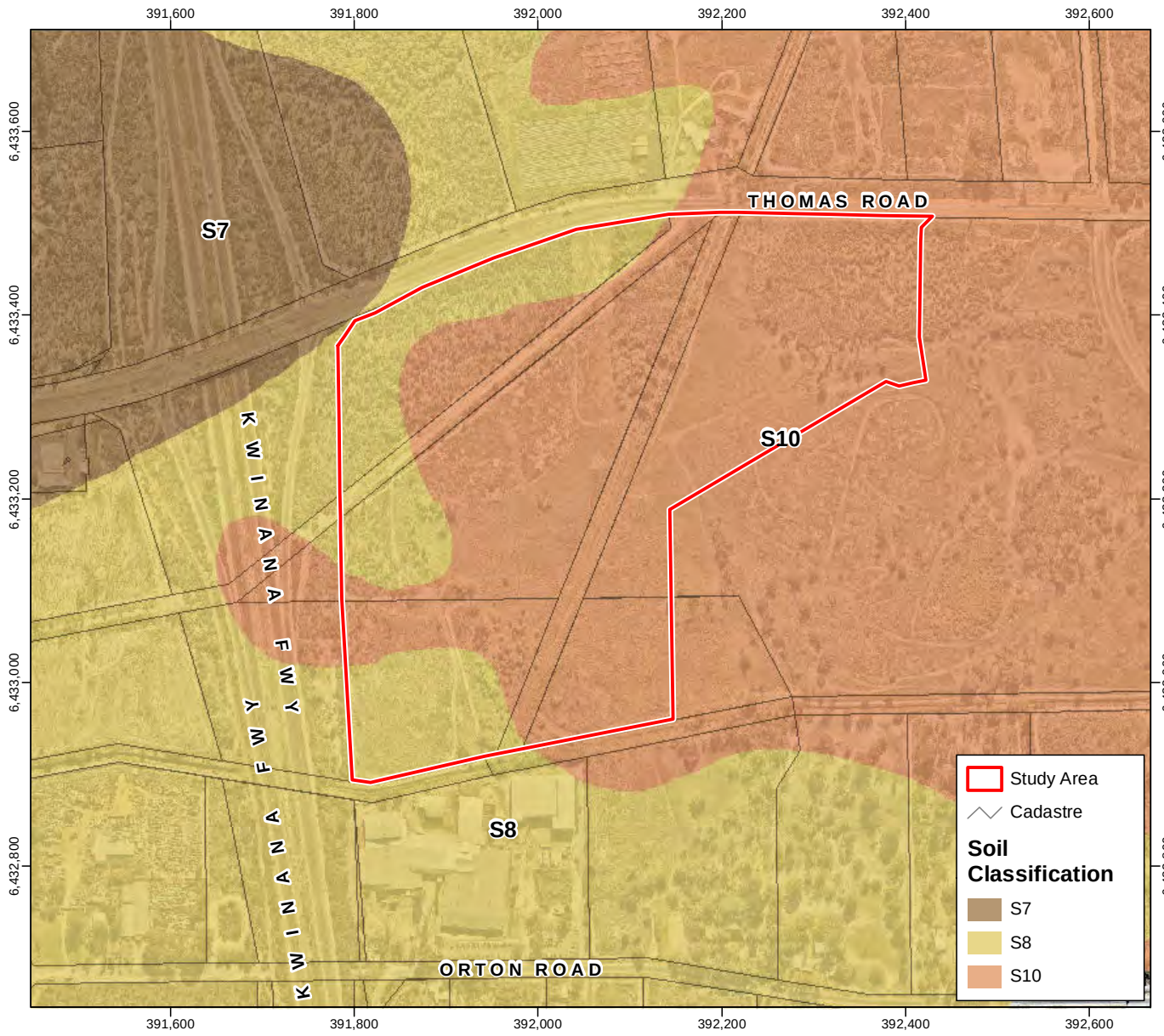
S8 - sand, very light grey at surface, yellow at depth, fine to medium-grained, sub-rounded quartz, moderately well sorted of eolian origin.

S10 - sand, white to pale grey at surface, yellow at depth, fine to medium-grained, moderately sorted, subangular to subrounded, minor heavy minerals, over sandy clay to clayey sand of the Guildford Formation, of eolian origin.

Surface Geology

Bassendean Sands - Aeolian and coastal sediment. Basal conglomerates overlain by dune quartz sand with heavy mineral concentrations.

Coastal Sand Dunes - calcareous sand with quartz sand and minor fine-grained, black, heavy mineral concentration.



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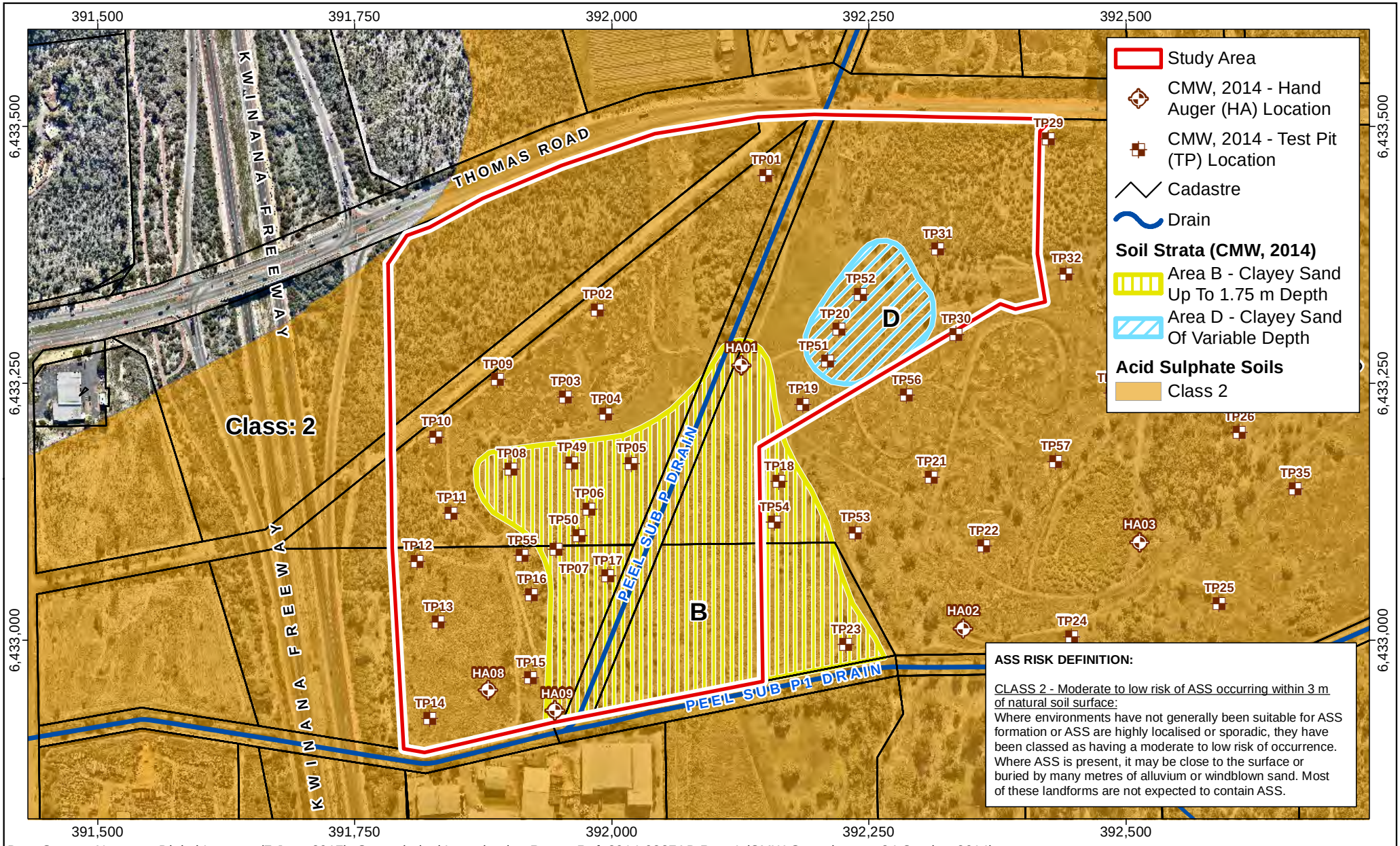
Aigle Royal Developments
Lots 9011, 9012, 9013, 1199 & 3 Thomas Road, Casuarina Structure Plan - LWMS

Figure 7: Surface Geology



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Aigle Royal Developments

Lots 9011, 9012, 9013, 1199 & 3 Thomas Road, Casuarina Structure Plan - LWMS

Figure 8: Geotechnical and ASS Mapping

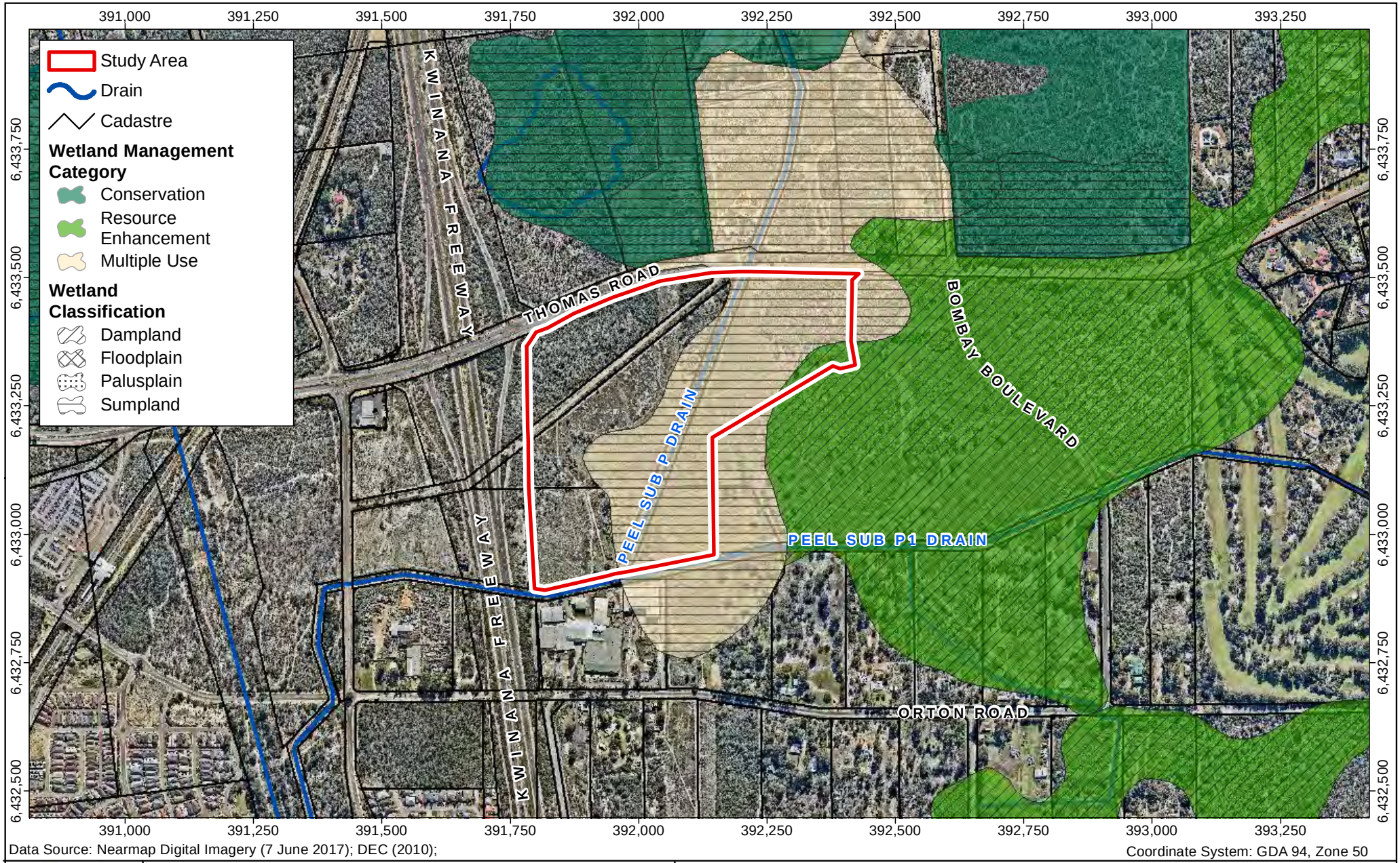

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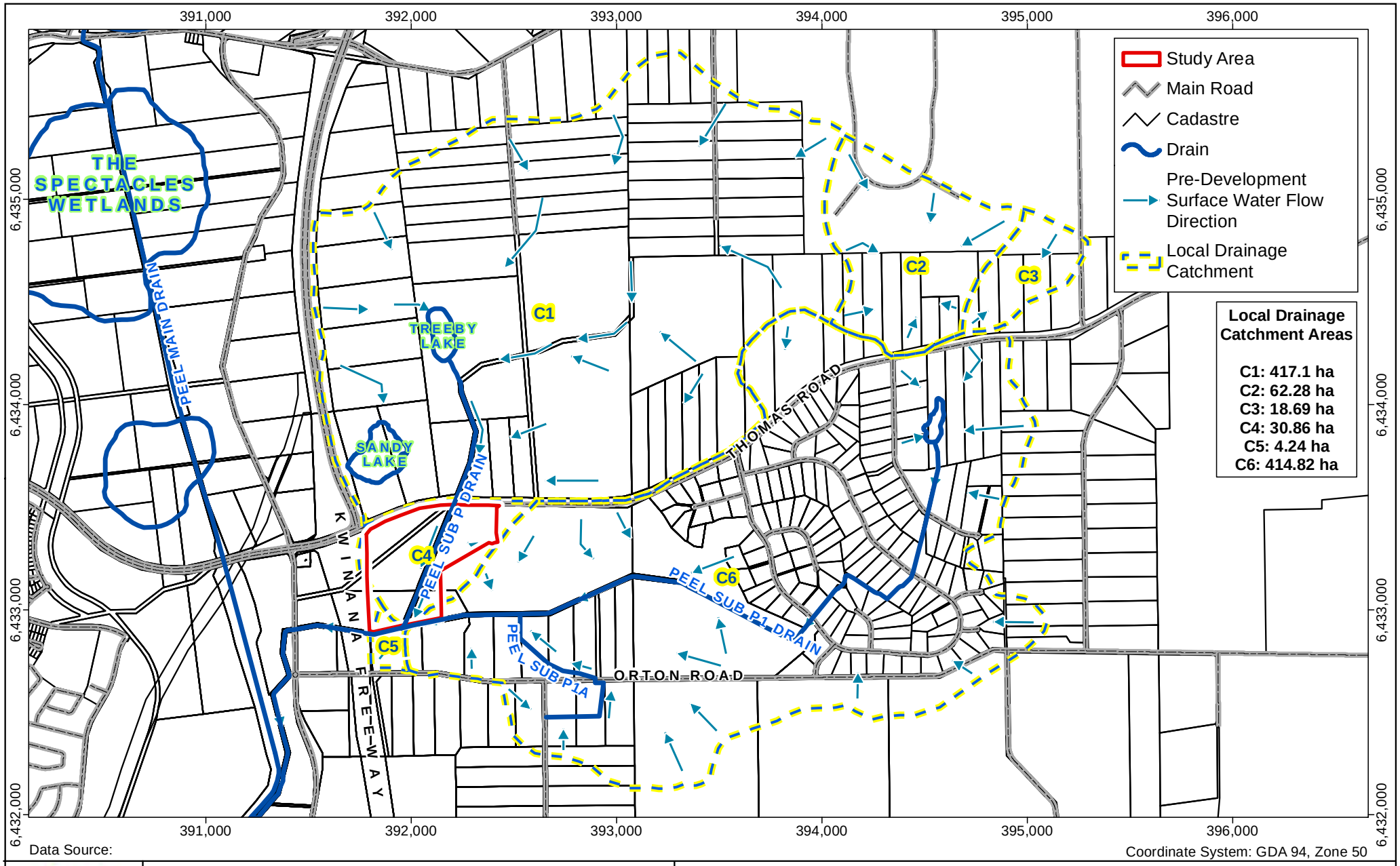
Figure 9: Wetland Mapping



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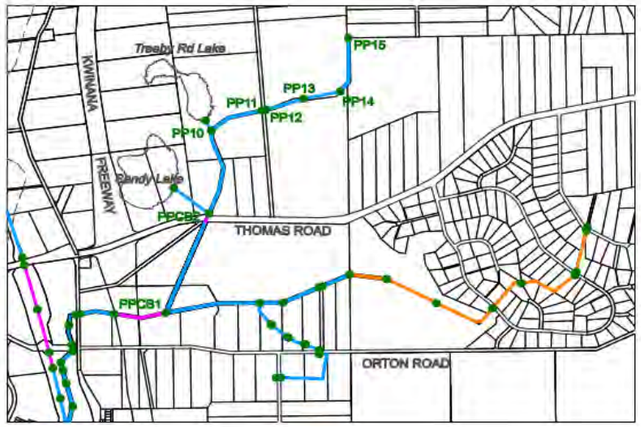
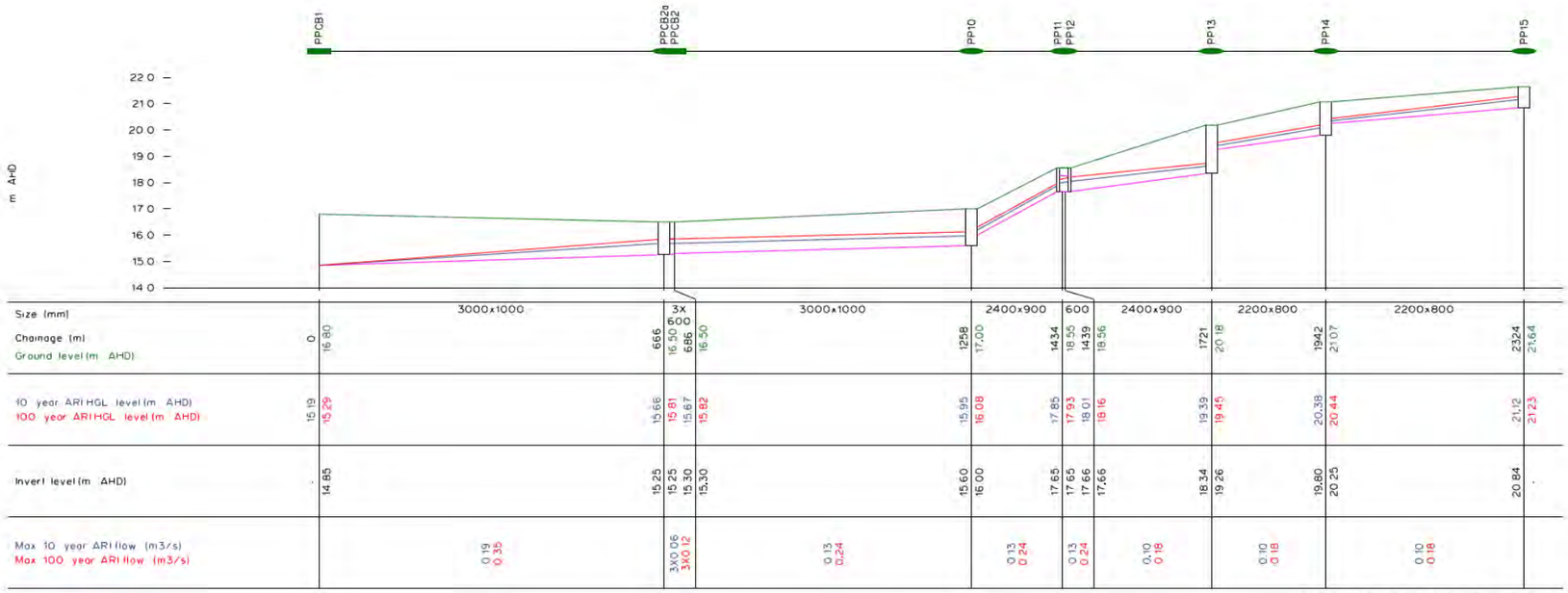
Aigle Royal Developments

Lots 9011, 9012, 9013, 1199 & 3 Thomas Road, Casuarina Structure Plan - LWMS

Figure 10: Surface Water Drainage Mapping

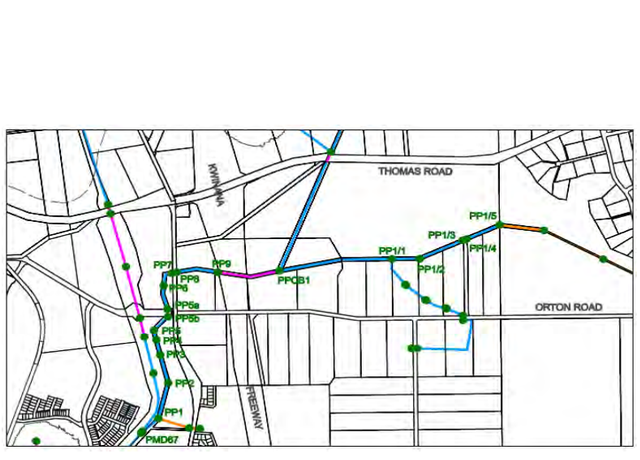


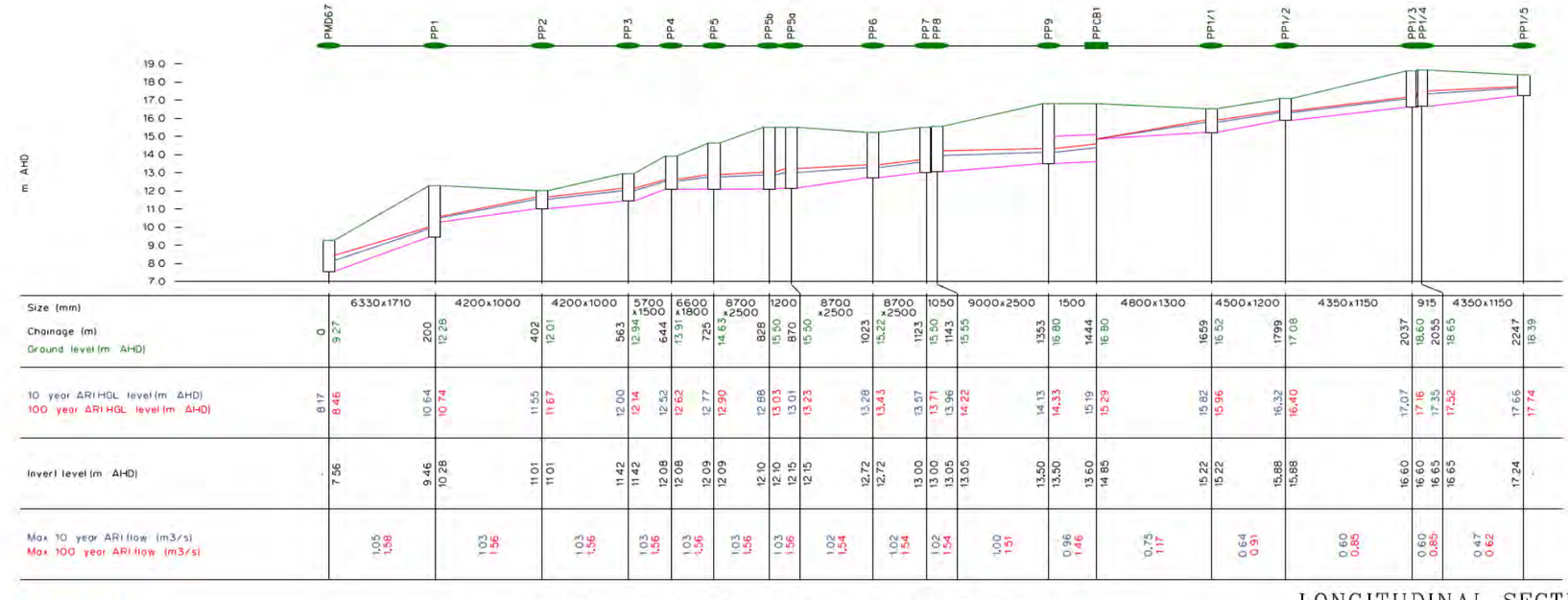


WATER CORPORATION

Peel Sub P Drain

LONGITUDINAL SECTION
Existing System HGLs & Flows





WATER CORPORATION

Peel Sub P Drain and Peel Sub P1 Drain

LONGITUDINAL SECTION
Existing System HGLs & Flows

Data Source: Jandakot DWMP (DoW, 2009)

JDA Consultant Hydrologists

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Aigle Royal Developments
Lots 9011, 9012, 9013, 1199 & 3 Thomas Road, Casuarina Structure Plan - LWMS
Figure 11: Peel Sub P Existing Long Sections from DWMP

Data Source: Nearmap Digital Imagery (7 June 2017);

Coordinate System: GDA 94, Zone 50

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Job No. J6447

Scale: 1:10,000 @A4

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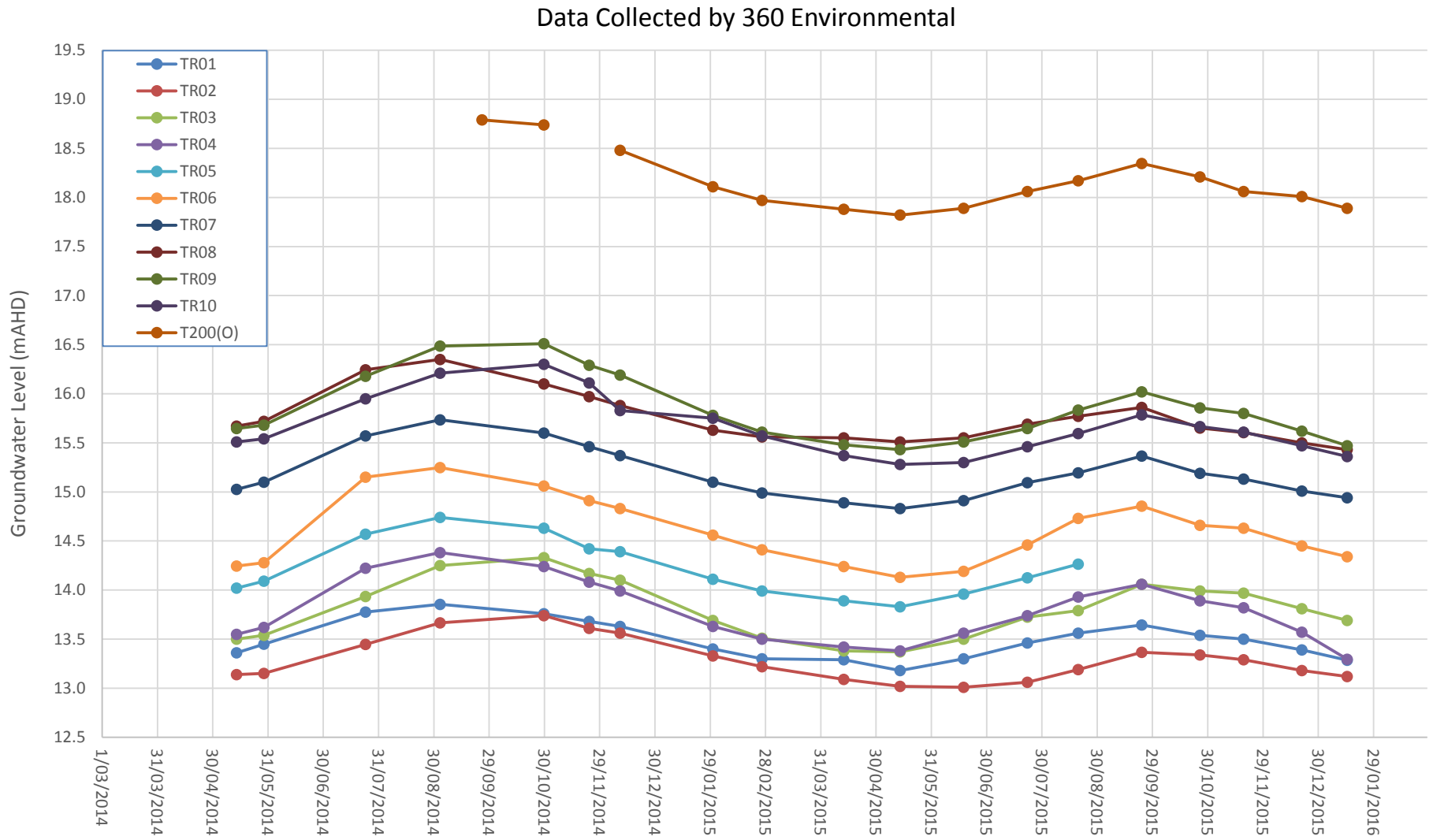
Aigle Royal Developments

Lots 9011, 9012, 9013, 1199 & 3 Thomas Road, Casuarina Structure Plan - LWMS

Figure 12: Groundwater Monitoring Bore Locations



Data Source: Levels measured by 360 Environmental

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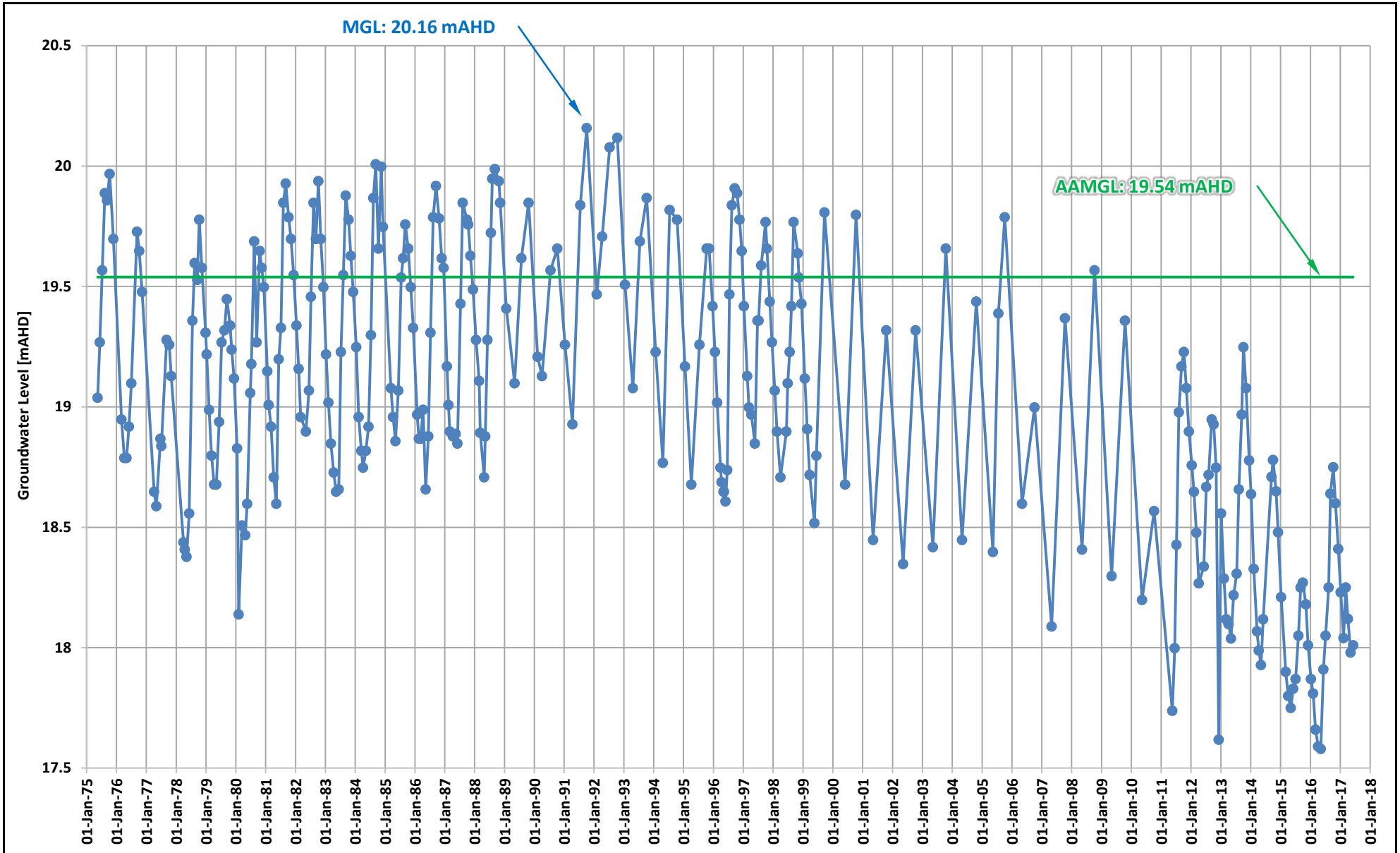
Lots 9011, 9012, 9013, 1199 & 3 Thomas Road, Casuarina Structure Plan - LWMS

Figure 13: Pre-Development Groundwater Level Time Series



Data Source: Water Information & Reporting Web Portal, Monitoring Bore/Site Reference 61410107 (DoWER, August 2017);

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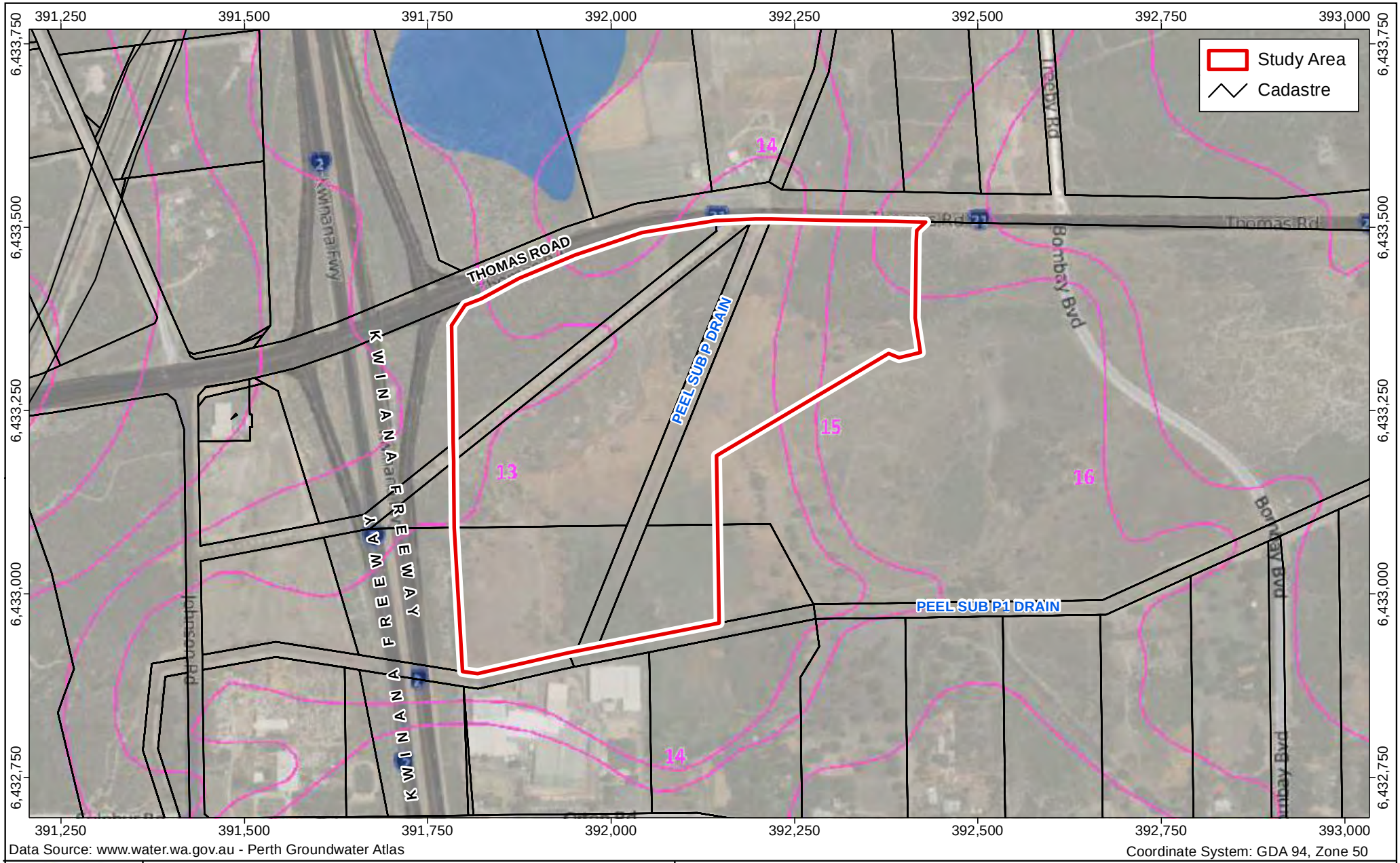
Aigle Royal Developments

Lots 9011, 9012, 9013, 1199 & 3 Thomas Road, Casuarina Structure Plan - LWMS

Figure 14: DoWER Monitoring Bore T200(O) Groundwater Level Time-Series



Data Source: www.water.wa.gov.au - Perth Groundwater Atlas

Coordinate System: GDA 94, Zone 50

JDA

Job No. J6447

Scale: 1:7,000 @A4

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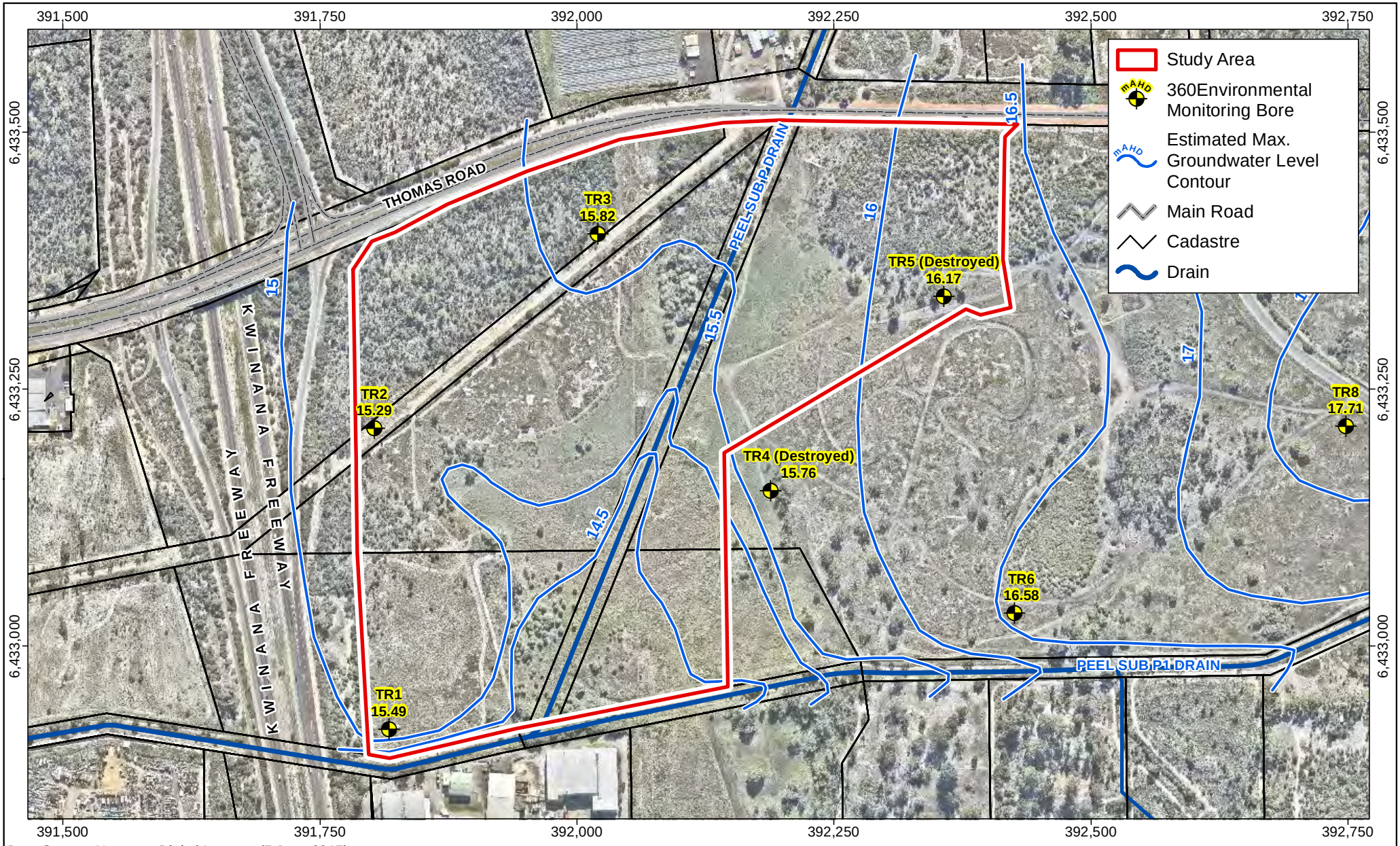
Aigle Royal Developments

Lots 9011, 9012, 9013, 1199 & 3 Thomas Road, Casuarina Structure Plan - LWMS

Figure 15: DoWER Groundwater Mapping - Historical Maximum



Data Source: Nearmap Digital Imagery (7 June 2017);

Coordinate System: GDA 94, Zone 50

JDA

Job No. J6447

Scale: 1:5,000 @A4

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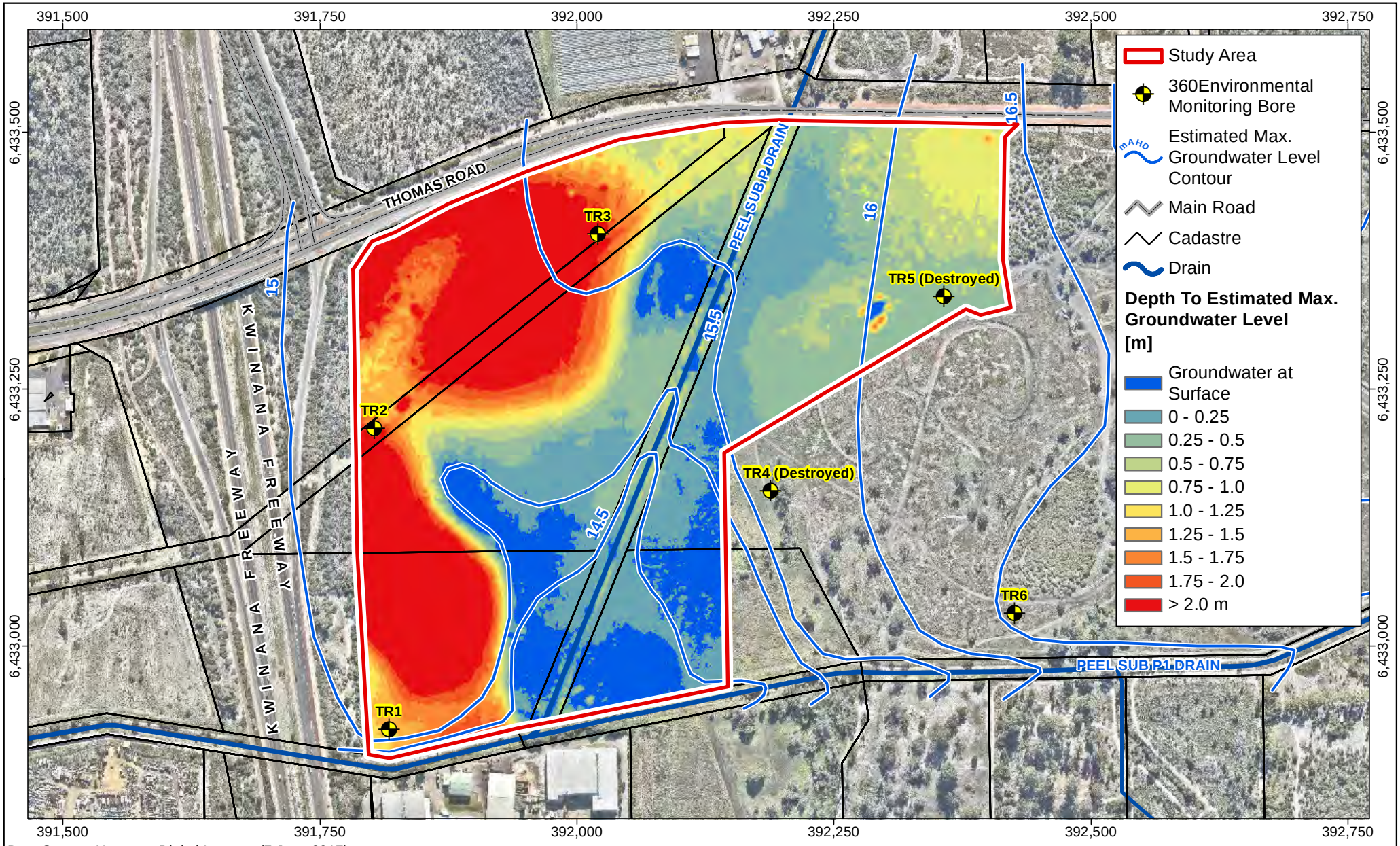
Aigle Royal Developments

Lots 9011, 9012, 9013, 1199 & 3 Thomas Road, Casuarina Structure Plan - LWMS

Figure 16: Estimated Pre-Development Maximum Groundwater Level Contours



Data Source: Nearmap Digital Imagery (7 June 2017);

Coordinate System: GDA 94, Zone 50

JDA

Job No. J6447

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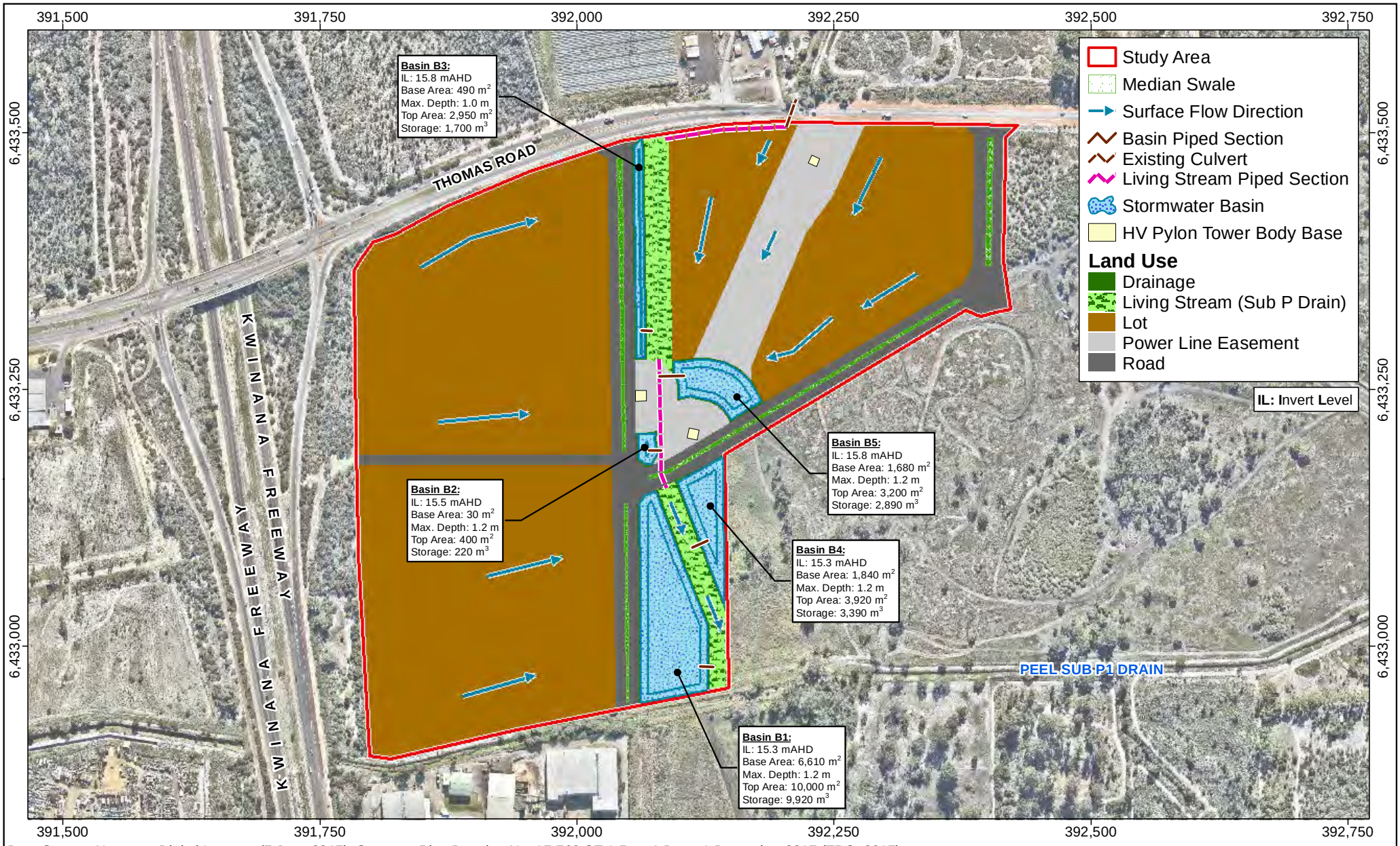
Aigle Royal Developments

Lots 9011, 9012, 9013, 1199 & 3 Thomas Road, Casuarina Structure Plan - LWMS

Figure 17: Depth to Estimated Pre-Development MGL



Data Source: Nearmap Digital Imagery (7 June 2017); Structure Plan Drawing No. 17-769 ST-1 Rev. A Date: 1 December 2017 (TPG, 2017);

Coordinate System: GDA 94, Zone 50

JDA

Job No. J6447

Scale: 1:5,000 @A4

0 100 200 300 400 Meters

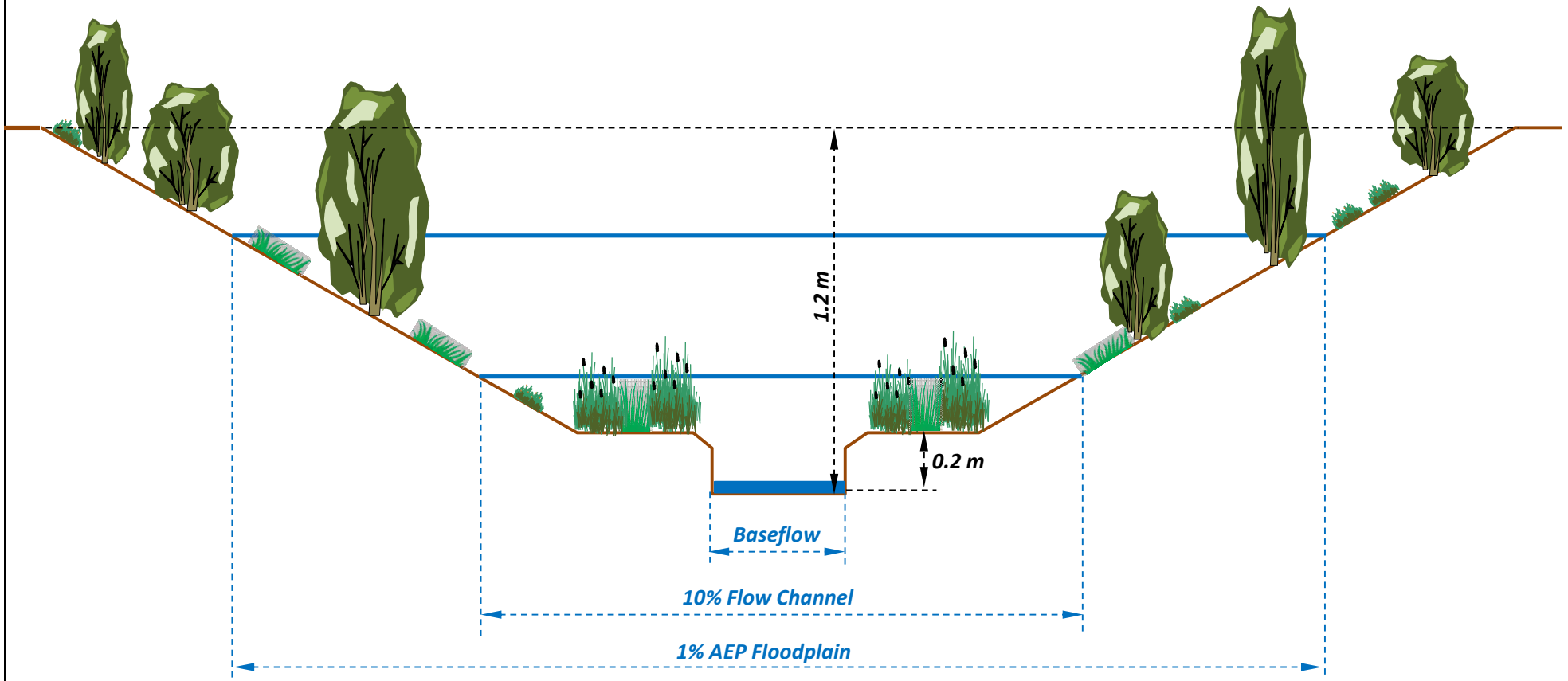
N

Aigle Royal Developments

Lots 9011, 9012, 9013, 1199 & 3 Thomas Road, Casuarina Structure Plan - LWMS

Figure 18: Stormwater Management Plan

Conceptual Sub-P Drain Living Stream Cross-Section



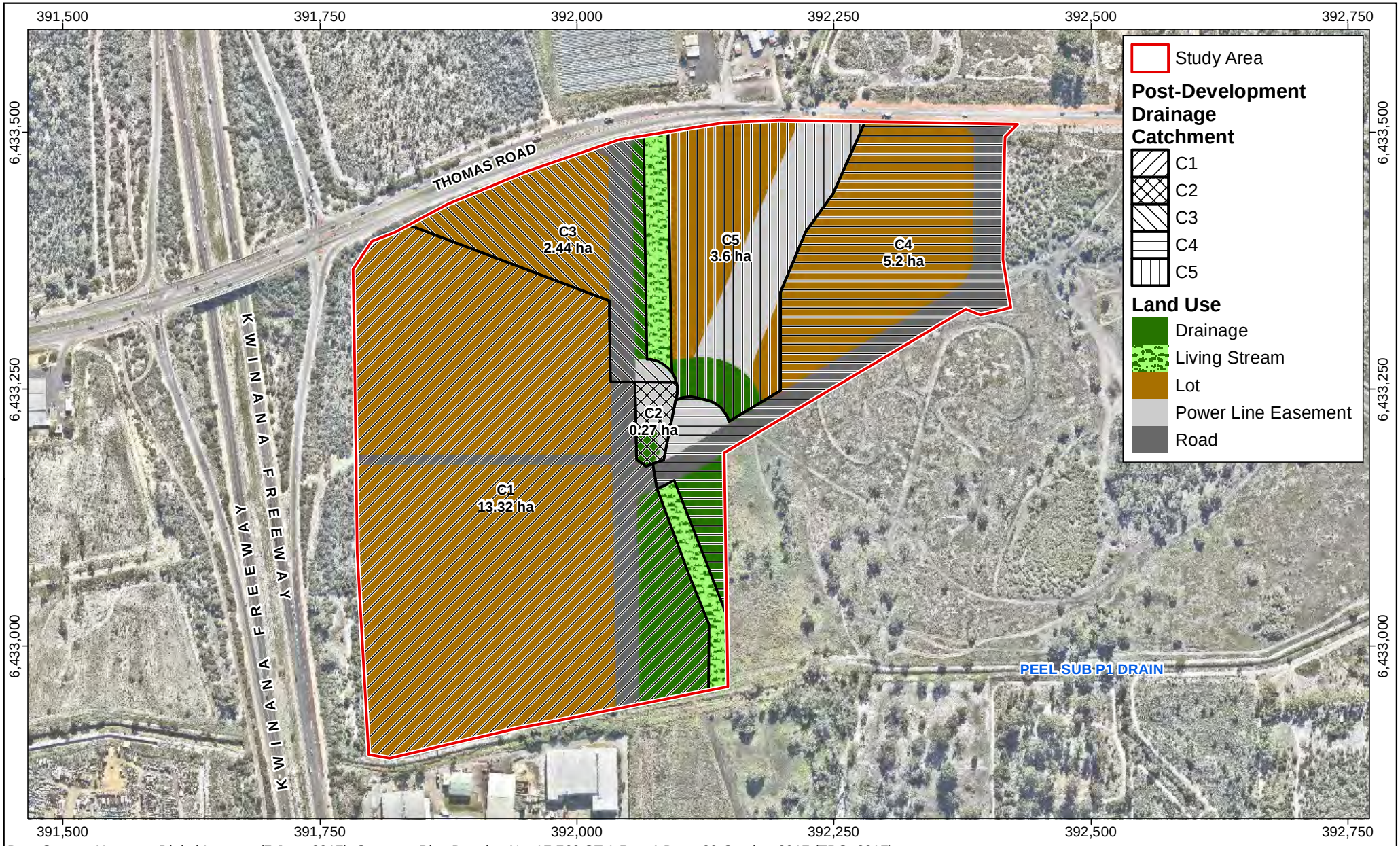
Data Source:

Job No. J6447

Aigle Royal Developments

Lots 9011, 9012, 9013, 1199 & 3 Thomas Road, Casuarina Structure Plan - LWMS

Figure 19: Proposed Sub-P Drain Living Stream Cross-Section



Data Source: Nearmap Digital Imagery (7 June 2017); Structure Plan Drawing No. 17-769 ST-1 Rev. A Date: 30 October 2017 (TPG, 2017);

Coordinate System: GDA 94, Zone 50

JDA

Job No. J6447

Scale: 1:5,000 @A4

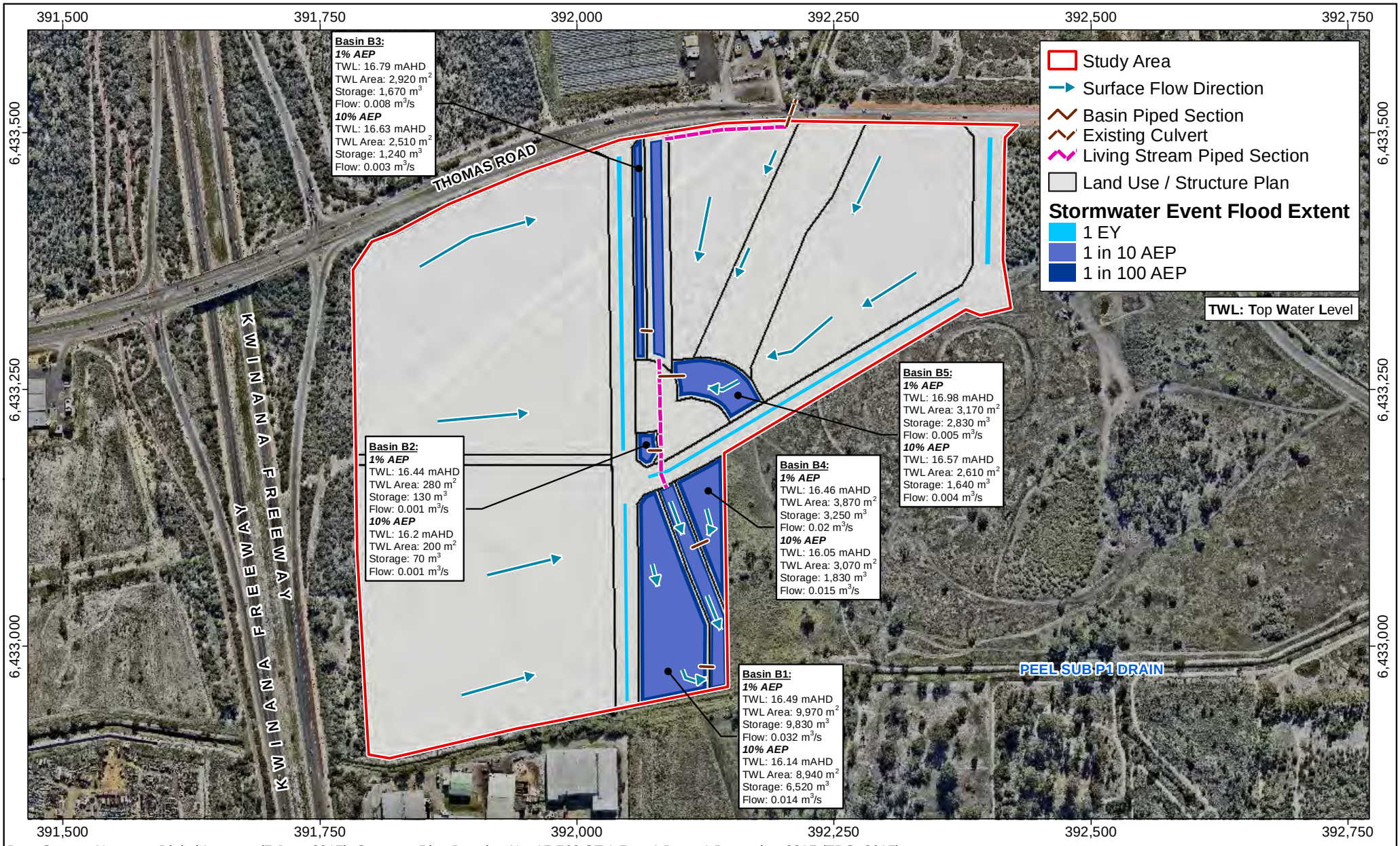
0 100 200 300 400 Meters

N

Aigle Royal Developments

Lots 9011, 9012, 9013, 1199 & 3 Thomas Road, Casuarina Structure Plan - LWMS

Figure 20: Post-Development Land Use & Catchment Mapping



Data Source: Nearmap Digital Imagery (7 June 2017); Structure Plan Drawing No. 17-769 ST-1 Rev. A Date: 1 December 2017 (TPG, 2017);

Coordinate System: GDA 94, Zone 50

JDA

Job No. J6447

Scale: 1:5,000 @A4

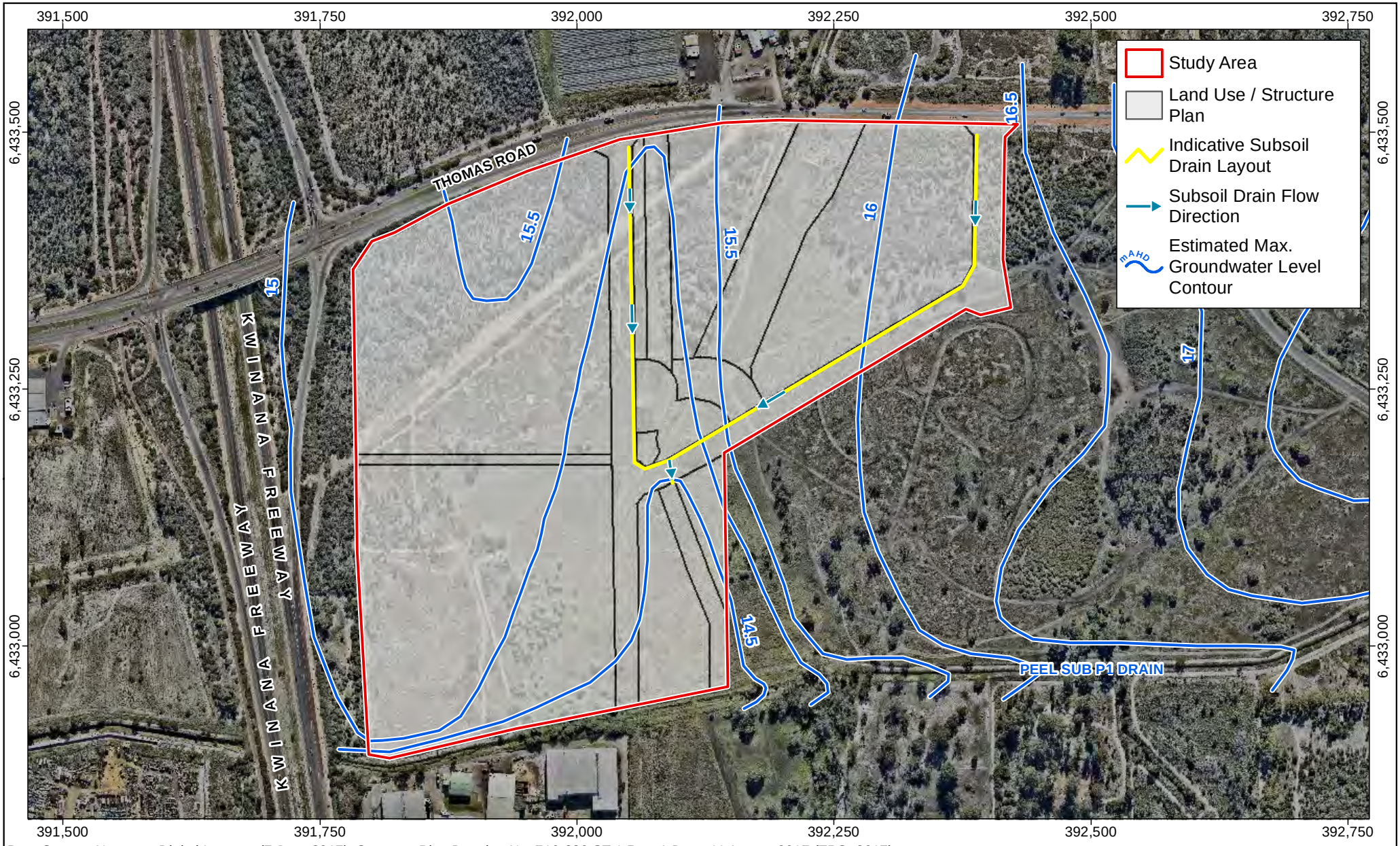
0 100 200 300 400 Meters

N

Aigle Royal Developments

Lots 9011, 9012, 9013, 1199 & 3 Thomas Road, Casuarina Structure Plan - LWMS

Figure 21: Storm Event Plans



Data Source: Nearmap Digital Imagery (7 June 2017); Structure Plan Drawing No. 716-289 ST-1 Rev. A Date: 11 August 2017 (TPG, 2017);

Coordinate System: GDA 94, Zone 50

JDA

Job No. J6447

Scale: 1:5,000 @A4

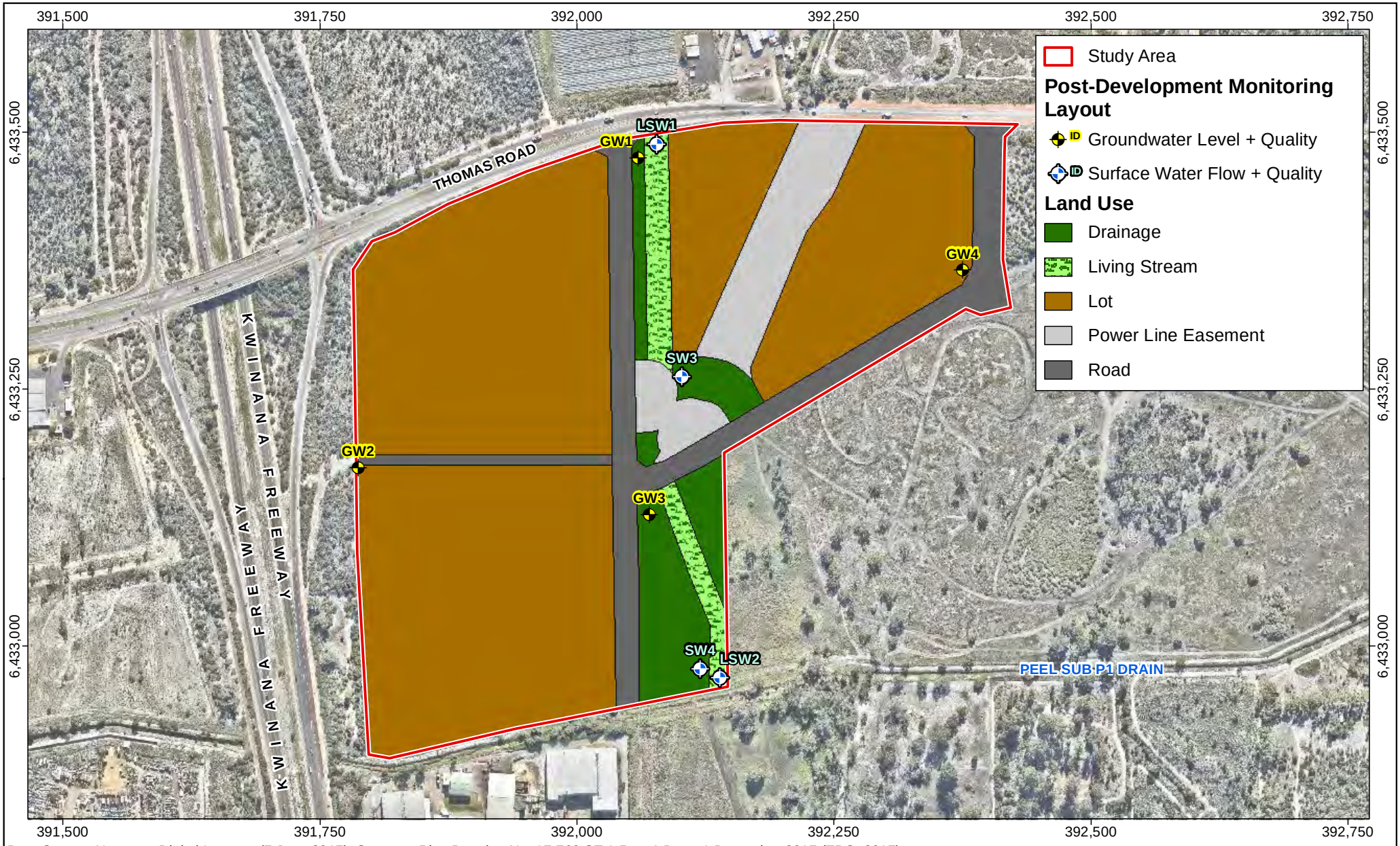
0 50 100 150 200 Meters

N

Aigle Royal Developments

Lots 9011, 9012, 9013, 1199 & 3 Thomas Road, Casuarina Structure Plan - LWMS

Figure 22: Indicative Subsoil Layout & Estimated Post-Development Groundwater Levels



Data Source: Nearmap Digital Imagery (7 June 2017); Structure Plan Drawing No. 17-769 ST-1 Rev. A Date: 1 December 2017 (TPG, 2017);

Coordinate System: GDA 94, Zone 50

JDA

Job No. J6447

Scale: 1:5,000 @A4

0 100 200 300 400 Meters

N

Aigle Royal Developments

Lots 9011, 9012, 9013, 1199 & 3 Thomas Road, Casuarina Structure Plan - LWMS

Figure 23: Post-Development Monitoring Layout

Lot 9011, 9012, 9013, 1199 & 3 Thomas Rd, Casuarina
LWMS

APPENDIX A

Local Water Management Strategy
Checklist for Developers

LOCAL WATER MANAGEMENT STRATEGY: CHECKLIST (WAPC, 2008)

The following checklist provides a guide to items which should be addressed by developers in the preparation of Local Water Management Strategies for assessment by the local authority when an application for a structure plan is lodged.

1. Tick the status column for items for which information is provided
2. Enter N/A in the status column if the item is not appropriate and enter the reason in the comments column
3. Provide brief comments on any relevant issues
4. Provide brief descriptions of any proposed best management practices, e.g. multi-use corridors, community based-social marketing, water re-use proposals

Applicant: Aigle Royal Developments	Date: December 2017
Name of Structure Plan: Lots 9011, 9012, 9013, 1199 & 3 Thomas Rd, Casuarina	
Contact: Alex Rogers, JDA Consultant Hydrologists	
Address: Suite 1, 27 York St Subiaco - Perth (WA) 6008	JDA Ref.: J6447b
Telephone: +61 (8) 6380 3431	Email: alex@jdahydro.com.au

Local Water Management Strategy Item	Required Deliverable	Deliverable		☐	Comment
		LWMS Reference	Comment		
Executive Summary					
Summary of the development design strategy, outlining how the design objectives are proposed to be met	Table 1: Design elements, requirements for BMPs and critical control points	Table 1, Executive Summary		☑	
Introduction					
Total water cycle management – principles & objectives Planning background Previous studies		Section 2.3 Section 2.1, 2.2 Section 2.3		☑	
Proposed Development					
Structure plan, zoning and land use. Key landscape features Previous land use	Proposed SP (Fig. 2) Proposed POS in SP (Fig. 2) Existing Aerial Imagery (Fig. 4)	Section 3		☑ ☑	
Landscape - proposed POS areas, POS credits, water source, bore(s), lake details (if applicable), irrigation areas	Proposed POS in SP (Fig. 2)	Section 3		☑	

Local Water Management Strategy Item	Required Deliverable	Deliverable		☐	Comment
		LWMS Reference	Comment		
Design Criteria					
Agreed design objectives and source of objective		Section 2		☑	
Pre-development Environment					
Existing information and more detailed assessments (monitoring). How do the site characteristics affect the design?		Section 4		☑	
Site Conditions - existing topography / contours, aerial photo underlay, major physical features	Aerial Imagery (Fig. 4) Existing Topography (Fig. 5)	Section 4.1, 4.2		☑	
Geotechnical - topography, soils including acid sulfate soils and infiltration capacity, test pit locations	Surface Geology (Fig. 7) Geotechnical Plan (Fig. 8) ASS Mapping (Fig. 8)	Section 4.4, 4.5		☑	
Environmental - areas of significant flora and fauna, wetlands and buffers, waterways and buffers, contaminated sites	Geomorphic Wetland Mapping (Fig. 9)	Section 4.6		☑	
Surface Water – topography, 100 year floodways and flood fringe areas, water quality of flows entering and leaving (if applicable)	Pre-dev catchment and flow direction mapping (Fig. 10, 11)	Section 4.7		☑	
Groundwater – topography, pre development groundwater levels and water quality, test bore locations	Groundwater Monitoring Layout (Fig. 12), Monitoring Data (Fig. 13, 14, 15; Appendix D)	Section 4.8		☑	
Water Use Sustainability Initiatives					
Water efficiency measures – private and public open spaces including method of enforcement		Section 5.2		☑	
Water supply (fit-for-purpose strategy), agreed actions and implementation. If non-potable supply, support with water balance		Section 5.2.2		☑	
Wastewater management		Section 5.2.3		☑	
Stormwater Management Strategy					
Flood protection - peak flow rates, volumes and top water levels at control points,100 year flow paths and 100 year detentions storage areas	1% AEP (100yr ARI) Flood Event Plan (Fig. 21)	Section 5.3		☑ ☑	
Manage serviceability - storage and retention required for the critical 5 year ARI storm events Minor roads should be passable in the 5 year ARI event	10% AEP (10yr ARI) Flood Event Plan (Fig. 21)	Section 5.3		☑	

Local Water Management Strategy Item	Required Deliverable	Deliverable		☐	Comment
		LWMS Reference	Comment		
Stormwater Management Strategy (cont)					
Protect ecology – detention areas for the 1 yr 1 hr ARI event, areas for water quality treatment and types of (including indicative locations for) agreed structural and non-structural best management practices and treatment trains. Protection of waterways, wetlands (and their buffers), remnant vegetation and ecological linkages	63% AEP (1yr ARI) Event Plan (Fig. 21)	Section 5.3, 5.5		☑ ☑	
Groundwater Management Strategy					
Post development groundwater levels, fill requirements (including existing and likely final surface levels), outlet controls, and subsoils areas/exclusion zones	Proposed Groundwater Management System (Fig. 22)	Section 5.4		☑	
Actions to address acid sulfate soils or contamination	ASS Mapping (Fig. 8)	Section 4.5, 6.3.2		☑	
The Next Stage - Subdivision and Urban Water Management Plans					
Content and coverage of future urban water management plans to be completed at subdivision. Include areas where further investigations are required prior to detailed design.		Section 6.2		☑	
Monitoring					
Recommended future monitoring plan including timing, frequency, locations and parameters, together with arrangements for ongoing actions		Section 6.5		☑	
Implementation					
Developer commitments		Section 6.1		☑	
Roles, responsibilities, funding for implementation		Section 6.1		☑	
Review		Section 6.5		☑	

Western Australian Planning Commission (2008), Better Urban Water Management, Perth, WA

Lot 9011, 9012, 9013, 1199 & 3 Thomas Rd, Casuarina LWMS

APPENDIX B

Geotechnical Report
(CMW Geosciences, 2014)

24 October 2014

LOTS 3, 650 & 1199 THOMAS ROAD, CASUARINA, WA
GEOTECHNICAL INVESTIGATION REPORT

Bombara Family

Ref. 2014-0337AB Rev 1

Unit 19 Wembley Green Offices,
127 Herdsman Parade, Wembley, WA 6014

www.cmwgeosciences.com

Table of Contents

Figures

Appendices

1 EXECUTIVE SUMMARY

This report presents the results of a geotechnical site investigation carried out at Lots 3, 650 and 1199 Thomas Road, Casuarina, WA. The Development Concept Plan provided indicates that the proposed development will comprise approximately 770 residential lots, approximately 8 ha of public open space (including the existing overhead power easement) plus associated roads and accessways.

Based on the investigation results, the subsurface profile varies across the site, but generally comprises topsoil overlying Tamala Sand, Bassendean Sand and the clayey sands of the Guildford Formation. It is important to note that the eastern two thirds of the site (Area A east of the Peel Sub P Drain and Area C – see Figure No. 02) contain between approximately 0.5 m and 2.5 m of very loose to loose sand.

The site is considered suitable for the proposed development subject to the recommendations provided herein, which are summarised as follows:

- Site classifications ranging from Class A to Class M (AS2870), subject to the recommendations provided in Section 9.2;
- Earthworks comprising topsoil stripping, proof rolling and compaction of sand fill in layers must be carried out in accordance with AS3798 and the recommendations provided in Section 9.2;
- Mucking out and backfilling of the existing drain must be carried out in accordance with AS3798 and the recommendations provided in Section 9.2.5;
- A design subgrade CBR value of 10% to 12% for the sandy soils and 5% to 8% for the clayey sands across the site is considered suitable subject to our earthworks recommendation detailed in Section 9.2.1.
- The low lying ground in the southwest is not considered suitable for in situ soakage systems due to the clayey sand soils and the presence of a high groundwater table. However, for the balance of the site we recommended adopting a preliminary coefficient of permeability of 2 m/day to 4 m/day for concept design;
- A site subsoil class of Ce (shallow soil site) to AS1170.4 is recommended for seismic design purposes; and
- Potential Acid Sulphate Soils (ASS) were encountered during our investigation and we recommended that consideration should be given to an acid sulphate soils investigation following the development of the bulk earthworks and civil design plans.

2 INTRODUCTION

CMW Geosciences Pty Ltd (CMW) was authorised by Hugo Bombara on behalf of the Bombara Family by way of signed authorisation, dated 2 September 2014, to carry out the requested scope of work. The scope of work and associated terms and conditions of our engagement were detailed in our services proposal letter referenced 2014-0337AA Rev 1, dated 12 March 2014.

The purpose of this report is to describe the investigation completed, the ground conditions encountered and to provide recommendations with respect to geotechnical aspects of the proposed development including site preparation, bulking factors, excavatability, design parameters for retention systems, bearing capacity and site / subsoil classification.

3 SITE DESCRIPTION

The proposed development site of approximately 64 ha is roughly rectangular in shape and located at Lots 3, 650 & 1199 Thomas Road, Casuarina, WA (refer attached Site Location Plan – Figure No. 01), approximately 30 km south of the Perth's CBD.

The site is bound to the north by Thomas Road, to the west by the Kwinana Freeway, to the east by Marri Park Golf Course and to the south by a semi-rural property and a mushroom farm. The site is intersected north/south by Bombay Boulevard, a sealed main road.

Drainage on site comprises the Peel Sub P and the Peel Sub P1 drains, which are tributaries of the Peel Main Drain that discharges to the Serpentine River. The Peel Sub P Drain intersects the site from north to south separating the western third from the eastern two thirds. The Peel Sub P1 Drain delineates the southern boundary and separates the site from the semi-rural property and mushroom farm beyond. Both drains are constructed open culverts approximately 3 m wide that drain towards the south and west, respectively. Existing overhead transmission lines align north-south either side of the Peel Sub P Drain.

A seasonal swamp referred to in geological references as 'Jim Pool' is located around the confluence of the two drains in the southwest of the site.

Ground levels range from RL 14 m to RL 21 m AHD and gradually slope towards the lowest part of the site at the confluence of the Peel Drains in the south and west. There is an elevated area in the southwest with ground levels of between RL 19 m and RL 21 m AHD.

The site has been previously used for agricultural purposes and as a result large portions of the site comprise pasturelands and small shrubs. Isolated areas of bushland exist in the northwest, across much of the northern boundary and in the southeast corner. Grass trees are common across the eastern half and marsh grass is dominant in the low lying area around the confluence of the two Peel Drains.

4 PROPOSED DEVELOPMENT

The Development Concept Plan – Option 1 (CLE, plan no. 2195-35-01, dated 04.02.2014) provided by the client indicates that the proposed development will comprise approximately 770 residential lots, approximately 8 ha of public open space (including the existing overhead power easement) plus associated roads and accessways.

We also understand that all lots will be developed with conventional gravity sewer systems located within road reserves, along with other buried services. Although we have not been provided with an earthworks plan, we understand that over 1 m of engineered fill is likely to be placed and compacted to form finished ground levels. Stormwater drainage is expected to be managed using conventional soakwells or soakage basins located in planned Public Open Spaces (POS).

The current concept plan indicates a proposed re-alignment to a section of the Peel Sub P Drain (north-south) with the existing section backfilled to proposed finish level to complete the development.

5 FIELD INVESTIGATION

The field investigation was carried out between 9 and 15 September 2014, following a dial before you dig search. All fieldwork was carried out under the direction of CMW Geosciences Pty Ltd in general accordance with AS1726 (1993), Geotechnical Site Investigations. The scope of fieldwork completed was as follows:

- Fifty-eight machine excavated test pits (TP01 to TP58) were excavated to depths of up to 3 m using an 8.5T Volvo BL71 backhoe to visually identify the ground profile and to allow for soil sampling;
- Nine hand auger boreholes (HA01 to HA09) were drilled with a 100 mm diameter auger to a depth of 1.4 m to visually identify the ground profile and to facilitate infiltration testing;

- Perth Sand Penetrometer (PSP) and Dynamic Cone Penetrometer (DCP) tests were carried out adjacent to the test pits and the hand auger boreholes up to a maximum depth of 3 m to provide soil density profiles; and
- Eleven PSPs and DCPs were conducted on or adjacent to proposed road alignments to a maximum depth of 1 m to assist in the correlation of subgrade CBR values for pavement design purposes.

The approximate test locations are shown on the attached Site Investigation Plan (Figure No. 02). Engineering logs of the hand auger boreholes, test pits and associated DCPs / PSPs are provided in Appendix A. The DCPs / PSPs associated with the road alignment are presented in Appendix B. The results of the in situ falling head permeability testing are provided in Appendix C.

6 LABORATORY TESTING

All testing was scheduled by CMW and carried out by Cardno Geotech and MPL, both NATA registered laboratories.

The following laboratory tests were carried out:

- 3 Particle Size Distribution Tests;
- 2 Atterberg Tests;
- 2 Compaction Tests – Maximum Modified Dry Density (MMDD); and
- 5 Organic Content Tests.

The laboratory test results and associated certificates are provided in Appendix D.

7 GROUND MODEL

7.1 Geology

A review of the geological references for the area suggests that the site is underlain by the following:

- Tamala Sand (S_7): outcropping in the northwest corner of the site. Described as pale yellowish brown, medium to coarse grained, sub-angular quartz.
- Bassendean Sand (S_8): underlying the S_7 unit and outcropping in a thin strip just to the east of the Tamala Sand. Described as very light grey (at surface) to yellow (at depth), fine to medium grained, sub-rounded quartz; and
- Thin Bassendean Sand over Guildford Formation (S_{10}): underlying the S_7 and S_8 units and outcropping over the majority of the site. Described as a thin veneer of Bassendean Sand over silts and clays;

It was also anticipated that ground conditions around 'Jim Pool' will differ from those outlined above and are more likely to reflect the Holocene aged swamp deposits located in the immediate surrounding areas.

7.2 Subsurface Conditions

The ground conditions encountered were generally consistent with those indicated from the published information. Beneath a topsoil layer of variable thickness, the surficial geological units encountered included Tamala Sand, Bassendean Sand and the clayey sands of the Guildford Formation. No peat deposits were encountered at our test locations. Substantial root mats up to 0.6 m thick and tree roots to a depth of up to 0.8 m were observed at test locations adjacent to established vegetation such as grass trees.

Four ground models have been defined for the site based on our test pit logs, desktop studies and review of available data, and are shown on the Site Investigation Plan (Figure No. 02) as Areas A, B, C and D. The areas depicted represent an interpretation of ground conditions based on available information and observations made during our investigation. Actual ground conditions may vary from those suggested in the ground model and reference should be made to our geotechnical logs (Appendix A), which describe ground conditions found at each discrete test location. Summaries of the ground models are presented in the tables below.

7.2.1 Area A

Area A typically comprised sandy topsoil underlain by sand derived from Tamala Limestone in the west and Bassendean Sand in the east. The sands west of the Peel P Drain (sand derived from the Tamala Limestone) were typically loose near the surface becoming medium dense beyond 0.3 m depth. East of the Peel P Drain the sands (Bassendean Sand) were typically very loose to loose to depths of between approximately 0.5 m and 2.5 m (average depth of 1.4 m) before the relative density increased.

Table 1: Summary of Ground Model - Area A

Description	Depth to base of layer (m)		Average thickness (m)
	Minimum	Maximum	
TOPSOIL comprising SAND	0.05	0.4	0.15
SAND*	>3		-

Note: * Sand extended beyond the depth investigated.

7.2.2 Area B

Area B typically comprised a clayey sand topsoil which was underlain by interbedded layers of medium dense clayey sands / sands of the Guildford Formation to greater than 1.75 m depth. It is important to note that the clayey sand layer encountered in TP50 was described as very loose to loose.

Shallow groundwater is also a feature of this area as discussed in Section 7.3.

Table 2: Summary of Ground Model - Area B

Description	Depth to base of layer (m)		Average thickness (m)
	Minimum	Maximum	
TOPSOIL comprising CLAYEY SAND	0.2	0.6	0.4
CLAYEY SAND*	0.5	>1.75	-
SAND	0.9	>3.0	-

Note: * In places clayey sand extended beyond the depth investigated.

7.2.3 Area C

Area C typically comprised clayey sand topsoil of varying thickness underlain by the clayey sands of the Guildford Formation up to 1 m depth, which were underlain by loose to medium dense sands to a depths of up to 2.5 m.

Table 3: Summary of Ground Model - Area C			
Description	**Depth to base of layer (m)**		**Average thickness (m)**
	Minimum	**Maximum**	
TOPSOIL comprising CLAYEY SAND	0.15	0.5	0.3
CLAYEY SAND	0.75	1.0	0.7
SAND	>3.0		-
Note: * Sand extended beyond the depth investigated.			

7.2.4 Area D

Area D typically comprised sandy topsoil underlain by a thin veneer of sand which was underlain by medium dense clayey sand with gravel and boulders derived from the weathering of Tamala Limestone. This was generally underlain by medium dense Bassendean Sand except at test pit TP51 where clayey sand extended beyond the depth investigated.

Table 4: Summary of Ground Model - Area D			
Description	**Depth to base of layer (m)**		**Average thickness (m)**
	Minimum	**Maximum**	
TOPSOIL comprising SAND	0.1	0.2	0.2
SAND	0.3	0.3	0.3
Clayey SAND*	0.6	>2.5	-
SAND	>3.0		-
Notes: * At test pit TP51, Clayey Sand extended beyond 2.5m depth.			

7.3 Groundwater

The Perth Groundwater Atlas depicts likely groundwater levels at approximately 2 m to 9 m below current ground levels (May 2003 levels). However, historical maximum data indicates groundwater levels could be within 1 m of the current ground levels.

During our investigation, groundwater was recorded in the test pits and hand auger boreholes between 0.3 m and 2.8 m depth, which equates to a level of between RL 14 m and RL 16.5 m AHD. In the low lying area of the site, described in this report as Area B, groundwater was encountered between 0.3 m and 1.6 m depth in our test pits and surface water was ponded adjacent to the south-western boundary (see Figure No. 02). However, groundwater was not observed at all locations.

A review of aerial photographs and available geological references together with anecdotal evidence suggests that the ponded surface water at Jim Pool may dry out completely during the summer months.

7.4 Permeability

The results of the shallow (1.4 m deep) falling head permeability tests were used to estimate the soil coefficient of permeability in accordance with the methods described in CIRIA Report No. 113. The tests were undertaken in hand auger boreholes (HA01 to HA08), all of which terminated in sand. The calculated coefficient of permeability of the sandy soils at these locations ranged from 1.1 x 10^{-5} m/s (1 m/day) to 4.2 x 10^{-5} m/s (4 m/day). Full results of the tests are presented in Appendix C.

7.5 Acid Sulphate Soils

The Swan Coastal Plain Acid Sulphate Soils (ASS) Risk Map shows the site is located in a "moderate to low risk area for ASS occurring within 3 m of natural surface". During the investigation, a hydrogen sulphide odour, which is typical of acid forming soils, was encountered in TP18. Also, limonite cemented sand (Coffee Rock), which can be associated with ASS, was encountered in a number of locations (HA05, TP08, TP14, TP31, TP32, TP36, TP46 and TP49).

8 LABORATORY TEST RESULTS

8.1 Classification Laboratory Test Results

The classification test results are summarised in Table 5 below:

Table 5: Summary of Classification Laboratory Test Results

Test Location	Depth (m bgl)	Gravel (%)	Sand (%)	Fines (%)	LL (%)	PL (%)	PI (%)	LS (%)	OMC (%)	MMDD (t/m^2)
TP12	0.6 to 1.0	-	-	-	-	-	-	-	13.5	1.71
TP05	0.5 to 1.2	0	70	30	61	45	16	6	-	-
TP45	0.6 to 1.2	-	-	-	-	-	-	-	15.0	1.70
TP49	0.4 to 1.0	5	88	7	-	-	-	-	15.0	1.70
TP58	0.6 to 1.0	0	67	33	40	27	13	5	-	-

Note: Gravel, sand and fines percentages are by weight, LL = liquid limit, PL = plasticity limit, PI = plasticity index, LS = linear shrinkage, OMC = Optimum Moisture Content, MMDD = Maximum Modified Dry Density.

8.2 Organic Content

The organic content test results are summarised in Table 6 below:

Table 6: Organic Soil Test Results

Test Location	Depth (m)	Organic Matter Content (%)
TP01	0.0 – 0.2	0.4
TP31	0.0 – 0.4	0.4
TP45	0.0 – 0.2	0.8
TP54	0.1 – 0.3	1.8
TP54	0.3 – 0.6	1.7

9 GEOTECHNICAL ASSESSMENT AND CONSTRUCTION RECOMMENDATIONS

Following a review of the preliminary development plans and our interpreted ground model, we consider that the sub surface soils are suitable for supporting the proposed development, subject to the requirements of AS 2870-1996 and our specific earthworks recommendations detailed in Section 9.2 below.

9.1 Preliminary Site Classification

We have assessed the site classification for Lots 3, 650 and 1199 Thomas Road, Casuarina in accordance with Australian Standard AS 2870-2011, "Residential Slabs and Footings".

9.1.1 Area A

Based on our preliminary assessment of the sands beneath the site and within the depth investigated, we anticipate negligible characteristic surface movements (y_s) beneath proposed residential building footprints. Area A can therefore be given a preliminary site classification of CLASS A in accordance with AS2870 subject to our earthworks recommendations provided in Section 9.2.

We understand that the elevated areas adjacent to the western boundary and to the east of the site may be excavated with materials used as borrow to fill the lower lying areas of the site. To retain a Class A site classification, at least 1.8 m of sand must remain below the final grade. This will be subject to assessment following bulk earthworks.

9.1.2 Area B

As detailed in Section 7.2.2, Area B was underlain by sandy clay which in places extended beyond the depth investigated. Modelling a thickness of clayey sand greater than or equal to the suction depth (1.8 m from the surface), applying a correlated I_{ss} value of 2.0 and following the procedure set out in Section 2.3 of AS2870-2011, characteristic surface movements (y_s) are estimated to be approximately 29 mm. Area B can therefore be given a preliminary site classification of CLASS M in accordance with AS2870 subject to our earthworks recommendations provided in Section 9.2.

9.1.3 Area C

At the locations investigated, Area C was underlain by a maximum thickness of clayey sand of 0.75 m. Modelling this thickness of clayey sand, applying a correlated I_{ss} value of 1.5 and following the procedure set out in Section 2.3 of AS2870-2011, characteristic surface movements (y_s) are estimated to be approximately 12 mm. Area B can therefore be given a preliminary site classification of CLASS S in accordance with AS2870 subject to our earthworks recommendations provided in Section 9.2.

9.1.4 Area D

Based on our preliminary assessment of the clayey sand / sands beneath Area D and within the depth investigated, we anticipate characteristic surface movements (y_s) of less than 20 mm beneath proposed residential building footprints. The site can therefore be given a preliminary site classification of CLASS S in accordance with AS2870 subject to our earthworks recommendations provided in Section 9.2.

9.1.5 Revision of Site Classification

To justify an improved site classification for design purposes, for Areas B, C and D, we recommend the following:

- In Area B, place and compact at least 0.6 m of clean sand to achieve a Class S site classification, or place and compact at least 1.8 m of clean sand to achieve a Class A site classification.
- In Areas C and D place and compact at least 1.2 m of clean sand fill to achieve a Class A site classification.

Alternatively, if all clayey sand is cut during bulk earthworks exposing the sandy soils below, a Class A site classification could be justified. An improved site classification will also depend on the nature of the fill material used to form finished ground levels.

Prior to development, we strongly recommend bulk earthworks plans are reviewed by a geotechnical professional familiar with this report to assess the proposed at grade geology to reassess site classifications and provide comment on the volume of fill which is required to be placed.

9.2 Earthworks

We anticipate that cut to fill bulk earthworks will be required to form finished ground levels. This activity is considered appropriate for the site subject to the earthworks construction recommendations described below:

9.2.1 Topsoil Strip and Subgrade Preparation

The natural groundcover comprises grasses, numerous grass trees and sporadic larger trees. Our test pits identified the presence of root mats that extend between 0.2m to 0.6 m depth and tree roots to depths of up to 0.8 m.

To minimise the topsoil strip we suggest the strip depth is varied to suit the groundcover type. If the operators are briefed to chase the root mat to its extent, limiting the strip to 200 mm where it is practicable, the topsoil volume will be minimised.

We strongly recommend that CMW is present on site during the stripping works to observe that sufficient topsoil and root mat is removed. As a minimum it would be a requirement that we were present at the beginning of the strip, approximately halfway through and immediately prior to, and during, the proof rolling.

We propose the following general recommendations for the topsoil stripping:

- All vegetation should be stripped and removed from the proposed building lots;
- Existing trees must be removed and it must be ensured that their root systems are completely grubbed out. The soil beneath all tree root systems must be re-compacted and filled with compacted clean sand;
- Topsoil, root mats or otherwise unsuitable organic material should be removed and cut to waste or alternatively reused as fill/topsoil in POS areas. A 200 mm strip should be considered appropriate for most of the site, however where root mats, peaty or cohesive topsoil or otherwise unsuitable material is present to a greater depth this should be removed and cut to waste or used as fill within the POS areas;

9.2.2 Specific Ground Remediation

The eastern two thirds of the site (Area A east of the Peel Sub P Drain and Area C – see Figure No. 02) contain between approximately 0.5 m and 2.5 m of very loose to loose sand. To limit total and differential settlements in these areas we recommend that at least a metre of either reconditioned ground or engineered fill is placed and compacted to provide a suitable zone of engineered materials to support future buildings loads.

To assist with this, the following remediation measures must be completed.

- Where less than 1.0 m of fill material is proposed or where shallow cut (<0.8 m) is proposed, over excavation and re-working of the in-situ material will be required in order to achieve a metre of engineered fill. This re-working must be undertaken in accordance with the general bulk earthworks requirements detailed in Section 9.2.3.

Where proposed cuts are greater than 0.8 m, careful subgrade compaction should provide a suitable founding layer for the proposed residential development. However, subgrade compaction must be supervised by a geotechnical engineer with suitable experience of the site and our report.

9.2.3 Bulk Earthworks

We recommend the following during bulk earthworks:

- Following topsoil stripping, the upper 300 mm of the exposed subgrade must be moisture conditioned with a water cart and compacted with a suitable roller to achieve at least 7 blows per 300 mm penetration with a Perth Sand Penetrometer (PSP) in granular soils or 3 blow per 100 mm with a Dynamic Cone Penetrometer (DCP) in cohesive soil, which is equivalent to a dry density ratio of at least 95% based on Standard compaction (AS1289 5.1.1). Any loose, soft, or organic materials observed during this proof roll shall be removed and replaced with compacted clean sand fill.
- Sandy fill material must be moisture conditioned with a water cart and compacted in layers not exceeding 300 mm with a suitable roller to achieve at least 7 blows per 300 mm penetration with a PSP, which is approximately equivalent to a dry density ratio of 95% based on Modified Compaction (AS1289 5.2.1);
- Site won material from proposed cut earthworks is considered suitable for use in bulk earthworks subject to the material being sandy in nature, free of organic or deleterious inclusions with a fines content of less than 12% and a maximum particle size of 150 mm; and
- Imported sand bulk fill materials will need to be free of organic or deleterious inclusions with a fines content of less than 12% of the fill volume and a maximum particle size of 150 mm.
- Where residential lots are planned within Area B, sub-soil drainage should be installed to permanently manage the shallow groundwater. This will allow for the effective placement and compaction of fill material. Sub-soil drainage may also be used to reduce the risk of seasonal inundation of the planned POS area located within Area B.

9.2.4 Drain Backfill

Backfilling of the re-aligned portion of the Peel Sub P Drain (see Figure No. 02) should be undertaken in accordance with the recommendations outlined below and with Section 9.2.3.

- The existing drain alignment must be drained and completely mucked out to expose competent materials. The drain should be filled with material placed and compacted in accordance with AS3798.
- Any unsuitable materials that are considered unfit for reworking should be undercut and disposed of off the site or on topsoil stockpiles if appropriate.
- Generally, the investigation locations in this area identified topsoil overlying clayey sand to greater than 1.75 m depth.
- Topsoil and any organic materials should be stripped from the drain invert. This work should be followed by the placement of a perforated underfill drain covered with free draining material that has a maximum particle size of 50 mm to a level above the seepage zone. A layer of Bidim A24 or similar should then be used to protect the drainage materials from the migration of fines. Clayey sand filling should then be placed and compacted in 300mm layers to certifiable standards up to finished level.

- The underfill drains must be connected into the stormwater system.

9.2.5 Retaining Wall Backfill

We recommend the following during retaining wall backfilling:

- Backfill layers should be placed in maximum 300 mm thick loose layers, moisture conditioned to within ±3% of the optimum moisture content and compacted with a suitable vibrating plate compactor to achieve a dry density ratio of at least 95% based on modified compaction (AS1289 5.2.1); and
- Backfill must comprise the same material as the retained lot to reduce the risk of differential settlements.

The technical and control requirements for Engineered Fill, including site observation and compaction testing, are outlined in AS3798. We recommend that this work is completed under the direction and control of a suitably experienced Geotechnical Engineer familiar with the contents of this report.

9.2.6 Earthworks Monitoring

Variations in ground conditions may occur between test locations. If conditions other than those described above are encountered, then further advice should be sought without delay. During earthworks, site visits should be made by a Geotechnical Engineer or Engineering Geologist who is familiar with the contents of this report to ensure that topsoil stripping is carried out adequately, proof compaction and cut to fill earthworks are conducted in accordance with AS3798-2007, and to audit the compaction of earthworks. Earthworks control testing should be undertaken in accordance with the guidelines set out in AS3798-2007. CMW would be pleased to perform this function if required.

In particular, prior to filling we strongly recommend that following proof compaction the density profile of the natural ground within each lot is verified so that the magnitude of settlement can be assessed.

9.2.7 Fill Induced Settlements

Placement of significant depths of fill on clayey sand soils may result in long term consolidation settlement and/or creep due the additional weight of soil, which may exceed typical building tolerances with respect to total and differential settlements. This will be of particular importance in the drain backfill area due to additional fill placement. Differential settlements between the drain backfill area and surrounding areas can be minimised by following the recommendations outlined in Section 9.2.5.

Based on estimates of consolidation parameters for the clayey sand soils that behave cohesively and an assumed clayey sand layer thickness of 3 m in Area B, long term settlements of up to 15 mm could occur for fill heights of up to 3 m from current ground levels. Settlements of this magnitude are not expected to be detrimental to residential developments and services / pavements based on the assumption of a 3 m thickness of clayey sand material as long as earthworks are carried out in accordance with the recommendations made in Section 9.2.3.

9.3 Preliminary Foundation Recommendations

Foundations supported by at least 1.0 m of medium dense sand (in situ soil or fill), subject to the earthworks recommendations outlined in Section 9.2, may be preliminarily designed on the basis of a maximum allowable bearing pressure of 100 kPa for foundations up to a maximum width of 1.2 m as per AS2870.

Foundation bearing pressures should be re-evaluated for each individual lot following the completion of bulk earthworks to align recommended bearing pressures and settlement profiles with the depth of fill placed.

9.4 Retaining Wall Design

Localised cut and fill earthworks are envisaged along proposed property boundaries for subdivision layout and drainage purposes although the exact locations were not available at the time of preparation of this report.

Recommended retaining wall design parameters are summarised in Table 7 below:

Table 7: Retaining Wall Design Parameters (No wall friction)

Soil Type	Density (kN/m^3)	Ø' (deg.)	K_0	K_a	K_p	E' (MPa)
Loose Sand	17	31	0.48	0.32	3.2	20
Medium dense Sand	18	33	0.50	0.29	3.4	40
Clayey Sand	18	28	0.50	0.36	2.8	30

Notes:
1. Ø' - angle of internal soil friction; K_0 - coefficient of earth pressure at rest based on normally consolidated soils, K_a - coefficient of active earth pressure, K_p - coefficient of passive earth pressure; E' – long term Youngs modulus.
2. The above parameters are based on the condition of a horizontal ground surface behind the retaining structure. Applicable surcharge loads behind the wall must also be considered in the design.

Retaining structures should be designed in accordance with AS 4678-2002 "*Earth Retaining Structures*" or an alternate approved factor of safety approach. Should any fill be placed against the permanent basement retaining wall after construction, it is expected that the compaction induced pressures will be much greater than the above active earth pressures. The compaction equipment used to compact backfill behind the wall must be carefully selected and preferably light-weight compaction equipment should be used. The load on the retaining wall due to compaction equipment may be estimated from Figure J5 in AS4678-2002 *"Earth Retaining Structures"*.

It is noted that some ground movement will occur behind temporary or permanent retaining walls. The extent of this movement is dependent on the height of retaining, type of wall selected and construction methodology. This must be considered during the design and construction of the retaining walls to ensure adjacent facilities are not adversely affected.

9.5 Pavements

Based on the field density testing and our experience with similar materials, a design subgrade CBR value of 10% to 12% for the sandy soils and 5% to 8% for the clayey sands across the site is considered suitable subject to our earthworks recommendation detailed in Section 9.2.1. A design subgrade CBR value of 15% is considered suitable for compacted sand fill.

These design CBR values are subject to the exposed subgrade being moisture conditioned to within ±3% of the optimum moisture content and compacted with a large (minimum 10 tonne static weight) suitable roller. It is recommended that appropriate QA / QC testing be undertaken on subgrade and pavement materials during construction.

9.6 Soakage System Design

Area B and the low lying ground fringing this area are not considered suitable for in situ soakage systems due to the anticipated low permeability of the soils and the presence of a high groundwater table.

However, the balance of the site is typically underlain with sandy soils at depth and a groundwater table typically 1.5 m below existing ground levels. Therefore, based on the soakage testing

conducted, for the sandy soils encountered across the site, we recommended adopting a preliminary coefficient of permeability of 2 m/day to 4 m/day for concept design. Coefficient of permeability values have only been estimated for sandy soils and should cohesive materials be encountered a lower design value will be required. This will need to be assessed once bulk earthworks plans have been confirmed.

We note that permeability values can change significantly with only minor changes in the soil characteristics (grain size / fines content).

9.7 Subsoil Classification

Based on our understanding of the general geology beneath the site and the recommendations provided in AS1170.4-1993, a site subsoil class of Ce (shallow soil site) is considered appropriate.

9.8 Acid Sulphate Soils

The observations made in Section 7.5 provide an indication that ASS may exist on parts of the site and it is therefore recommended that consideration should be given to an acid sulphate soils investigation following the development of the bulk earthworks and civil design plans.

10 LIMITATIONS

The findings contained within this report are the result of limited discrete investigations conducted in accordance with normal practices and standards. To the best of our knowledge, they represent a reasonable interpretation of the general condition of the site. Under no circumstances, can it be considered that these findings represent the actual state of the ground conditions outside of our investigation locations.

For and on behalf of
CMW Geosciences Pty Ltd

Matt Watts

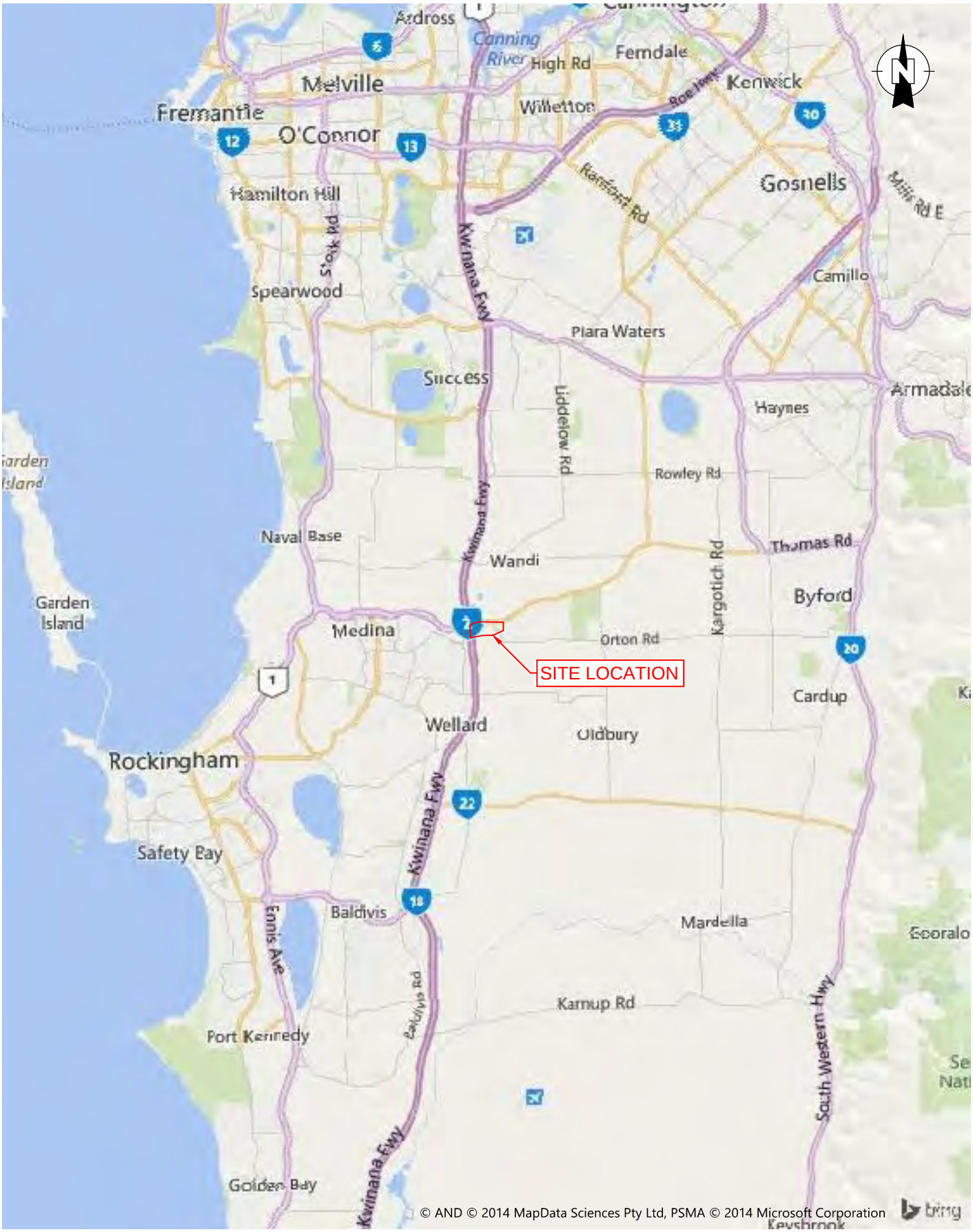
Project Engineering Geologist

Reviewed by:

Phil Chapman

Managing Director / Principal

Figures



0 2 4 6 8 10 km

1:200 000

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CLIENT: BOMBARA FAMILY		DRAWN: CJ	PROJECT: 2014-0337
PROJECT: LOTS 3, 650 & 1199 THOMAS ROAD CASUARINA, WA		CHECKED: SA	FIGURE: 01
		REVISION: 0	SCALE: 1:200 000
TITLE: SITE LOCATION PLAN		DATE: 25/09/2014	SHEET: A4

C:\USERS\CARLJ\.LOGICALDOC\CHECKIN\2014-0337-001 SITE LOC REV A 240914.DWG

LEGEND:

HA 01	DENOTES HAND AUGER (HA) LOCATION
TP 01	DENOTES TEST PIT (TP) LOCATION
PSP/DCP 01	DENOTES PERTH SAND PENETROMETER (PSP) / DYNAMIC CONE PENETROMETER (DCP) LOCATION
	DENOTES SITE BOUNDARY LOCATION
	DENOTES AREA OF DENSER VEGETATION

KEY:

	AREA A - SAND THROUGH DEPTH INVESTIGATED
	AREA B - CLAYEY SAND UP TO 1.75m DEPTH
	AREA C - CLAYEY SAND UP TO 1m DEPTH
	AREA D - CLAYEY SAND OF VARIABLE DEPTH
18	DENOTES EXISTING GROUND CONTOUR (m AHD)

1:4000 0 40 80 120 160 200 m

NOTE:
BASE PLAN ADAPTED FROM: CLE TOWN PLANNING, DEVELOPMENT CONCEPT PLAN - OPTION 1 (CLEARED TREES, REFERENCE: 2195-35-01, DATED: 04/02/2014

CMW Geosciences Pty Ltd
Chapman Morton Woodward

CLIENT: BOMBARA FAMILY		DRAWN: CJ	PROJECT: 2014-0337
PROJECT: LOTS 3, 650 & 1199 THOMAS ROAD CASUARINA, WA		CHECKED: MW	FIGURE: 02
		REVISION: 1	SCALE: 1:4000
TITLE: SITE INVESTIGATION PLAN		DATE: 01/10/2014	SHEET: A3

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Appendix A

Hand Auger Borehole and Test Pit Logs

BOREHOLE LOG - HA01

Client: Bombara Family

Project: Lots 3, 650 and 1199 Thomas Road, Casuarina

Location: Casuarina, WA

Project ID: 2014-0337

Date:15/09/2014

CMW Geosciences Pty Ltd
Chapman Morton Woodward

Logged By:SA | Postion: E.392126m N.6433268m | Hole Diameter:100mm

Checked By:MW | Elevation: | Angle from Horizontal:90°

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description (Soil Type, Plasticity or Particle Characteristic; Colour, Secondary and Minor Components)	Moisture Condition	Consistency/ Relative Density	Dynamic Cone Penetrometer (Blows/100mm)	Structure & other observations
					0		TOPSOIL/CLAYEY SAND: fine to medium grained, sub-angular to rounded, dark grey to black; clay, medium plasticity; with root fibres.				From 0.0 m to 0.8 m soil behaves cohesively.
							SC: CLAYEY SAND: fine to medium grained, sub-angular to rounded, brown; clay, medium to high plasticity.	M	MD		
							SP: SAND: fine to medium grained, sub-angular to rounded, brown; trace fines.		D		
					1		*… from 1.0 m becoming grey.*	W			
							End of borehole at 1.40 m				
					2						
					3						
					4						

Dynamic Cone Penetrometer (Blows/100mm): 5 10 15

Termination Reason: Target depth.

Remarks:

BOREHOLE LOG - HA02

Client: Bombara Family

Project: Lots 3, 650 and 1199 Thomas Road, Casuarina

Location: Casuarina, WA

Project ID: 2014-0337

Date:15/09/2014

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Sheet 1 of 1

Logged By:SA	Postion: E.392342m N.6433012m	Hole Diameter:100mm
Checked By:MW	Elevation:	Angle from Horizontal:90°

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description (Soil Type, Plasticity or Particle Charasteristic; Colour, Secondary and Minor Components)	Moisture Condition	Consistency/ Relative Density	Perth Sand Penetrometer Blows/150mm (5, 10, 15)	Structure & other observations
					0		TOPSOIL/SAND: fine to medium grained, sub-angular to rounded, dark grey; with root fibres.				
							SP: SAND: fine to medium grained, sub-angular to rounded, grey; trace fines.				
							… from 0.5 m becoming pale brown.	M	MD		
					1						
							End of borehole at 1.40 m				
					2						
					3						
					4						

Termination Reason: Target depth.

Remarks:

BOREHOLE LOG - HA03

Client: Bombara Family

Project: Lots 3, 650 and 1199 Thomas Road, Casuarina

Location: Casuarina, WA

Project ID: 2014-0337

Date:15/09/2014

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Sheet 1 of 1

Logged By:SA	Postion: E.392514m N.6433096m	Hole Diameter:100mm
Checked By:MW	Elevation:	Angle from Horizontal:90°

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description Soil Type, Plasticity or Particle Characteristic; Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Dynamic Cone Penetrometer (Blows/100mm)	Structure & other observations
					0		TOPSOIL/CLAYEY SAND: fine to medium grained, sub-angular to rounded, dark grey to black; clay, medium plasticity; with root fibres.				From 0.0 m to 0.75 m soil behaves cohesively.
							SC: CLAYEY SAND: fine to medium grained, sub-angular to rounded, brown; clay, medium to high plasticity.		VL to L		
							… from 0.6 m becoming brown.	M	D		
							SP: SAND: fine to medium grained, sub-angular to rounded, pale white; with clay, medium to high plasticity.				
					1		*… from 1.2 m becoming brown.*				
							End of borehole at 1.40 m				
					2						
					3						
					4						

Dynamic Cone Penetrometer (Blows/100mm): 5, 10, 15

Termination Reason: Target depth.

Remarks:

BOREHOLE LOG - HA04

Client: Bombara Family

Project: Lots 3, 650 and 1199 Thomas Road, Casuarina

Location: Casuarina, WA

Project ID: 2014-0337

Date:15/09/2014

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Sheet 1 of 1

Logged By:SA	Postion: E.392570m N.6433303m	Hole Diameter:100mm
Checked By:MW	Elevation:	Angle from Horizontal:90°

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description (Soil Type, Plasticity or Particle Characteristic; Colour, Secondary and Minor Components)	Moisture Condition	Consistency/ Relative Density	Dynamic Cone Penetrometer (Blows/100mm)	Structure & other observations
					0		TOPSOIL/SAND: fine to medium grained, sub-angular to rounded, dark grey; with root fibres.				
							SP: SAND: fine to medium grained, sub-angular to rounded, grey; trace fines.	M	L		
					1		*... from 1.0 m becoming pale grey.*	W			
							End of borehole at 1.40 m				
					2						
					3						
					4						

Termination Reason: Target depth.

Remarks:

BOREHOLE LOG - HA05

Client: Bombara Family

Project: Lots 3, 650 and 1199 Thomas Road, Casuarina

Location: Casuarina, WA

Project ID: 2014-0337

Date:15/09/2014

Sheet 1 of 1

Logged By:SA	Postion: E.392685m N.6433395m	Hole Diameter:100mm
Checked By:MW	Elevation:	Angle from Horizontal:90°

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description (Soil Type, Plasticity or Particle Characteristic; Colour, Secondary and Minor Components)	Moisture Condition	Consistency/ Relative Density	Dynamic Cone Penetrometer (Blows/100mm)	Structure & other observations
					0		TOPSOIL/SAND: medium grained, sub-angular to rounded, dark grey; with root fibres.	M	L	5 10 15	
							SP: SAND: fine to medium grained, sub-angular to rounded, grey; trace fines.				
							... from 0.4 m becoming pale brown.				
							... from 0.85 m to 1.05 m dark brown, weak limonite cementation.				
					1		*... from 1.2 m becoming dark grey.*				
							End of borehole at 1.40 m				
					2						
					3						
					4						

Termination Reason: Target depth.

Remarks:

BOREHOLE LOG - HA06

Client: Bombara Family

Project: Lots 3, 650 and 1199 Thomas Road, Casuarina

Location: Casuarina, WA

Project ID: 2014-0337

Date:15/09/2014

CMW Geosciences Pty Ltd
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Sheet 1 of 1

Logged By:SA	Postion: E.392816m N.6433236m	Hole Diameter:100mm
Checked By:MW	Elevation:	Angle from Horizontal:90°

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description (Soil Type, Plasticity or Particle Charasteristic; Colour, Secondary and Minor Components)	Moisture Condition	Consistency/ Relative Density	Perth Sand Penetrometer Blows/150mm (5, 10, 15)	Structure & other observations
					0		TOPSOIL/SAND: medium grained, sub-angular to rounded, dark grey; with root fibres.				
							SP: SAND: fine to medium grained, sub-angular to rounded, grey; trace fines.	M	MD		
					1		*... from 1.2 m becoming pale brown.*				
							End of borehole at 1.40 m				
					2						
					3						
					4						

Termination Reason: Target depth.

Remarks:

BOREHOLE LOG - HA07

Client: Bombara Family

Project: Lots 3, 650 and 1199 Thomas Road, Casuarina

Location: Casuarina, WA

Project ID: 2014-0337

Date:15/09/2014

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Sheet 1 of 1

Logged By:SA	Postion: E.392970m N.6433136m	Hole Diameter:100mm
Checked By:MW	Elevation:	Angle from Horizontal:90°

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description: Soil Type, Plasticity or Particle Charasteristic; Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Perth Sand Penetrometer Blows/150mm (5 10 15)	Structure & other observations
					0		TOPSOIL/SAND: medium grained, sub-angular to rounded, dark grey; with root fibres.				
							SP: SAND: fine to medium grained, sub-angular to rounded, pale brown; trace fines.	M	MD		
					1						
							End of borehole at 1.40 m				
					2						
					3						
					4						

Termination Reason: Target depth.

Remarks:

BOREHOLE LOG - HA08

Client: Bombara Family

Project: Lots 3, 650 and 1199 Thomas Road, Casuarina

Location: Casuarina, WA

Project ID: 2014-0337

Date:15/09/2014

CMW Geosciences Pty Ltd
Chapman Morton Woodward

Logged By:SA	Postion: E.391880m N.6432952m	Hole Diameter:100mm
Checked By:MW	Elevation:	Angle from Horizontal:90°

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description: Soil Type, Plasticity or Particle Charasteristic; Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Perth Sand Penetrometer Blows/150mm	Structure & other observations
					1		SP: SAND: fine to medium grained, sub-angular to rounded, grey; trace fines.	D	MD	5 10 15	
								M	L		
							End of borehole at 1.40 m				
					2						
					3						
					4						

Termination Reason: Target depth.

Remarks:

BOREHOLE LOG - HA09

Client: Bombara Family

Project: Lots 3, 650 and 1199 Thomas Road, Casuarina

Location: Casuarina, WA

Project ID: 2014-0337

Date:15/09/2014

CMW Geosciences Pty Ltd
Chapman Morton Woodward

Sheet 1 of 1

Logged By:SA	Postion: E.391945m N.6432932m	Hole Diameter:100mm
Checked By:MW	Elevation:	Angle from Horizontal:90°

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description (Soil Type, Plasticity or Particle Characteristic; Colour, Secondary and Minor Components)	Moisture Condition	Consistency/ Relative Density	Dynamic Cone Penetrometer (Blows/100mm)	Structure & other observations
	▼				0		TOPSOIL/CLAYEY SAND: fine to medium grained, sub-angular to rounded, dark grey to black; clay, medium plasticity; with root fibres.	M	VL to L	5 10 15	From 0.0 m to 0.5 m soil behaves cohesively.
									MD		
							SP: SAND: fine to medium grained, sub-angular to rounded, dark grey; with clay, low plasticity; weak limonite cementation.		D		
								W			From 0.9 m to 1.4 m soil behaves cohesively.
					1		SC: CLAYEY SAND: fine to medium grained, sub-angular to rounded, brown; clay, medium to high plasticity.				
							End of borehole at 1.40 m				
					2						
					3						
					4						

Termination Reason: Target depth.

Remarks:

TEST PIT LOG - TP01

Client: Bombara Family

Project: Lots 3, 650 and 1199 Thomas Road, Casuarina

Location: Casuarina, WA

Project ID: 2014-0337

Date:09/09/2014

CMW Geosciences Pty Ltd
Chapman Morton Woodward

Sheet 1 of 1

Logged By: SA	Postion: E.392150m N.6433453m	Plant: Volvo BL71 Backhoe	
Checked By: MW	Elevation:	Contractor: Allwest Rapid Hire	Dimensions: 2.5m x 1.5m

Groundwater	Samples & Insitu Testing: Depth	Type	Results	RL (m)	Depth (m)	Graphic Log	Material Description: Soil Type, Plasticity or Particle Charasteristic; Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Perth Sand Penetrometer Blows/150mm (5, 10, 15)	Structure & other Observations
					0		TOPSOIL/SAND: medium grained, sub-angular to rounded, grey; with root fibres.				
							SP: SAND: medium grained, sub-angular to rounded, pale grey; trace fines.		VL to L		
					1			M	MD		
							... from 0.2 m to 1.7 m with tree roots.				
▼					2		End of Test Pit at 2.00 m				
					3						

Termination Reason: Pit collapse due to groundwater.

Remarks:

TEST PIT LOG - TP02

Client: Bombara Family

Project: Lots 3, 650 and 1199 Thomas Road, Casuarina

Location: Casuarina, WA

Project ID: 2014-0337

Date:09/09/2014

Sheet 1 of 1

Logged By: SA	Postion: E.391986m N.6433322m	Plant: Volvo BL71 Backhoe	
Checked By: MW	Elevation:	Contractor: Allwest Rapid Hire	Dimensions: 2.5m x 1.5m

Groundwater	Samples & Insitu Testing: Depth	Type	Results	RL (m)	Depth (m)	Graphic Log	Material Description: Soil Type, Plasticity or Particle Charasteristic; Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Perth Sand Penetrometer Blows/150mm (5, 10, 15)	Structure & other Observations
					0		TOPSOIL/SAND: medium grained, sub-angular to rounded, dark grey; with root fibres.		L		
							SP: SAND: medium grained, sub-angular to rounded, pale grey; trace fines.	M	MD		
					1						
					2						
							End of Test Pit at 2.25 m				
					3						

Termination Reason: Pit collapse.

Remarks:

TEST PIT LOG - TP03

Client: Bombara Family

Project: Lots 3, 650 and 1199 Thomas Road, Casuarina

Location: Casuarina, WA

Project ID: 2014-0337

Date:09/09/2014

CMW Geosciences Pty Ltd
Chapman Morton Woodward

Sheet 1 of 1

Logged By: SA	Postion: E.391955m N.6433237m	Plant: Volvo BL71 Backhoe	
Checked By: MW	Elevation:	Contractor: Allwest Rapid Hire	Dimensions: 2.5m x 1.5m

Groundwater	Samples & Insitu Testing: Depth	Type	Results	RL (m)	Depth (m)	Graphic Log	Material Description: Soil Type, Plasticity or Particle Charasteristic; Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Perth Sand Penetrometer Blows/150mm (5 10 15)	Structure & other Observations
					0		TOPSOIL/SAND: medium grained, sub-angular to rounded, dark grey; with root fibres.	M	MD		
							SP: SAND: medium grained, sub-angular to rounded, pale grey; trace fines.				
					1						
					2			M to W			
							End of Test Pit at 2.50 m				
					3						

Termination Reason: Pit collapse.

Remarks:

TEST PIT LOG - TP04

Client: Bombara Family

Project: Lots 3, 650 and 1199 Thomas Road, Casuarina

Location: Casuarina, WA

Project ID: 2014-0337

Date:09/09/2014

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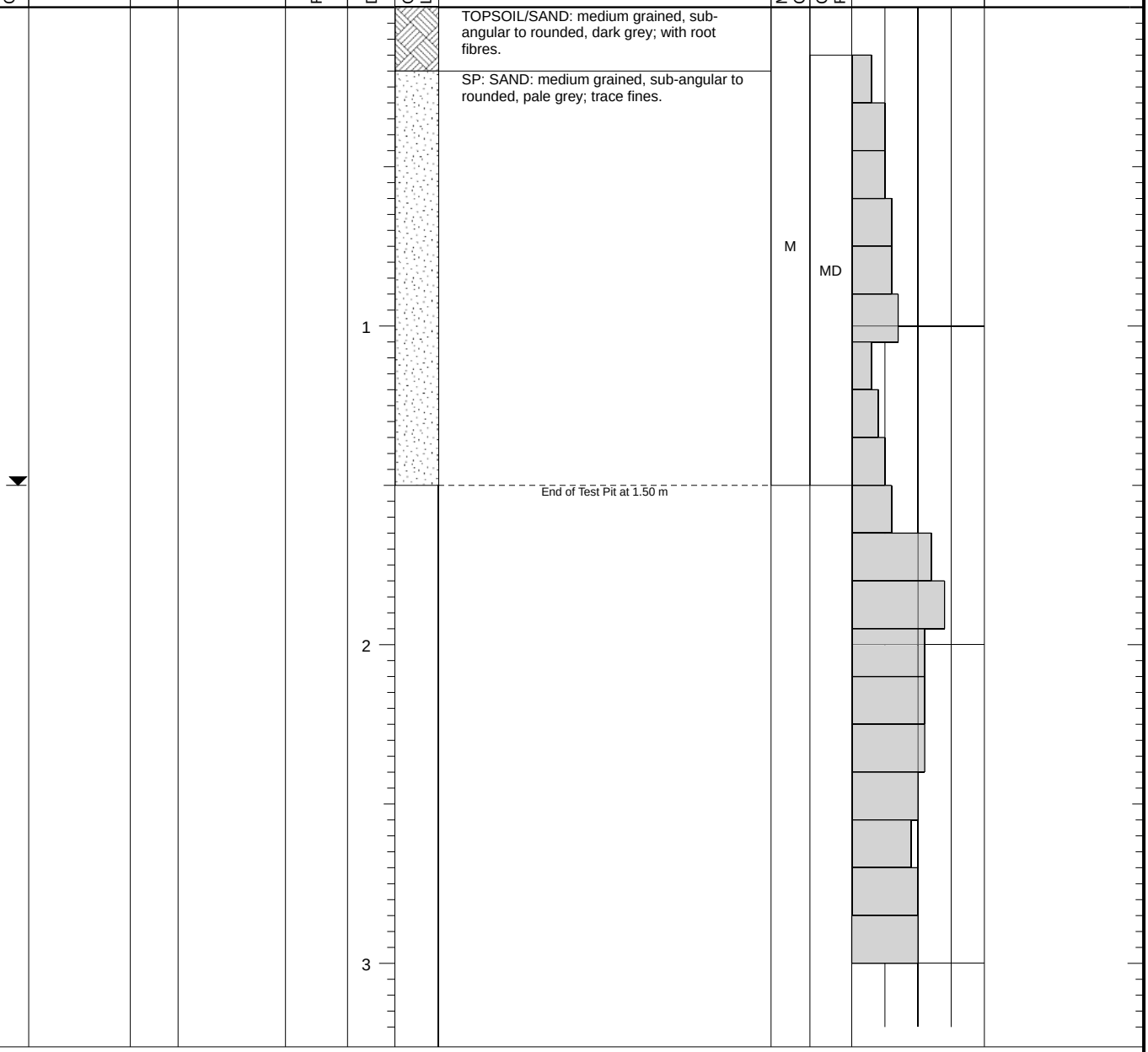
Logged By: SA	Postion: E.391994m N.6433220m	Plant: Volvo BL71 Backhoe	
Checked By: MW	Elevation:	Contractor: Allwest Rapid Hire	Dimensions: 2.5m x 1.5m

Groundwater	Samples & Insitu Testing: Depth	Type	Results	RL (m)	Depth (m)	Graphic Log	Material Description: Soil Type, Plasticity or Particle Charasteristic; Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Perth Sand Penetrometer Blows/150mm (5, 10, 15)	Structure & other Observations
							TOPSOIL/SAND: medium grained, sub-angular to rounded, dark grey; with root fibres.				
					1		SP: SAND: medium grained, sub-angular to rounded, pale grey; trace fines.	M	MD		
▼							End of Test Pit at 1.50 m				
					2						
					3						



Termination Reason: Pit collapse due to groundwater.

Remarks:

TEST PIT LOG - TP05

Client: Bombara Family

Project: Lots 3, 650 and 1199 Thomas Road, Casuarina

Location: Casuarina, WA

Project ID: 2014-0337

Date:09/09/2014

Sheet 1 of 1

Logged By: SA	Postion: E.392019m N.6433172m	Plant: Volvo BL71 Backhoe	
Checked By: MW	Elevation:	Contractor: Allwest Rapid Hire	Dimensions: 2.5m x 1.5m

Groundwater	Samples & Insitu Testing: Depth	Type	Results	RL (m)	Depth (m)	Graphic Log	Material Description: Soil Type, Plasticity or Particle Charasteristic; Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Perth Sand Penetrometer Blows/150mm (5 10 15)	Structure & other Observations
			HVP=10				TOPSOIL/CLAYEY SAND: fine to medium grained, sub-angular to rounded, dark grey to black; clay, medium plasticity; with root fibres.				From 0.25 m to 1.2 m soil behaves cohesively.
							SC: CLAYEY SAND: fine to medium grained, sub-angular to rounded, dark grey; clay, medium to high plasticity.				
			HVP=34					M			
			HVP=75 HVP=69		1						
▼							SP: SAND: medium grained, sub-angular to rounded, pale yellow and dark yellow; trace fines.				
							SP: SAND: medium grained, sub-angular to rounded, pale grey; trace fines.				
					2			W			
					3		End of Test Pit at 3.00 m				

Termination Reason: Target depth.

Remarks:

TEST PIT LOG - TP06

Client: Bombara Family

Project: Lots 3, 650 and 1199 Thomas Road, Casuarina

Location: Casuarina, WA

Project ID: 2014-0337

Date:09/09/2014

Sheet 1 of 1

Logged By: SA	Postion: E.391978m N.6433128m	Plant: Volvo BL71 Backhoe	
Checked By: MW	Elevation:	Contractor: Allwest Rapid Hire	Dimensions: 2.5m x 1.5m

Groundwater	Samples & Insitu Testing: Depth	Type	Results	RL (m)	Depth (m)	Graphic Log	Material Description: Soil Type, Plasticity or Particle Charasteristic; Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Perth Sand Penetrometer Blows/150mm (5 10 15)	Structure & other Observations
							TOPSOIL/CLAYEY SAND: fine to medium grained, sub-angular to rounded, dark grey to black; clay, medium plasticity; with root fibres.	M			From 0.0 m to 1.0 m soil behaves cohesively.
▼			HVP=41 HVP=36				SC: CLAYEY SAND: fine to medium grained, sub-angular to rounded, brown; clay, medium to high plasticity.	W			
					1		SP: SAND: medium grained, sub-angular to rounded, pale grey; trace fines.				
							End of Test Pit at 1.20 m				
					2						
					3						

Termination Reason: Pit collapse due to groundwater.

Remarks:

TEST PIT LOG - TP07

Client: Bombara Family

Project: Lots 3, 650 and 1199 Thomas Road, Casuarina

Location: Casuarina, WA

Project ID: 2014-0337

Date:09/09/2014

Sheet 1 of 1

Logged By: SA	Postion: E.391946m N.6433089m	Plant: Volvo BL71 Backhoe	
Checked By: MW	Elevation:	Contractor: Allwest Rapid Hire	Dimensions: 2.5m x 1.5m

Groundwater	Samples & Insitu Testing: Depth	Type	Results	RL (m)	Depth (m)	Graphic Log	Material Description: Soil Type, Plasticity or Particle Charasteristic; Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Perth Sand Penetrometer Blows/150mm (5, 10, 15)	Structure & other Observations
▼			HVP=61 HVP=62 HVP=58		1 2 3		TOPSOIL/CLAYEY SAND: fine to medium grained, sub-angular to rounded, dark grey to black; clay, medium plasticity; with root fibres.	M			From 0.0 m to 0.9 m soil behaves cohesively.
							CH: CLAY: high plasticity, brown; trace sand; fine to medium grained, sub-angular to rounded.				
							SC: CLAYEY SAND: fine to medium grained, sub-angular to rounded, brown; clay, medium to high plasticity.	W			
							SP: SAND: medium grained, sub-angular to rounded, pale grey; trace fines.				
							End of Test Pit at 1.70 m				

Termination Reason: Pit collapse due to groundwater.

Remarks:

TEST PIT LOG - TP08

Client: Bombara Family

Project: Lots 3, 650 and 1199 Thomas Road, Casuarina

Location: Casuarina, WA

Project ID: 2014-0337

Date:09/09/2014

Sheet 1 of 1

Logged By: SA	Postion: E.391902m N.6433167m	Plant: Volvo BL71 Backhoe	
Checked By: MW	Elevation:	Contractor: Allwest Rapid Hire	Dimensions: 2.5m x 1.5m

Groundwater	Samples & Insitu Testing: Depth	Type	Results	RL (m)	Depth (m)	Graphic Log	Material Description: Soil Type, Plasticity or Particle Charasteristic; Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Perth Sand Penetrometer Blows/150mm (5, 10, 15)	Structure & other Observations
▼					0		TOPSOIL/CLAYEY SAND: fine to medium grained, sub-angular to rounded, dark grey to black; clay, medium plasticity; with root fibres.	M	MD to D		From 0.0 m to 0.8 m soil behaves cohesively.
							SC: CLAYEY SAND: fine to medium grained, sub-angular to rounded, brown; clay, medium to high plasticity.				
					1		SP: SAND: medium grained, sub-angular to rounded, brown; with clay, medium to high plasticity.	W	D		
					2		*... from 2.5 m to 3.0 m weak limonite cementation.*				
					3		End of Test Pit at 3.00 m				

Termination Reason: Target depth.

Remarks:

TEST PIT LOG - TP09

Client: Bombara Family

Project: Lots 3, 650 and 1199 Thomas Road, Casuarina

Location: Casuarina, WA

Project ID: 2014-0337

Date:09/09/2014

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Logged By: SA	Postion: E.391889m N.6433254m	Plant: Volvo BL71 Backhoe	
Checked By: MW	Elevation:	Contractor: Allwest Rapid Hire	Dimensions: 2.5m x 1.5m

Groundwater	Samples & Insitu Testing: Depth	Type	Results	RL (m)	Depth (m)	Graphic Log	Material Description: Soil Type, Plasticity or Particle Charasteristic; Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Perth Sand Penetrometer Blows/150mm (5 10 15)	Structure & other Observations
					0		TOPSOIL/SAND: medium grained, sub-angular to rounded, dark grey; with root fibres.				
							SP: SAND: medium grained, sub-angular to rounded, pale grey; trace fines.		MD		
					1			M	L		
							... from 1.75 m becoming pale white .		MD		
					2						
							End of Test Pit at 2.25 m				
					3						

Termination Reason: Pit collapse.

Remarks:

TEST PIT LOG - TP10

Client: Bombara Family

Project: Lots 3, 650 and 1199 Thomas Road, Casuarina

Location: Casuarina, WA

Project ID: 2014-0337

Date:09/09/2014

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Sheet 1 of 1

Logged By: SA	Postion: E.391829m N.6433198m	Plant: Volvo BL71 Backhoe	
Checked By: MW	Elevation:	Contractor: Allwest Rapid Hire	Dimensions: 2.5m x 1.5m

Groundwater	Samples & Insitu Testing: Depth	Type	Results	RL (m)	Depth (m)	Graphic Log	Material Description: Soil Type, Plasticity or Particle Charasteristic; Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Perth Sand Penetrometer Blows/150mm (5, 10, 15)	Structure & other Observations
					0		TOPSOIL/SAND: medium grained, sub-angular to rounded, dark grey; with root fibres.				
							SP: SAND: medium grained, sub-angular to rounded, pale grey; trace fines.		MD		
					1			M			
									L		
									MD		
					2		End of Test Pit at 2.00 m				
					3						

Termination Reason: Pit collapse.

Remarks:

TEST PIT LOG - TP11

Client: Bombara Family

Project: Lots 3, 650 and 1199 Thomas Road, Casuarina

Location: Casuarina, WA

Project ID: 2014-0337

Date:09/09/2014

Sheet 1 of 1

Logged By: SA	Postion: E.391844m N.6433124m	Plant: Volvo BL71 Backhoe	
Checked By: MW	Elevation:	Contractor: Allwest Rapid Hire	Dimensions: 2.5m x 1.5m

Groundwater	Samples & Insitu Testing: Depth	Type	Results	RL (m)	Depth (m)	Graphic Log	Material Description: Soil Type, Plasticity or Particle Charasteristic; Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Perth Sand Penetrometer Blows/150mm (5, 10, 15)	Structure & other Observations
					0		TOPSOIL/SAND: medium grained, sub-angular to rounded, dark grey; with root fibres.				
							SP: SAND: medium grained, sub-angular to rounded, pale grey; trace fines.		L		
							... from 0.5 m becoming pale white .				
					1			M	MD		
					2						
					3		End of Test Pit at 3.00 m				

Termination Reason: Target depth.

Remarks:

TEST PIT LOG - TP12

Client: Bombara Family

Project: Lots 3, 650 and 1199 Thomas Road, Casuarina

Location: Casuarina, WA

Project ID: 2014-0337

Date:09/09/2014

Sheet 1 of 1

Logged By: SA	Postion: E.391811m N.6433077m	Plant: Volvo BL71 Backhoe	
Checked By: MW	Elevation:	Contractor: Allwest Rapid Hire	Dimensions: 2.5m x 1.5m

Groundwater	Samples & Insitu Testing: Depth	Type	Results	RL (m)	Depth (m)	Graphic Log	Material Description: Soil Type, Plasticity or Particle Charasteristic; Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Perth Sand Penetrometer Blows/150mm (5, 10, 15)	Structure & other Observations
					0		TOPSOIL/SAND: medium grained, sub-angular to rounded, dark grey; with root fibres.				
							SP: SAND: fine to medium grained, sub-angular to rounded, pale orange; trace fines.		L		
							... from 0.6 m becoming orange.				
					1			M	MD		
					2		End of Test Pit at 2.50 m				
					3						

Termination Reason: Pit collapse.

Remarks:

TEST PIT LOG - TP13

Client: Bombara Family

Project: Lots 3, 650 and 1199 Thomas Road, Casuarina

Location: Casuarina, WA

Project ID: 2014-0337

Date:09/09/2014

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Logged By: SA	Postion: E.391831m N.6433018m	Plant: Volvo BL71 Backhoe	
Checked By: MW	Elevation:	Contractor: Allwest Rapid Hire	Dimensions: 2.5m x 1.5m

Groundwater	Samples & Insitu Testing: Depth	Type	Results	RL (m)	Depth (m)	Graphic Log	Material Description: Soil Type, Plasticity or Particle Charasteristic; Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Perth Sand Penetrometer Blows/150mm (5, 10, 15)	Structure & other Observations
					1		TOPSOIL/SAND: medium grained, sub-angular to rounded, dark grey; with root fibres.	M	L to MD		
							SP: SAND: medium grained, sub-angular to rounded, pale grey; trace fines.				
							... from 0.3 m becoming pale white .				
							... from 1.5 m becoming pale orange.		L		
					2				MD		
							End of Test Pit at 2.20 m				
					3						

Termination Reason: Pit collapse.

Remarks:

TEST PIT LOG - TP14

Client: Bombara Family

Project: Lots 3, 650 and 1199 Thomas Road, Casuarina

Location: Casuarina, WA

Project ID: 2014-0337

Date:09/09/2014

Sheet 1 of 1

Logged By: SA	Postion: E.391823m N.6432924m	Plant: Volvo BL71 Backhoe	
Checked By: MW	Elevation:	Contractor: Allwest Rapid Hire	Dimensions: 2.5m x 1.5m

Groundwater	Samples & Insitu Testing: Depth	Type	Results	RL (m)	Depth (m)	Graphic Log	Material Description: Soil Type, Plasticity or Particle Charasteristic; Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Perth Sand Penetrometer Blows/150mm (5, 10, 15)	Structure & other Observations
					0		TOPSOIL/SAND: medium grained, sub-angular to rounded, dark grey; with root fibres.				
							SP: SAND: fine to medium grained, sub-angular to rounded, dark grey; trace fines.		MD		
							SP: SAND: medium grained, sub-angular to rounded, pale grey; trace fines.	M	L		
					1				MD		
							... from 1.7 m weak to moderate limonite cementation.				
							End of Test Pit at 1.80 m				
					2						
					3						

Termination Reason: Refusal on limonite cemented sand.

Remarks:

TEST PIT LOG - TP15

Client: Bombara Family

Project: Lots 3, 650 and 1199 Thomas Road, Casuarina

Location: Casuarina, WA

Project ID: 2014-0337

Date:09/09/2014

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Sheet 1 of 1

Logged By: SA	Postion: E.391921m N.6432964m	Plant: Volvo BL71 Backhoe	
Checked By: MW	Elevation:	Contractor: Allwest Rapid Hire	Dimensions: 2.5m x 1.5m

Groundwater	Samples & Insitu Testing: Depth	Type	Results	RL (m)	Depth (m)	Graphic Log	Material Description: Soil Type, Plasticity or Particle Charasteristic; Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Perth Sand Penetrometer Blows/150mm (5, 10, 15)	Structure & other Observations
					0		TOPSOIL/SAND: medium grained, sub-angular to rounded, dark grey; with root fibres.				
							SP: SAND: medium grained, sub-angular to rounded, pale grey; trace fines.		MD		
					1			M			
							... from 1.8 m becoming dark brown.	W			
▼					2		End of Test Pit at 2.00 m				
					3						

Termination Reason: Pit collapse due to groundwater.

Remarks:

TEST PIT LOG - TP16

Client: Bombara Family

Project: Lots 3, 650 and 1199 Thomas Road, Casuarina

Location: Casuarina, WA

Project ID: 2014-0337

Date:09/09/2014

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Sheet 1 of 1

Logged By: SA	Postion: E.391922m N.6433045m	Plant: Volvo BL71 Backhoe	
Checked By: MW	Elevation:	Contractor: Allwest Rapid Hire	Dimensions: 2.5m x 1.5m

Groundwater	Samples & Insitu Testing: Depth	Type	Results	RL (m)	Depth (m)	Graphic Log	Material Description: Soil Type, Plasticity or Particle Charasteristic; Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Perth Sand Penetrometer Blows/150mm (5 10 15)	Structure & other Observations
					0		TOPSOIL/SAND: medium grained, sub-angular to rounded, dark grey; with root fibres.				
							SP: SAND: medium grained, sub-angular to rounded, pale grey; trace fines.				
					1			M	MD		
					2		End of Test Pit at 2.00 m				
					3						

Termination Reason: Pit collapse.

Remarks:

TEST PIT LOG - TP17

Client: Bombara Family

Project: Lots 3, 650 and 1199 Thomas Road, Casuarina

Location: Casuarina, WA

Project ID: 2014-0337

Date:09/09/2014

Sheet 1 of 1

Logged By: SA	Postion: E.391996m N.6433063m	Plant: Volvo BL71 Backhoe	
Checked By: MW	Elevation:	Contractor: Allwest Rapid Hire	Dimensions: 2.5m x 1.5m

Groundwater	Samples & Insitu Testing: Depth	Type	Results	RL (m)	Depth (m)	Graphic Log	Material Description: Soil Type, Plasticity or Particle Charasteristic; Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Perth Sand Penetrometer Blows/150mm (5 10 15)	Structure & other Observations
▼			HVP=74		0		TOPSOIL/CLAYEY SAND: fine to medium grained, sub-angular to rounded, dark grey to black; clay, medium plasticity; with root fibres.	M			From 0.0 m to 1.75 m soil behaves cohesively.
							SC: CLAYEY SAND: fine to medium grained, sub-angular to rounded, brown; clay, medium to high plasticity.				
							... from 0.5 m becoming pale brown; with sand.				
					1			W			
							End of Test Pit at 1.75 m				
					2						
					3						

Termination Reason: Pit collapse due to groundwater.

Remarks:

TEST PIT LOG - TP18

Client: Bombara Family

Project: Lots 3, 650 and 1199 Thomas Road, Casuarina

Location: Casuarina, WA

Project ID: 2014-0337

Date:09/09/2014

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Logged By: SA	Postion: E.392163m N.6433155m	Plant: Volvo BL71 Backhoe	
Checked By: MW	Elevation:	Contractor: Allwest Rapid Hire	Dimensions: 2.5m x 1.5m

Groundwater	Samples & Insitu Testing: Depth	Type	Results	RL (m)	Depth (m)	Graphic Log	Material Description: Soil Type, Plasticity or Particle Charasteristic; Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Perth Sand Penetrometer Blows/150mm (5, 10, 15)	Structure & other Observations
▼					0		TOPSOIL/CLAYEY SAND: fine to medium grained, sub-angular to rounded, dark grey to black; clay, medium plasticity; with root fibres.	M	MD		From 0.0 m to 0.6 m soil behaves cohesively.
							SC: CLAYEY SAND: fine to medium grained, sub-angular to rounded, brown; clay, medium to high plasticity.				
							SP: SAND: fine to medium grained, sub-angular to rounded, pale brown.; trace fines.		D		
					1			W			
					2						Note: From 2.0 m soils has a hydrogen sulphide odour.
							End of Test Pit at 2.90 m				
					3						

Termination Reason: Pit collapse.

Remarks:

TEST PIT LOG - TP19

Client: Bombara Family

Project: Lots 3, 650 and 1199 Thomas Road, Casuarina

Location: Casuarina, WA

Project ID: 2014-0337

Date:10/09/2014

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Sheet 1 of 1

Logged By: SA	Postion: E.392186m N.6433230m	Plant: Volvo BL71 Backhoe	
Checked By: MW	Elevation:	Contractor: Allwest Rapid Hire	Dimensions: 2.5m x 1.5m

Groundwater	Samples & Insitu Testing: Depth	Type	Results	RL (m)	Depth (m)	Graphic Log	Material Description: Soil Type, Plasticity or Particle Charasteristic; Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Dynamic Cone Penetrometer (blows per 100mm)	Structure & other Observations
					0		TOPSOIL/SAND: medium grained, sub-angular to rounded, dark grey; with root fibres.	M	L	5 10 15	No DCP data as test undertaken from surface and in base of pit at 1.2 m depth.
							SP: SAND: fine to medium grained, sub-angular to rounded, pale orange; trace fines.		MD		
									D		
					1		*... from 1.0 m becoming pale white .*				
									MD		
							... from 1.5 m becoming brown.	M to W	D		
					2				VD		
							End of Test Pit at 2.20 m				
					3						

Termination Reason: Pit collapse.

Remarks:

TEST PIT LOG - TP20

Client: Bombara Family

Project: Lots 3, 650 and 1199 Thomas Road, Casuarina

Location: Casuarina, WA

Project ID: 2014-0337

Date:10/09/2014

Sheet 1 of 1

Logged By: SA	Postion: E.392221m N.6433303m	Plant: Volvo BL71 Backhoe	
Checked By: MW	Elevation:	Contractor: Allwest Rapid Hire	Dimensions: 2.5m x 1.5m

Groundwater	Samples & Insitu Testing: Depth	Type	Results	RL (m)	Depth (m)	Graphic Log	Material Description: Soil Type, Plasticity or Particle Charasteristic; Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Dynamic Cone Penetrometer (blows per 100mm)	Structure & other Observations
					0		TOPSOIL/SAND: medium grained, sub-angular to rounded, dark grey; with root fibres.	M	L		
							SP: SAND: fine to medium grained, sub-angular to rounded, pale orange; trace fines.				
							SC: CLAYEY SAND: fine to medium grained, sub-angular to rounded, pale brown to pale white; clay, medium to high plasticity; with fine gravel to boulder size clasts of limestone, fine grained, low strength, extremely to distinctly weathered.	D to M	MD		
							SP: SAND: medium grained, sub-angular to rounded, pale white; trace fines.		D		
					1			M			No DCP data as test undertaken from surface and in base of pit at 1.2 m depth.
▼									MD		
							SP: SAND: medium grained, sub-angular to rounded, brown; with clay, medium to high plasticity.				
					2			W	D		
									VD		
					3		End of Test Pit at 3.00 m				

Termination Reason: Target depth.

Remarks:

TEST PIT LOG - TP21

Client: Bombara Family

Project: Lots 3, 650 and 1199 Thomas Road, Casuarina

Location: Casuarina, WA

Project ID: 2014-0337

Date:10/09/2014

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Logged By: SA	Postion: E.392311m N.6433159m	Plant: Volvo BL71 Backhoe	
Checked By: MW	Elevation:	Contractor: Allwest Rapid Hire	Dimensions: 2.5m x 1.5m

Groundwater	Samples & Insitu Testing: Depth	Type	Results	RL (m)	Depth (m)	Graphic Log	Material Description: Soil Type, Plasticity or Particle Charasteristic; Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Dynamic Cone Penetrometer (blows per 100mm)	Structure & other Observations
					0		TOPSOIL/SAND: medium grained, sub-angular to rounded, dark grey; with root fibres.	M	VL to L	5 10 15	No DCP data as test undertaken from surface and in base of pit at 1.2 m depth.
							SP: SAND: medium grained, sub-angular to rounded, pale grey; trace fines.				
					1				MD to D		
									D		
					2		End of Test Pit at 2.25 m				
					3						

Termination Reason: Pit collapse.

Remarks:

TEST PIT LOG - TP22

Client: Bombara Family

Project: Lots 3, 650 and 1199 Thomas Road, Casuarina

Location: Casuarina, WA

Project ID: 2014-0337

Date:10/09/2014

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Logged By: SA	Postion: E.392362m N.6433092m	Plant: Volvo BL71 Backhoe	
Checked By: MW	Elevation:	Contractor: Allwest Rapid Hire	Dimensions: 2.5m x 1.5m

Groundwater	Samples & Insitu Testing: Depth	Type	Results	RL (m)	Depth (m)	Graphic Log	Material Description: Soil Type, Plasticity or Particle Charasteristic; Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Dynamic Cone Penetrometer (blows per 100mm)	Structure & other Observations
					0		TOPSOIL/SAND: medium grained, sub-angular to rounded, dark grey; with root fibres.				
							SP: SAND: medium grained, sub-angular to rounded, pale grey; trace fines.	M	VL to L	5 10 15	No DCP data as test undertaken from surface and in base of pit at 1.2 m depth.
					1				MD		
									D		
▼					2		*... from 2.2 m becoming brown.*	W			
							End of Test Pit at 2.50 m				
					3						

Termination Reason: Pit collapse due to groundwater.

Remarks:

TEST PIT LOG - TP23

Client: Bombara Family

Project: Lots 3, 650 and 1199 Thomas Road, Casuarina

Location: Casuarina, WA

Project ID: 2014-0337

Date:10/09/2014

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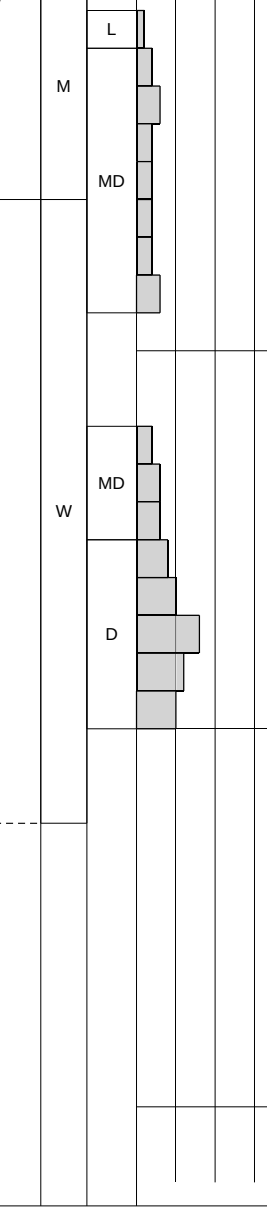
Logged By: SA	Postion: E.392228m N.6432996m	Plant: Volvo BL71 Backhoe	
Checked By: MW	Elevation:	Contractor: Allwest Rapid Hire	Dimensions: 2.5m x 1.5m

Groundwater	Samples & Insitu Testing: Depth	Type	Results	RL (m)	Depth (m)	Graphic Log	Material Description: Soil Type, Plasticity or Particle Charasteristic; Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Dynamic Cone Penetrometer (blows per 100mm)	Structure & other Observations
▼					0		TOPSOIL/CLAYEY SAND: fine to medium grained, sub-angular to rounded, dark grey to black; clay, medium plasticity; with root fibres.	M	L		From 0.0 m to 0.6 m soil behaves cohesively.
									MD		
					1		SP: SAND: fine to medium grained, sub-angular to rounded, dark grey; trace fines.	W	MD		No DCP data as test undertaken from surface and in base of pit at 1.2 m depth.
									D		
					2		End of Test Pit at 2.25 m				
					3						



Termination Reason: Pit collapse due to groundwater.

Remarks:

TEST PIT LOG - TP24

Client: Bombara Family

Project: Lots 3, 650 and 1199 Thomas Road, Casuarina

Location: Casuarina, WA

Project ID: 2014-0337

Date:10/09/2014

Sheet 1 of 1

Logged By: SA	Postion: E.392448m N.6433004m	Plant: Volvo BL71 Backhoe	
Checked By: MW	Elevation:	Contractor: Allwest Rapid Hire	Dimensions: 2.5m x 1.5m

Groundwater	Samples & Insitu Testing: Depth	Type	Results	RL (m)	Depth (m)	Graphic Log	Material Description: Soil Type, Plasticity or Particle Charasteristic; Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Dynamic Cone Penetrometer (blows per 100mm)	Structure & other Observations
					0		TOPSOIL/SAND: medium grained, sub-angular to rounded, dark grey; with root fibres.		L		
							SP: SAND: medium grained, sub-angular to rounded, pale grey; trace fines.		MD		
					1			M			No DCP data as test undertaken from surface and in base of pit at 1.2 m depth.
									MD		
									D		
					2		End of Test Pit at 2.00 m				
					3						

Dynamic Cone Penetrometer (blows per 100mm): 5, 10, 15

Termination Reason: Pit collapse.

Remarks:

TEST PIT LOG - TP25

Client: Bombara Family

Project: Lots 3, 650 and 1199 Thomas Road, Casuarina

Location: Casuarina, WA

Project ID: 2014-0337

Date:10/09/2014

Sheet 1 of 1

Logged By: SA	Postion: E.392591m N.6433036m	Plant: Volvo BL71 Backhoe	
Checked By: MW	Elevation:	Contractor: Allwest Rapid Hire	Dimensions: 2.5m x 1.5m

Groundwater	Samples & Insitu Testing: Depth	Type	Results	RL (m)	Depth (m)	Graphic Log	Material Description: Soil Type, Plasticity or Particle Charasteristic; Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Dynamic Cone Penetrometer (blows per 100mm)	Structure & other Observations
					0		TOPSOIL/SAND: medium grained, sub-angular to rounded, dark grey; with root fibres.				
							SP: SAND: medium grained, sub-angular to rounded, pale grey; trace fines.				
							... from 0.5 m becoming pale brown.	M	VL to L		
					1				MD		No DCP data as test undertaken from surface and in base of pit at 1.2 m depth.
							... from 1.5 m becoming dark grey.	W	D		
									MD		
					2		End of Test Pit at 2.00 m				
					3						

Dynamic Cone Penetrometer (blows per 100mm): 5, 10, 15

Termination Reason: Pit collapse due to groundwater.

Remarks:

TEST PIT LOG - TP26

Client: Bombara Family

Project: Lots 3, 650 and 1199 Thomas Road, Casuarina

Location: Casuarina, WA

Project ID: 2014-0337

Date:10/09/2014

Sheet 1 of 1

Logged By: SA	Postion: E.392611m N.6433203m	Plant: Volvo BL71 Backhoe	
Checked By: MW	Elevation:	Contractor: Allwest Rapid Hire	Dimensions: 2.5m x 1.5m

Groundwater	Samples & Insitu Testing: Depth	Type	Results	RL (m)	Depth (m)	Graphic Log	Material Description: Soil Type, Plasticity or Particle Charasteristic; Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Dynamic Cone Penetrometer (blows per 100mm) 5 10 15	Structure & other Observations
▼					0		TOPSOIL/CLAYEY SAND: fine to medium grained, sub-angular to rounded, dark grey to black; clay, medium plasticity; with root fibres.	M	VL to L		From 0.0 m to 0.5 m soil behaves cohesively.
					1		SP: SAND: medium grained, sub-angular to rounded, pale brown, trace fines.				No DCP data as test undertaken from surface and in base of pit at 1.2 m depth.
					2		End of Test Pit at 2.00 m	W	MD		
					3						

Termination Reason: Pit collapse due to groundwater.

Remarks:

TEST PIT LOG - TP27

Client: Bombara Family

Project: Lots 3, 650 and 1199 Thomas Road, Casuarina

Location: Casuarina, WA

Project ID: 2014-0337

Date:10/09/2014

Sheet 1 of 1

Logged By: SA	Postion: E.392573m N.6433354m	Plant: Volvo BL71 Backhoe	
Checked By: MW	Elevation:	Contractor: Allwest Rapid Hire	Dimensions: 2.5m x 1.5m

Groundwater	Samples & Insitu Testing: Depth	Type	Results	RL (m)	Depth (m)	Graphic Log	Material Description: Soil Type, Plasticity or Particle Charasteristic; Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Dynamic Cone Penetrometer (blows per 100mm)	Structure & other Observations
					0		TOPSOIL/SAND: medium grained, sub-angular to rounded, dark grey; with root fibres.	M	L	5 10 15	No DCP data as test undertaken from surface and in base of pit at 1.2 m depth.
							SP: SAND: medium grained, sub-angular to rounded, pale grey; trace fines.				
							… from 0.5 m becoming pale brown.				
					1				MD		
▼							*… from 1.5 m becoming dark grey.*	W	D		
					2		End of Test Pit at 2.00 m				
					3						

Termination Reason: Pit collapse due to groundwater.

Remarks:

TEST PIT LOG - TP28

Client: Bombara Family

Project: Lots 3, 650 and 1199 Thomas Road, Casuarina

Location: Casuarina, WA

Project ID: 2014-0337

Date:10/09/2014

Sheet 1 of 1

Logged By: SA	Postion: E.392566m N.6433485m	Plant: Volvo BL71 Backhoe	
Checked By: MW	Elevation:	Contractor: Allwest Rapid Hire	Dimensions: 2.5m x 1.5m

Groundwater	Samples & Insitu Testing: Depth	Type	Results	RL (m)	Depth (m)	Graphic Log	Material Description: Soil Type, Plasticity or Particle Charasteristic; Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Dynamic Cone Penetrometer (blows per 100mm)	Structure & other Observations
					0		TOPSOIL/SAND: medium grained, sub-angular to rounded, dark grey; with root fibres.				
							SP: SAND: medium grained, sub-angular to rounded, pale grey; trace fines.		VL to L		
								M			No DCP data as test undertaken from surface and in base of pit at 1.2 m depth.
					1				L		
									MD		
							End of Test Pit at 1.80 m				
					2						
					3						

Termination Reason: Pit collapse.

Remarks:

TEST PIT LOG - TP29

Client: Bombara Family

Project: Lots 3, 650 and 1199 Thomas Road, Casuarina

Location: Casuarina, WA

Project ID: 2014-0337

Date:10/09/2014

Sheet 1 of 1

Logged By: SA	Postion: E.392425m N.6433488m	Plant: Volvo BL71 Backhoe	
Checked By: MW	Elevation:	Contractor: Allwest Rapid Hire	Dimensions: 2.5m x 1.5m

Groundwater	Samples & Insitu Testing: Depth	Type	Results	RL (m)	Depth (m)	Graphic Log	Material Description: Soil Type, Plasticity or Particle Charasteristic; Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Dynamic Cone Penetrometer (blows per 100mm)	Structure & other Observations
					0		TOPSOIL/SAND: medium grained, sub-angular to rounded, dark grey; with root fibres.				
							SP: SAND: medium grained, sub-angular to rounded, pale grey; trace fines.		VL to L		
					1			M	L		No DCP data as test undertaken from surface and in base of pit at 1.2 m depth.
									MD		
							End of Test Pit at 1.80 m				
					2						
					3						

Dynamic Cone Penetrometer (blows per 100mm): 5, 10, 15

Termination Reason: Pit collapse.

Remarks:

TEST PIT LOG - TP30

Client: Bombara Family

Project: Lots 3, 650 and 1199 Thomas Road, Casuarina

Location: Casuarina, WA

Project ID: 2014-0337

Date:10/09/2014

Sheet 1 of 1

Logged By: SA	Postion: E.392335m N.6433298m	Plant: Volvo BL71 Backhoe	
Checked By: MW	Elevation:	Contractor: Allwest Rapid Hire	Dimensions: 2.5m x 1.5m

Groundwater	Samples & Insitu Testing: Depth	Type	Results	RL (m)	Depth (m)	Graphic Log	Material Description: Soil Type, Plasticity or Particle Charasteristic; Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Dynamic Cone Penetrometer (blows per 100mm)	Structure & other Observations
					0		TOPSOIL/SAND: medium grained, sub-angular to rounded, dark grey; with root fibres.				
							SP: SAND: medium grained, sub-angular to rounded, pale white; trace fines.		L		
							… from 0.4 m becoming pale orange.		MD		
									D		
					1			M			No DCP data as test undertaken from surface and in base of pit at 1.2 m depth.
									MD		
							End of Test Pit at 1.80 m		MD to D		
					2						
					3						

5 10 15

Termination Reason: Pit collapse.

Remarks:

TEST PIT LOG - TP31

Client: Bombara Family

Project: Lots 3, 650 and 1199 Thomas Road, Casuarina

Location: Casuarina, WA

Project ID: 2014-0337

Date:10/09/2014

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Sheet 1 of 1

Logged By: SA	Postion: E.392317m N.6433381m	Plant: Volvo BL71 Backhoe	
Checked By: MW	Elevation:	Contractor: Allwest Rapid Hire	Dimensions: 2.5m x 1.5m

Groundwater	Samples & Insitu Testing: Depth	Type	Results	RL (m)	Depth (m)	Graphic Log	Material Description: Soil Type, Plasticity or Particle Charasteristic; Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Dynamic Cone Penetrometer (blows per 100mm)	Structure & other Observations
					0		TOPSOIL/CLAYEY SAND: fine to medium grained, sub-angular to rounded, dark grey to black; clay, medium plasticity; with root fibres.				From 0.0 m to 0.4 m soil behaves cohesively.
							SP: SAND: medium grained, sub-angular to rounded, pale grey; trace fines.	M	VL to L		
							... from 0.5 m becoming pale brown.				
					1				L		
							... from 1.25 m dark brown, moderate limonite cementation.		VD		
							End of Test Pit at 1.30 m				
					2						
					3						

Dynamic Cone Penetrometer (blows per 100mm): 5, 10, 15

Termination Reason: Refusal on limonite cemented sand.

Remarks:

TEST PIT LOG - TP32

Client: Bombara Family

Project: Lots 3, 650 and 1199 Thomas Road, Casuarina

Location: Casuarina, WA

Project ID: 2014-0337

Date:10/09/2014

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Sheet 1 of 1

Logged By: SA	Postion: E.392442m N.6433357m	Plant: Volvo BL71 Backhoe	
Checked By: MW	Elevation:	Contractor: Allwest Rapid Hire	Dimensions: 2.5m x 1.5m

Groundwater	Samples & Insitu Testing: Depth	Type	Results	RL (m)	Depth (m)	Graphic Log	Material Description: Soil Type, Plasticity or Particle Charasteristic; Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Dynamic Cone Penetrometer (blows per 100mm)	Structure & other Observations
					0		TOPSOIL/SAND: medium grained, sub-angular to rounded, dark grey; with root fibres.				
							SP: SAND: medium grained, sub-angular to rounded, pale grey; trace fines.				
							... from 0.3 m becoming pale brown.		VL to L		
								M			
					1						No DCP data as test undertaken from surface and in base of pit at 1.2 m depth.
									D		
							... from 1.4 m dark brown to black, moderate limonite cementation.				
							End of Test Pit at 1.50 m				
					2						
					3						

Termination Reason: Refusal on limonite cemented sand.

Remarks:

TEST PIT LOG - TP33

Client: Bombara Family

Project: Lots 3, 650 and 1199 Thomas Road, Casuarina

Location: Casuarina, WA

Project ID: 2014-0337

Date:10/09/2014

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Sheet 1 of 1

Logged By: SA	Postion: E.392487m N.6433241m	Plant: Volvo BL71 Backhoe	
Checked By: MW	Elevation:	Contractor: Allwest Rapid Hire	Dimensions: 2.5m x 1.5m

Groundwater	Samples & Insitu Testing: Depth	Type	Results	RL (m)	Depth (m)	Graphic Log	Material Description: Soil Type, Plasticity or Particle Charasteristic; Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Dynamic Cone Penetrometer (blows per 100mm)	Structure & other Observations
					0		TOPSOIL/SAND: medium grained, sub-angular to rounded, dark grey; with root fibres.	M	VL to L	5 10 15	
							SP: SAND: fine to medium grained, sub-angular to rounded, dark grey; trace fines.				
							... from 0.3 m becoming pale grey.				
					1						No DCP data as test undertaken from surface and in base of pit at 1.2 m depth.
									MD		
									D		
								M to W			
							End of Test Pit at 1.80 m				
					2						
					3						

Termination Reason: Pit collapse.

Remarks:

TEST PIT LOG - TP34

Client: Bombara Family

Project: Lots 3, 650 and 1199 Thomas Road, Casuarina

Location: Casuarina, WA

Project ID: 2014-0337

Date:10/09/2014

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Logged By: SA	Postion: E.392676m N.6433268m	Plant: Volvo BL71 Backhoe	
Checked By: MW	Elevation:	Contractor: Allwest Rapid Hire	Dimensions: 2.5m x 1.5m

Groundwater	Samples & Insitu Testing: Depth	Type	Results	RL (m)	Depth (m)	Graphic Log	Material Description: Soil Type, Plasticity or Particle Charasteristic; Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Dynamic Cone Penetrometer (blows per 100mm)	Structure & other Observations
					0		TOPSOIL/SAND: medium grained, sub-angular to rounded, dark grey; with root fibres.				
							SP: SAND: fine to medium grained, sub-angular to rounded, dark grey; trace fines.		VL to L		
							... from 0.5 m becoming pale brown.		L		
					1			M			No DCP data as test undertaken from surface and in base of pit at 1.2 m depth.
									L		
									MD		
▼							*... from 1.8 m becoming dark grey.*	W	D		
					2		End of Test Pit at 2.00 m				
					3						

Termination Reason: Pit collapse due to groundwater.

Remarks:

TEST PIT LOG - TP35

Client: Bombara Family

Project: Lots 3, 650 and 1199 Thomas Road, Casuarina

Location: Casuarina, WA

Project ID: 2014-0337

Date:10/09/2014

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Sheet 1 of 1

Logged By: SA	Postion: E.392665m N.6433148m	Plant: Volvo BL71 Backhoe	
Checked By: MW	Elevation:	Contractor: Allwest Rapid Hire	Dimensions: 2.5m x 1.5m

Groundwater	Samples & Insitu Testing: Depth	Type	Results	RL (m)	Depth (m)	Graphic Log	Material Description: Soil Type, Plasticity or Particle Charasteristic; Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Dynamic Cone Penetrometer (blows per 100mm)	Structure & other Observations
					0		TOPSOIL/SAND: medium grained, sub-angular to rounded, dark grey; with root fibres.				
							SP: SAND: fine to medium grained, sub-angular to rounded, dark grey; trace fines.		L		
							… from 0.4 m becoming pale brown.	M			No DCP data as test undertaken from surface and in base of pit at 1.2 m depth.
					1				L		
									MD		
									D		
							End of Test Pit at 1.80 m				
					2						
					3						

Termination Reason: Pit collapse.

Remarks:

TEST PIT LOG - TP36

Client: Bombara Family

Project: Lots 3, 650 and 1199 Thomas Road, Casuarina

Location: Casuarina, WA

Project ID: 2014-0337

Date:10/09/2014

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Sheet 1 of 1

Logged By: SA	Postion: E.392750m N.6433055m	Plant: Volvo BL71 Backhoe	
Checked By: MW	Elevation:	Contractor: Allwest Rapid Hire	Dimensions: 2.5m x 1.5m

Groundwater	Samples & Insitu Testing: Depth	Type	Results	RL (m)	Depth (m)	Graphic Log	Material Description: Soil Type, Plasticity or Particle Charasteristic; Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Dynamic Cone Penetrometer (blows per 100mm)	Structure & other Observations
▼					1		TOPSOIL/SAND: medium grained, sub-angular to rounded, dark grey; with root fibres. SP: SAND: medium grained, sub-angular to rounded, pale white; trace fines.	M	L to VL L MD D VD	5 10 15	No DCP data as test undertaken from surface and in base of pit at 1.2 m depth.
					2		*... from 1.6 m to 1.7 m weak to moderate limonite cementation.*	W			
					3		End of Test Pit at 2.50 m				

Termination Reason: Pit collapse due to groundwater.

Remarks:

TEST PIT LOG - TP37

Client: Bombara Family

Project: Lots 3, 650 and 1199 Thomas Road, Casuarina

Location: Casuarina, WA

Project ID: 2014-0337

Date:10/09/2014

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Sheet 1 of 1

Logged By: SA	Postion: E.392826m N.6433090m	Plant: Volvo BL71 Backhoe	
Checked By: MW	Elevation:	Contractor: Allwest Rapid Hire	Dimensions: 2.5m x 1.5m

Groundwater	Samples & Insitu Testing: Depth	Type	Results	RL (m)	Depth (m)	Graphic Log	Material Description: Soil Type, Plasticity or Particle Charasteristic; Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Dynamic Cone Penetrometer (blows per 100mm)	Structure & other Observations
					0		TOPSOIL/SAND: medium grained, sub-angular to rounded, dark grey; with root fibres.				
							SP: SAND: medium grained, sub-angular to rounded, pale grey; trace fines.				
							... from 0.4 m becoming pale brown.		VL to L		
								M			No DCP data as test undertaken from surface and in base of pit at 1.2 m depth.
					1				L		
									D		
									MD		
							End of Test Pit at 1.80 m				
					2						
					3						

5 10 15

Termination Reason: Pit collapse.

Remarks:

TEST PIT LOG - TP38

Client: Bombara Family

Project: Lots 3, 650 and 1199 Thomas Road, Casuarina

Location: Casuarina, WA

Project ID: 2014-0337

Date:10/09/2014

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Sheet 1 of 1

Logged By: SA	Postion: E.392794m N.6433177m	Plant: Volvo BL71 Backhoe	
Checked By: MW	Elevation:	Contractor: Allwest Rapid Hire	Dimensions: 2.5m x 1.5m

Groundwater	Samples & Insitu Testing: Depth	Type	Results	RL (m)	Depth (m)	Graphic Log	Material Description: Soil Type, Plasticity or Particle Charasteristic; Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Dynamic Cone Penetrometer (blows per 100mm)	Structure & other Observations
					0		TOPSOIL/CLAYEY SAND: fine to medium grained, sub-angular to rounded, dark grey to black; clay, medium plasticity; with root fibres.				From 0.0 m to 0.15 m soil behaves cohesively.
							SP: SAND: medium grained, sub-angular to rounded, pale grey; trace fines.		VL to L		
							... from 0.5 m becoming pale brown.				
					1			M			No DCP data as test undertaken from surface and in base of pit at 1.2 m depth.
									L		
									D		
					2		End of Test Pit at 2.00 m				
					3						

5 10 15

Termination Reason: Pit collapse.

Remarks:

TEST PIT LOG - TP39

Client: Bombara Family

Project: Lots 3, 650 and 1199 Thomas Road, Casuarina

Location: Casuarina, WA

Project ID: 2014-0337

Date:10/09/2014

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Logged By: SA	Postion: E.392755m N.6433222m	Plant: Volvo BL71 Backhoe	
Checked By: MW	Elevation:	Contractor: Allwest Rapid Hire	Dimensions: 2.5m x 1.5m

Groundwater	Samples & Insitu Testing: Depth	Type	Results	RL (m)	Depth (m)	Graphic Log	Material Description: Soil Type, Plasticity or Particle Charasteristic; Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Dynamic Cone Penetrometer (blows per 100mm)	Structure & other Observations
					0		TOPSOIL/SAND: medium grained, sub-angular to rounded, dark grey; with root fibres.				
							SP: SAND: medium grained, sub-angular to rounded, pale grey; trace fines.				
							... from 0.4 m becoming pale brown.	M	L		No DCP data as test undertaken from surface and in base of pit at 1.2 m depth.
					1				L		
									MD		
▼							*... from 1.8 m becoming dark grey.*	W	D		
					2		End of Test Pit at 2.00 m				
					3						

Termination Reason: Pit collapse due to groundwater.

Remarks:

TEST PIT LOG - TP40

Client: Bombara Family

Project: Lots 3, 650 and 1199 Thomas Road, Casuarina

Location: Casuarina, WA

Project ID: 2014-0337

Date:11/09/2014

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Logged By: SA	Postion: E.392663m N.6433379m	Plant: Volvo BL71 Backhoe	
Checked By: MW	Elevation:	Contractor: Allwest Rapid Hire	Dimensions: 2.5m x 1.5m

Groundwater	Samples & Insitu Testing: Depth	Type	Results	RL (m)	Depth (m)	Graphic Log	Material Description: Soil Type, Plasticity or Particle Charasteristic; Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Dynamic Cone Penetrometer (blows per 100mm)	Structure & other Observations
▼					1 2 3		TOPSOIL/SAND: medium grained, sub-angular to rounded, dark grey; with root fibres. SP: SAND: medium grained, sub-angular to rounded, pale grey; trace fines. *… from 0.4 m becoming pale brown, roots to 0.5 m.* *… from 1.4 m becoming dark grey.* End of Test Pit at 2.25 m	M W	VL to L MD D	5 10 15	No DCP data as test undertaken from surface and in base of pit at 1.2 m depth.

Termination Reason: Pit collapse due to groundwater.

Remarks:

TEST PIT LOG - TP41

Client: Bombara Family

Project: Lots 3, 650 and 1199 Thomas Road, Casuarina

Location: Casuarina, WA

Project ID: 2014-0337

Date:11/09/2014

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Chapman Morton Woodward

Logged By: SA	Postion: E.392796m N.6433432m	Plant: Volvo BL71 Backhoe	
Checked By: MW	Elevation:	Contractor: Allwest Rapid Hire	Dimensions: 2.5m x 1.5m

Groundwater	Samples & Insitu Testing: Depth	Type	Results	RL (m)	Depth (m)	Graphic Log	Material Description: Soil Type, Plasticity or Particle Charasteristic; Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Dynamic Cone Penetrometer (blows per 100mm)	Structure & other Observations
					0		TOPSOIL/SAND: medium grained, sub-angular to rounded, dark grey; with root fibres.	M			
							SP: SAND: medium grained, sub-angular to rounded, pale grey; trace fines.		VL to L		
							... from 0.5 m becoming pale brown.				
					1			M to W	MD		No DCP data as test undertaken from surface and in base of pit at 1.2 m depth.
									D		
					2		End of Test Pit at 2.10 m				
					3						

Termination Reason: Pit collapse.

Remarks:

TEST PIT LOG - TP42

Client: Bombara Family

Project: Lots 3, 650 and 1199 Thomas Road, Casuarina

Location: Casuarina, WA

Project ID: 2014-0337

Date:11/09/2014

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Sheet 1 of 1

Logged By: SA	Postion: E.392993m N.6433454m	Plant: Volvo BL71 Backhoe	
Checked By: MW	Elevation:	Contractor: Allwest Rapid Hire	Dimensions: 2.5m x 1.5m

Groundwater	Samples & Insitu Testing: Depth	Type	Results	RL (m)	Depth (m)	Graphic Log	Material Description: Soil Type, Plasticity or Particle Charasteristic; Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Dynamic Cone Penetrometer (blows per 100mm)	Structure & other Observations
					1		TOPSOIL/SAND: medium grained, sub-angular to rounded, dark grey; with root fibres.				
							SP: SAND: medium grained, sub-angular to rounded, pale grey; trace fines.		VL to L		
							… from 0.3 m becoming pale brown, with fine to medium gravel size pieces of charcoal.	M			No DCP data as test undertaken from surface and in base of pit at 1.2 m depth.
									L		
					2		End of Test Pit at 1.80 m				
					3						

Termination Reason: Pit collapse.

Remarks:

TEST PIT LOG - TP43

Client: Bombara Family

Project: Lots 3, 650 and 1199 Thomas Road, Casuarina

Location: Casuarina, WA

Project ID: 2014-0337

Date:11/09/2014

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Sheet 1 of 1

Logged By: SA	Postion: E.393057m N.6433349m	Plant: Volvo BL71 Backhoe	
Checked By: MW	Elevation:	Contractor: Allwest Rapid Hire	Dimensions: 2.5m x 1.5m

Groundwater	Samples & Insitu Testing: Depth	Type	Results	RL (m)	Depth (m)	Graphic Log	Material Description: Soil Type, Plasticity or Particle Charasteristic; Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Dynamic Cone Penetrometer (blows per 100mm)	Structure & other Observations
					0		TOPSOIL/SAND: medium grained, sub-angular to rounded, grey; with root fibres.				
							SP: SAND: medium grained, sub-angular to rounded, pale grey; trace fines.				
							… from 0.2 m becoming pale brown, with fine to medium gravel size pieces of charcoal.		L		
								M			No DCP data as test undertaken from surface and in base of pit at 1.2 m depth.
					1				L		
							End of Test Pit at 1.80 m				
					2						
					3						

5 10 15

Termination Reason: Pit collapse.

Remarks:

TEST PIT LOG - TP44

Client: Bombara Family

Project: Lots 3, 650 and 1199 Thomas Road, Casuarina

Location: Casuarina, WA

Project ID: 2014-0337

Date:11/09/2014

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Sheet 1 of 1

Logged By: SA	Postion: E.392971m N.6433246m	Plant: Volvo BL71 Backhoe	
Checked By: MW	Elevation:	Contractor: Allwest Rapid Hire	Dimensions: 2.5m x 1.5m

Groundwater	Samples & Insitu Testing: Depth	Type	Results	RL (m)	Depth (m)	Graphic Log	Material Description: Soil Type, Plasticity or Particle Charasteristic; Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Dynamic Cone Penetrometer (blows per 100mm)	Structure & other Observations
					0		TOPSOIL/SAND: medium grained, sub-angular to rounded, dark grey; with root fibres.	M	VL to L	5 10 15	No DCP data as test undertaken from surface and in base of pit at 1.2 m depth.
							SP: SAND: medium grained, sub-angular to rounded, pale brown, trace fines.				
					1				L		
									MD		
									D		
					2		End of Test Pit at 2.25 m				
					3						

Termination Reason: Pit collapse.

Remarks:

TEST PIT LOG - TP45

Client: Bombara Family

Project: Lots 3, 650 and 1199 Thomas Road, Casuarina

Location: Casuarina, WA

Project ID: 2014-0337

Date:11/09/2014

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Sheet 1 of 1

Logged By: SA	Postion: E.393042m N.6433168m	Plant: Volvo BL71 Backhoe	
Checked By: MW	Elevation:	Contractor: Allwest Rapid Hire	Dimensions: 2.5m x 1.5m

Groundwater	Samples & Insitu Testing: Depth	Type	Results	RL (m)	Depth (m)	Graphic Log	Material Description: Soil Type, Plasticity or Particle Charasteristic; Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Dynamic Cone Penetrometer (blows per 100mm)	Structure & other Observations
					0		TOPSOIL/SAND: medium grained, sub-angular to rounded, dark grey; with root fibres.				
							SP: SAND: medium grained, sub-angular to rounded, pale brown, trace fines.		VL to L		
							... from 0.6 m becoming pale white .				
					1			M	MD		No DCP data as test undertaken from surface and in base of pit at 1.2 m depth.
					2				D		
▼							*... from 2.5 m becoming grey.*	W			
					3		End of Test Pit at 3.00 m				

Termination Reason: Target depth.

Remarks:

TEST PIT LOG - TP46

Client: Bombara Family

Project: Lots 3, 650 and 1199 Thomas Road, Casuarina

Location: Casuarina, WA

Project ID: 2014-0337

Date:11/09/2014

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Sheet 1 of 1

Logged By: SA	Postion: E.392923m N.6433128m	Plant: Volvo BL71 Backhoe	
Checked By: MW	Elevation:	Contractor: Allwest Rapid Hire	Dimensions: 2.5m x 1.5m

Groundwater	Samples & Insitu Testing: Depth	Type	Results	RL (m)	Depth (m)	Graphic Log	Material Description: Soil Type, Plasticity or Particle Charasteristic; Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Dynamic Cone Penetrometer (blows per 100mm)	Structure & other Observations
					0		TOPSOIL/SAND: medium grained, sub-angular to rounded, dark grey; with root fibres.				
							SP: SAND: medium grained, sub-angular to rounded, pale white; trace fines.		VL to L		
					1			M			No DCP data as test undertaken from surface and in base of pit at 1.2 m depth.
									MD		
									D		
					2		SP: SAND: fine to medium grained, sub-angular to rounded, brown; locally weakly cemented with limonite.	M to W			
							End of Test Pit at 2.80 m				
					3						

Termination Reason: Pit collapse.

Remarks:

TEST PIT LOG - TP47

Client: Bombara Family

Project: Lots 3, 650 and 1199 Thomas Road, Casuarina

Location: Casuarina, WA

Project ID: 2014-0337

Date:11/09/2014

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Logged By: SA	Postion: E.392793m N.6433258m	Plant: Volvo BL71 Backhoe	
Checked By: MW	Elevation:	Contractor: Allwest Rapid Hire	Dimensions: 2.5m x 1.5m

Groundwater	Samples & Insitu Testing: Depth	Type	Results	RL (m)	Depth (m)	Graphic Log	Material Description: Soil Type, Plasticity or Particle Charasteristic; Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Dynamic Cone Penetrometer (blows per 100mm)	Structure & other Observations
					0		TOPSOIL/SAND: medium grained, sub-angular to rounded, dark grey; with root fibres.				
							SP: SAND: medium grained, sub-angular to rounded, pale grey; trace fines.		VL to L		
							... from 0.8 m becoming pale brown.				No DCP data as test undertaken from surface and in base of pit at 1.2 m depth.
					1			M			
									L		
					2		*... from 2.0 m becoming dark grey.*				
▼								W			
							End of Test Pit at 2.50 m				
					3						

Termination Reason: Pit collapse due to groundwater.

Remarks:

TEST PIT LOG - TP48

Client: Bombara Family

Project: Lots 3, 650 and 1199 Thomas Road, Casuarina

Location: Casuarina, WA

Project ID: 2014-0337

Date:11/09/2014

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Sheet 1 of 1

Logged By: SA	Postion: E.392795m N.6433374m	Plant: Volvo BL71 Backhoe	
Checked By: MW	Elevation:	Contractor: Allwest Rapid Hire	Dimensions: 2.5m x 1.5m

Groundwater	Samples & Insitu Testing: Depth	Type	Results	RL (m)	Depth (m)	Graphic Log	Material Description: Soil Type, Plasticity or Particle Charasteristic; Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Dynamic Cone Penetrometer (blows per 100mm)	Structure & other Observations
					0		TOPSOIL/SAND: medium grained, sub-angular to rounded, dark grey; with root fibres.				
							SP: SAND: medium grained, sub-angular to rounded, pale grey; trace fines.		VL to L		
							... from 0.6 m becoming pale brown.				
					1			M			No DCP data as test undertaken from surface and in base of pit at 1.2 m depth.
									L		
									MD		
									D		
					2		*... from 2.0 m becoming brown.*				
							... from 2.3 m becoming pale brown.	M to W			
▼								W			
					3		End of Test Pit at 3.00 m				

Termination Reason: Target depth.

Remarks:

TEST PIT LOG - TP49

Client: Bombara Family

Project: Lots 3, 650 and 1199 Thomas Road, Casuarina

Location: Casuarina, WA

Project ID: 2014-0337

Date:11/09/2014

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Sheet 1 of 1

Logged By: SA	Postion: E.391961m N.6433173m	Plant: Volvo BL71 Backhoe	
Checked By: MW	Elevation:	Contractor: Allwest Rapid Hire	Dimensions: 2.5m x 1.5m

Groundwater	Samples & Insitu Testing: Depth	Type	Results	RL (m)	Depth (m)	Graphic Log	Material Description: Soil Type, Plasticity or Particle Charasteristic; Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Dynamic Cone Penetrometer (blows per 100mm)	Structure & other Observations
▼					0		TOPSOIL/CLAYEY SAND: fine to medium grained, sub-angular to rounded, dark grey to black; clay, medium plasticity; with root fibres.	M	L to MD	5 10 15	From 0.0 m to 1.6 m soil behaves cohesively.
							SC: CLAYEY SAND: fine to medium grained, sub-angular to rounded, brown; clay, medium to high plasticity.		MD		
					1		*... from 1.0 m to 1.5 m weak to moderate limonite cementation.*		D		
							End of Test Pit at 1.60 m				
					2						
					3						

Termination Reason: Pit collapse due to groundwater.

Remarks:

TEST PIT LOG - TP50

Client: Bombara Family

Project: Lots 3, 650 and 1199 Thomas Road, Casuarina

Location: Casuarina, WA

Project ID: 2014-0337

Date:11/09/2014

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Sheet 1 of 1

Logged By: SA	Postion: E.391968m N.6433102m	Plant: Volvo BL71 Backhoe	
Checked By: MW	Elevation:	Contractor: Allwest Rapid Hire	Dimensions: 2.5m x 1.5m

Groundwater	Samples & Insitu Testing: Depth	Type	Results	RL (m)	Depth (m)	Graphic Log	Material Description: Soil Type, Plasticity or Particle Charasteristic; Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Dynamic Cone Penetrometer (blows per 100mm)	Structure & other Observations
▼					0		TOPSOIL/CLAYEY SAND: fine to medium grained, sub-angular to rounded, dark grey to black; clay, medium plasticity; with root fibres.				From 0.0 m to 0.6 m soil behaves cohesively.
							SC: CLAYEY SAND: fine to medium grained, sub-angular to rounded, brown; clay, medium to high plasticity.	M	VL to L		
							End of Test Pit at 0.60 m				
					1						
					2						
					3						

Dynamic Cone Penetrometer (blows per 100mm): 5, 10, 15

Termination Reason: Pit collapse due to groundwater.

Remarks:

TEST PIT LOG - TP51

Client: Bombara Family

Project: Lots 3, 650 and 1199 Thomas Road, Casuarina

Location: Casuarina, WA

Project ID: 2014-0337

Date:11/09/2014

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Sheet 1 of 1

Logged By: SA	Postion: E.392210m N.6433272m	Plant: Volvo BL71 Backhoe	
Checked By: MW	Elevation:	Contractor: Allwest Rapid Hire	Dimensions: 2.5m x 1.5m

Groundwater	Samples & Insitu Testing: Depth	Type	Results	RL (m)	Depth (m)	Graphic Log	Material Description: Soil Type, Plasticity or Particle Charasteristic; Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Dynamic Cone Penetrometer (blows per 100mm)	Structure & other Observations
▼					0		TOPSOIL/SAND: medium grained, sub-angular to rounded, dark grey; with root fibres.				
							SC: CLAYEY SAND: fine to medium grained, sub-angular to rounded, pale brown to pale white; clay, medium to high plasticity; with fine gravel to boulder size clasts of limestone, fine grained, low strength, extremely to distinctly weathered.		L		
									MD		
					1			M	D		
					2			W			
							End of Test Pit at 2.50 m				
					3						

Termination Reason: Pit collapse.

Remarks:

TEST PIT LOG - TP52

Client: Bombara Family

Project: Lots 3, 650 and 1199 Thomas Road, Casuarina

Location: Casuarina, WA

Project ID: 2014-0337

Date:11/09/2014

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Sheet 1 of 1

Logged By: SA	Postion: E.392242m N.6433337m	Plant: Volvo BL71 Backhoe	
Checked By: MW	Elevation:	Contractor: Allwest Rapid Hire	Dimensions: 2.5m x 1.5m

Groundwater	Samples & Insitu Testing: Depth	Type	Results	RL (m)	Depth (m)	Graphic Log	Material Description: Soil Type, Plasticity or Particle Charasteristic; Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Dynamic Cone Penetrometer (blows per 100mm)	Structure & other Observations
					0		TOPSOIL/SAND: medium grained, sub-angular to rounded, dark grey; with root fibres.				
							SP: SAND: medium grained, sub-angular to rounded, pale brown, trace fines.		L		
							SC: CLAYEY SAND: fine to medium grained, sub-angular to rounded, pale brown to pale white; clay, medium to high plasticity; with fine gravel to boulder size clasts of limestone, fine grained, low strength, extremely to distinctly weathered.				No DCP data as test undertaken from surface and in base of pit at 1.2 m depth.
							SP: SAND: medium grained, sub-angular to rounded, pale brown, trace fines.				
					1			M			
									D		
									VD		
					2						
▼							*... from 2.2 m becoming dark brown.*	W			
					3		End of Test Pit at 3.00 m				

Termination Reason: Target depth.

Remarks:

TEST PIT LOG - TP53

Client: Bombara Family

Project: Lots 3, 650 and 1199 Thomas Road, Casuarina

Location: Casuarina, WA

Project ID: 2014-0337

Date:11/09/2014

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Sheet 1 of 1

Logged By: SA	Postion: E.392237m N.6433105m	Plant: Volvo BL71 Backhoe	
Checked By: MW	Elevation:	Contractor: Allwest Rapid Hire	Dimensions: 2.5m x 1.5m

Groundwater	Samples & Insitu Testing: Depth	Type	Results	RL (m)	Depth (m)	Graphic Log	Material Description: Soil Type, Plasticity or Particle Charasteristic; Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Dynamic Cone Penetrometer (blows per 100mm)	Structure & other Observations
					0		TOPSOIL/SAND: medium grained, sub-angular to rounded, dark grey; with root fibres.		L		
							SP: SAND: medium grained, sub-angular to rounded, pale grey; trace fines.		MD		
					1			M			No DCP data as test undertaken from surface and in base of pit at 1.2 m depth.
									L		
									MD		
									D		
							End of Test Pit at 1.80 m				
					2						
					3						

5 10 15

Termination Reason: Pit collapse.

Remarks:

TEST PIT LOG - TP54

Client: Bombara Family

Project: Lots 3, 650 and 1199 Thomas Road, Casuarina

Location: Casuarina, WA

Project ID: 2014-0337

Date:11/09/2014

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Sheet 1 of 1

Logged By: SA	Postion: E.392158m N.6433115m	Plant: Volvo BL71 Backhoe	
Checked By: MW	Elevation:	Contractor: Allwest Rapid Hire	Dimensions: 2.5m x 1.5m

Groundwater	Samples & Insitu Testing: Depth	Type	Results	RL (m)	Depth (m)	Graphic Log	Material Description: Soil Type, Plasticity or Particle Charasteristic; Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Dynamic Cone Penetrometer (blows per 100mm)	Structure & other Observations
▼					0		TOPSOIL/CLAYEY SAND: fine to medium grained, sub-angular to rounded, dark grey to black; clay, medium plasticity; with root fibres.	M	L		From 0.0 m to 0.6 m soil behaves cohesively.
							SP: SAND: medium grained, sub-angular to rounded, pale grey; trace fines.	W	MD		
					1		End of Test Pit at 1.00 m				No DCP data as test undertaken from surface and in base of pit at 1.2 m depth.
					2						
					3						

Dynamic Cone Penetrometer (blows per 100mm): 5, 10, 15

Termination Reason: Pit collapse due to groundwater.

Remarks:

TEST PIT LOG - TP55

Client: Bombara Family

Project: Lots 3, 650 and 1199 Thomas Road, Casuarina

Location: Casuarina, WA

Project ID: 2014-0337

Date:11/09/2014

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Sheet 1 of 1

Logged By: SA	Postion: E.391913m N.6433083m	Plant: Volvo BL71 Backhoe	
Checked By: MW	Elevation:	Contractor: Allwest Rapid Hire	Dimensions: 2.5m x 1.5m

Groundwater	Samples & Insitu Testing: Depth	Type	Results	RL (m)	Depth (m)	Graphic Log	Material Description: Soil Type, Plasticity or Particle Charasteristic; Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Dynamic Cone Penetrometer (blows per 100mm)	Structure & other Observations
					0		TOPSOIL/SAND: medium grained, sub-angular to rounded, dark grey; with root fibres.				
							SP: SAND: medium grained, sub-angular to rounded, pale grey; trace fines.		L		
							... from 0.5 m becoming pale white.				
								M	MD		No DCP data as test undertaken from surface and in base of pit at 1.2 m depth.
					1				MD		
									MD		
							End of Test Pit at 1.80 m				
					2						
					3						

DCP scale: 5, 10, 15

Termination Reason: Pit collapse.

Remarks:

TEST PIT LOG - TP56

Client: Bombara Family

Project: Lots 3, 650 and 1199 Thomas Road, Casuarina

Location: Casuarina, WA

Project ID: 2014-0337

Date:11/09/2014

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Sheet 1 of 1

Logged By: SA	Postion: E.392287m N.6433239m	Plant: Volvo BL71 Backhoe	
Checked By: MW	Elevation:	Contractor: Allwest Rapid Hire	Dimensions: 2.5m x 1.5m

Groundwater	Samples & Insitu Testing: Depth	Type	Results	RL (m)	Depth (m)	Graphic Log	Material Description: Soil Type, Plasticity or Particle Charasteristic; Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Dynamic Cone Penetrometer (blows per 100mm)	Structure & other Observations
					0		TOPSOIL/SAND: medium grained, sub-angular to rounded, dark grey; with root fibres.				
							SP: SAND: medium grained, sub-angular to rounded, pale grey; trace fines.		L		
							... from 0.5 m becoming pale brown.		MD		
					1			M			No DCP data as test undertaken from surface and in base of pit at 1.2 m depth.
									MD		
									D		
							End of Test Pit at 1.80 m				
					2						
					3						

DCP scale: 5, 10, 15

Termination Reason: Pit collapse.

Remarks:

TEST PIT LOG - TP57

Client: Bombara Family

Project: Lots 3, 650 and 1199 Thomas Road, Casuarina

Location: Casuarina, WA

Project ID: 2014-0337

Date:11/09/2014

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Sheet 1 of 1

Logged By: SA	Postion: E.392432m N.6433174m	Plant: Volvo BL71 Backhoe	
Checked By: MW	Elevation:	Contractor: Allwest Rapid Hire	Dimensions: 2.5m x 1.5m

Groundwater	Samples & Insitu Testing: Depth	Type	Results	RL (m)	Depth (m)	Graphic Log	Material Description: Soil Type, Plasticity or Particle Charasteristic; Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Dynamic Cone Penetrometer (blows per 100mm)	Structure & other Observations
					0		TOPSOIL/SAND: medium grained, sub-angular to rounded, dark grey; with root fibres.				
							SP: SAND: medium grained, sub-angular to rounded, pale grey; trace fines.				
							... from 0.4 m becoming pale brown.		VL to L		
					1			M			No DCP data as test undertaken from surface and in base of pit at 1.2 m depth.
									MD		
									D		
					2		End of Test Pit at 2.00 m				
					3						

Termination Reason: Pit collapse.

Remarks:

TEST PIT LOG - TP58

Client: Bombara Family

Project: Lots 3, 650 and 1199 Thomas Road, Casuarina

Location: Casuarina, WA

Project ID: 2014-0337

Date:11/09/2014

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Logged By: SA	Postion: E.392504m N.6433344m	Plant: Volvo BL71 Backhoe	
Checked By: MW	Elevation:	Contractor: Allwest Rapid Hire	Dimensions: 2.5m x 1.5m

Groundwater	Samples & Insitu Testing: Depth	Type	Results	RL (m)	Depth (m)	Graphic Log	Material Description: Soil Type, Plasticity or Particle Charasteristic; Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Dynamic Cone Penetrometer (blows per 100mm)	Structure & other Observations
							TOPSOIL/SAND: medium grained, sub-angular to rounded, dark grey; with root fibres.				
							SC: CLAYEY SAND: fine to medium grained, sub-angular to rounded, brown; clay, medium to high plasticity.	M	L		From 0.2 m to 1.0 m soil behaves cohesively.
							... from 0.6 m becoming pale brown.				
					1		SP: SAND: fine to medium grained, sub-angular to rounded, brown; with clay, medium to high plasticity.		L		No DCP data as test undertaken from surface and in base of pit at 1.2 m depth.
					2			W	D		
					3		End of Test Pit at 3.00 m				

Termination Reason: Target depth.

Remarks:

Appendix B

Dynamic Cone Penetrometer and Perth Sand Penetrometer Test Results

Perth Sand Penetrometer

AS1289.6.3.3 – 1997 Project ID: 2014-0337

Client: BOMBARA	**Date**: 09-12/09/2014
Project Name: LOTS 3, 650 & 1199, THOMAS ROAD	**Tested By**: SA
Location: CASUARINA	**Hammer Weight**: 9 kg
Soil Type:	**Hammer Drop Height**: 0.6 m

Test Location	PSP1	PSP2	PSP3	PSP11				
Easting	391835	391990	0392165	392422				
Northing	6432977	6433010	6433118	6432985				

Test Depth (mm)	Blows/150mm							
0-0.15	SET	SET	SET	SET	SET	SET	SET	SET
0.15-0.30	2	1	4	4				
0.30-0.45	2	2	6	4				
0.45-0.60	2	1	10	4				
0.60-0.75	2	3	9	4				
0.75-0.90	2	4	13	5				
0.90-1.05	3	4	14	6				

Dynamic Cone Penetrometer

AS1289.6.3.2 – 1997 Project ID: 2014-0337

Client: BOMBARA	**Date**: 09-12/09/2014
Project Name: LOTS 3, 650 & 1199, THOMAS ROAD	**Tested By**: SA
Location: CASUARINA	**Hammer Weight**: 9 kg
Soil Type:	**Hammer Drop Height**: 0.51 m

Test Location	DCP4	DCP5	DCP6	DCP7	DCP8	DCP9	DCP10	
Ground Level	0392913	0392790	0392791	0391974	0392211	0392247	0391904	
	6433135	6433273	6433389	6433116	6433272	6433127	6433090	

Test Depth (mm)	Blows/100mm							
0-0.10	SET	SET	SET	SET	SET	SET	SET	SET
0.10-0.20	1	1	1	1	1	1	4	
0.20-0.30	0	0	0	0	2	1	4	
0.30-0.40	0	1	1	1	2	1	4	
0.40-0.50	1	0	0	1	2	2	4	
0.60-0.70	0	1	1	0	3	2	5	
0.70-0.80	1	1	1	1	3	3	6	
0.80-0.90	1	1	1	2	4	3		
0.90-1.00	1	1	1	2	4	3		

Appendix C

Falling Head Permeability Test Results

CLIENT: BOMBARA FAMILY
PROJECT: LOTS 3, 650 & 1199 THOMAS ROAD
LOCATION: CASUARINA
JOB NUMBER: 2014-0337
TEST DATE: 15/09/2014

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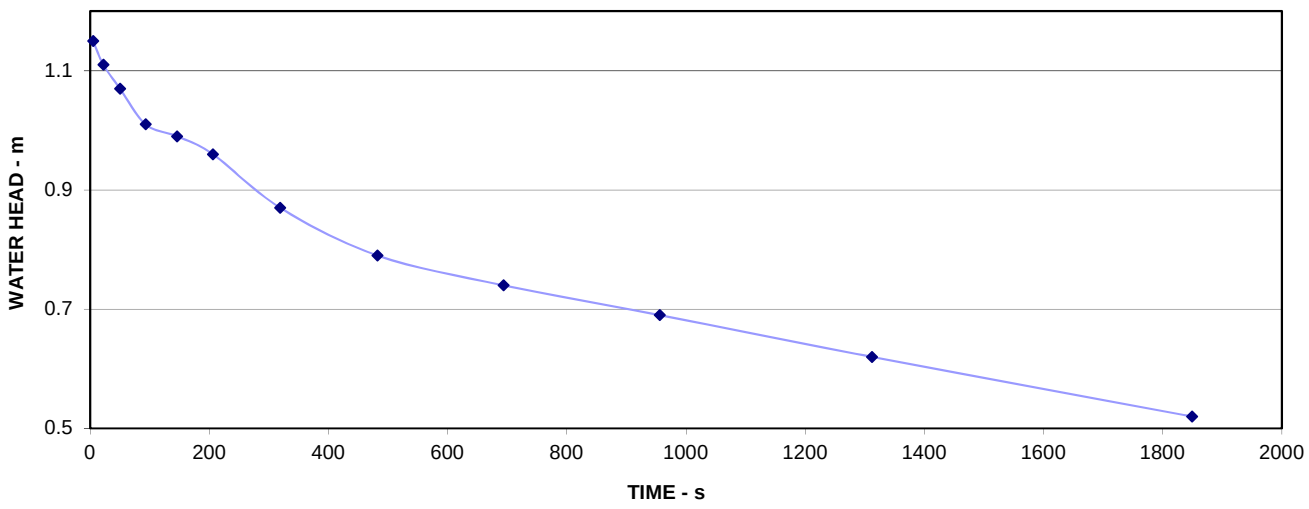
FALLING HEAD PERMEABILITY TEST 1 RESULT - HA01



STRATIGRAPHIC LOG	
	CLAYEY SAND (SC): 0.3 m to 0.8 m
	SAND (SP): 0.8 m to 1.4 m
Bottom of soakage test hole = 1.40 m Groundwater table at 1.2 m	

Reference: Appendix 4, Control of Groundwater for Temporary Works (CIRIA Report No. 113)

Borehole diameter = 90 mm

Hydraulic conductivity $$k = \left(\frac{log\left(\frac{h_1}{h_2}\right) - log\left(\frac{\alpha h_1 + 1}{\alpha h_2 + 1}\right)}{(t_2 - t_1)} \right) \times I$$

where I = average piezometric head over chosen time interval

$$= \frac{(h_1 + h_2)}{2}$$

h_1 = piezometric head at start of chosen interval (m)

h_2 = piezometric head at end of chosen interval (m)

$t_2 - t_1$ = chosen time interval (seconds)

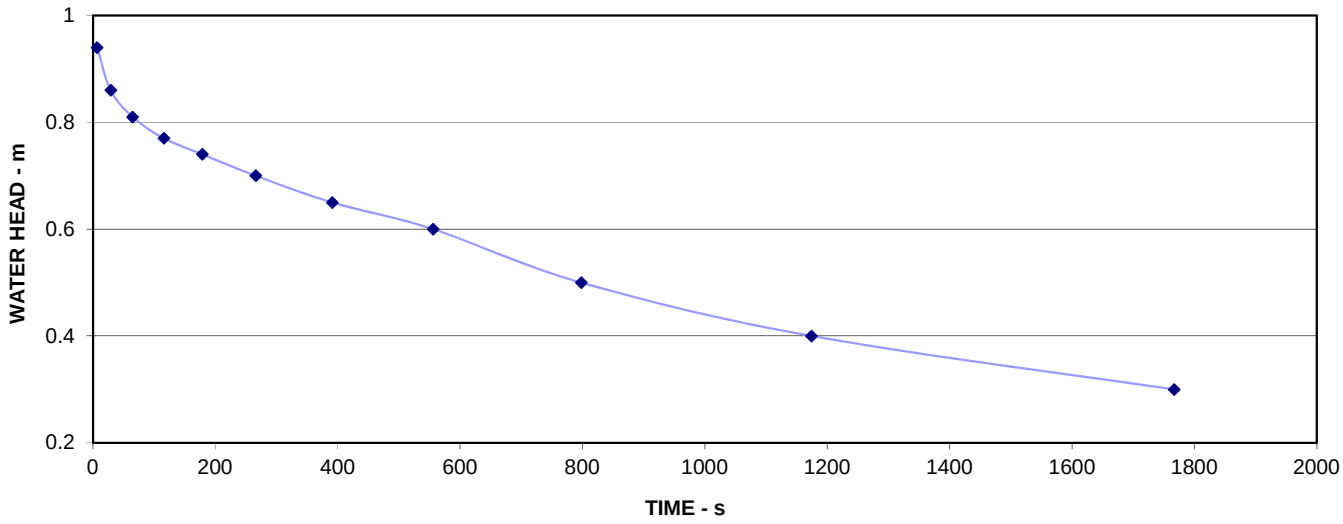
$$\alpha = \frac{\pi d}{\left(\frac{\pi d^2}{2}\right)} = 22.2$$

Elapsed Time (s)	t2 - t1 (secs)	Piezometric Head h (m)	*Avg head* *I* (m)	log (h_1/h_2)	Hydraulic Conductivity k (m/sec)	k (m/day)
5		1.15				
22	17	1.11	1.13	0.02	3.91E-05	3
50	28	1.07	1.09	0.02	2.46E-05	2
93	43	1.01	1.04	0.03	2.52E-05	2
146	53	0.99	1.00	0.01	7.06E-06	1
206	60	0.96	0.98	0.01	9.58E-06	1
319	113	0.87	0.92	0.04	1.63E-05	1
482	163	0.79	0.83	0.04	1.10E-05	1
694	212	0.74	0.77	0.03	5.70E-06	0
956	262	0.69	0.72	0.03	4.91E-06	0
1312	356	0.62	0.66	0.05	5.50E-06	0
1849	537	0.52	0.57	0.08	5.96E-06	1
				Average =	1.41E-05	1

CLIENT: BOMBARA FAMILY
PROJECT: LOTS 3, 650 & 1199 THOMAS ROAD
LOCATION: CASUARINA
JOB NUMBER: 2014-0337
TEST DATE: 15/09/2014

CMW Geosciences Pty Ltd
Chapman Morton Woodward

FALLING HEAD PERMEABILITY TEST 1 RESULT - HA02



STRATIGRAPHIC LOG	
	SAND (SP): 0.2 m to 1.4 m
Bottom of soakage test hole = 1.40 m	

Reference: Appendix 4, Control of Groundwater for Temporary Works (CIRIA Report No. 113)

Borehole diameter = 90 mm

Hydraulic conductivity $$k = \left(\frac{log\left(\frac{h_1}{h_2}\right) - log\left(\frac{\alpha h_1 + 1}{\alpha h_2 + 1}\right)}{(t_2 - t_1)} \right) \times I$$

where I = average piezometric head over chosen time interval

$$= \frac{(h_1 + h_2)}{2}$$

h_1 = piezometric head at start of chosen interval (m)

h_2 = piezometric head at end of chosen interval (m)

$t_2 - t_1$ = chosen time interval (seconds)

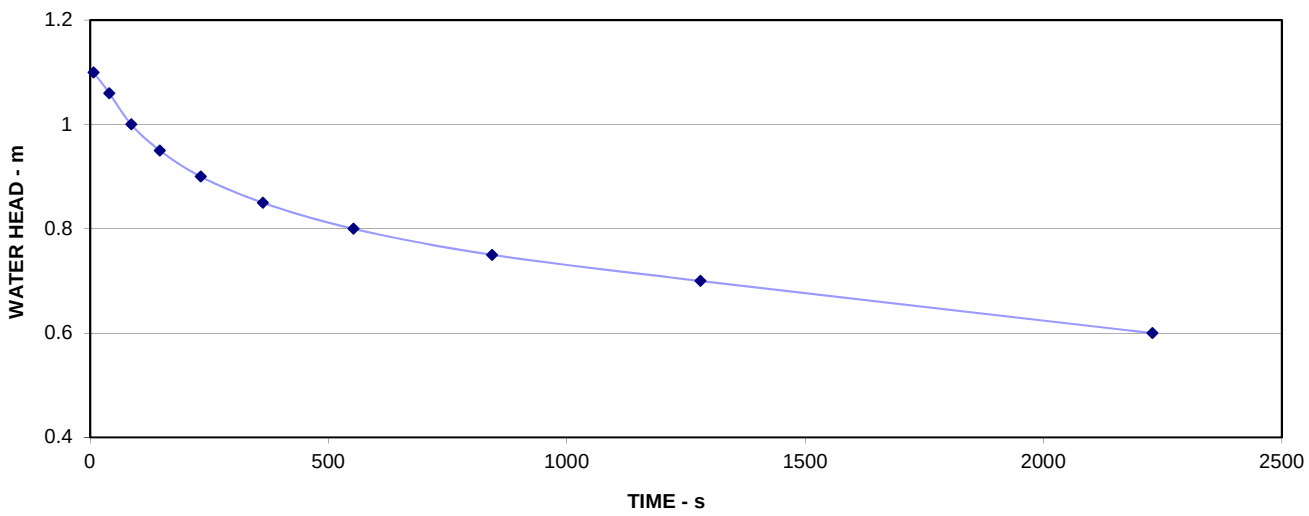
$$\alpha = \frac{\pi d}{\left(\frac{\pi d^2}{2}\right)} = 22.2$$

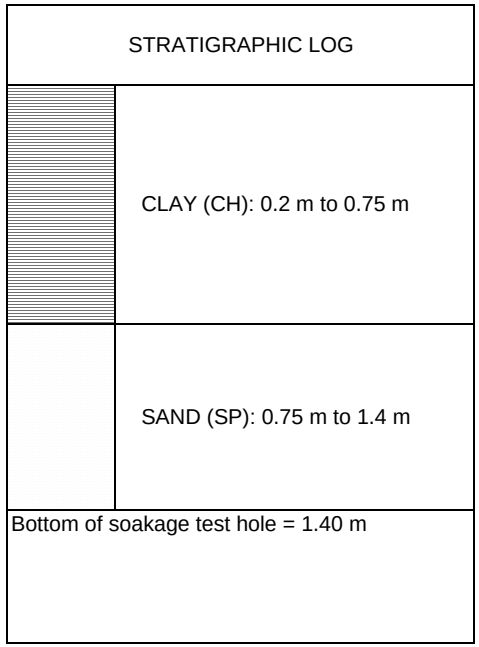
Elapsed Time (s)	t2 - t1 (secs)	Piezometric Head h (m)	*Avg head* I (m)	log (h_1/h_2)	Hydraulic Conductivity k (m/sec)	k (m/day)
7		0.94				
29	22	0.86	0.90	0.04	7.53E-05	7
65	36	0.81	0.84	0.03	3.09E-05	3
116	51	0.77	0.79	0.02	1.84E-05	2
179	63	0.74	0.76	0.02	1.16E-05	1
266	87	0.7	0.72	0.02	1.18E-05	1
391	125	0.65	0.68	0.03	1.09E-05	1
556	165	0.6	0.63	0.03	8.85E-06	1
798	242	0.5	0.55	0.08	1.37E-05	1
1174	376	0.4	0.45	0.10	1.06E-05	1
1767	593	0.3	0.35	0.12	8.50E-06	1
				Average =	2.00E-05	2

CLIENT: BOMBARA FAMILY
PROJECT: LOTS 3, 650 & 1199 THOMAS ROAD
LOCATION: CASUARINA
JOB NUMBER: 2014-0337
TEST DATE: 15/09/2014

CMW Geosciences Pty Ltd
Chapman Morton Woodward

FALLING HEAD PERMEABILITY TEST 1 RESULT - HA03





Reference: Appendix 4, Control of Groundwater for Temporary Works (CIRIA Report No. 113)

Borehole diameter = 90 mm

Hydraulic conductivity $$k = \left(\frac{log\left(\frac{h_1}{h_2}\right) - log\left(\frac{\alpha h_1 + 1}{\alpha h_2 + 1}\right)}{(t_2 - t_1)} \right) \times I$$

where I = average piezometric head over chosen time interval

$$= \frac{(h_1 + h_2)}{2}$$

h_1 = piezometric head at start of chosen interval (m)

h_2 = piezometric head at end of chosen interval (m)

$t_2 - t_1$ = chosen time interval (seconds)

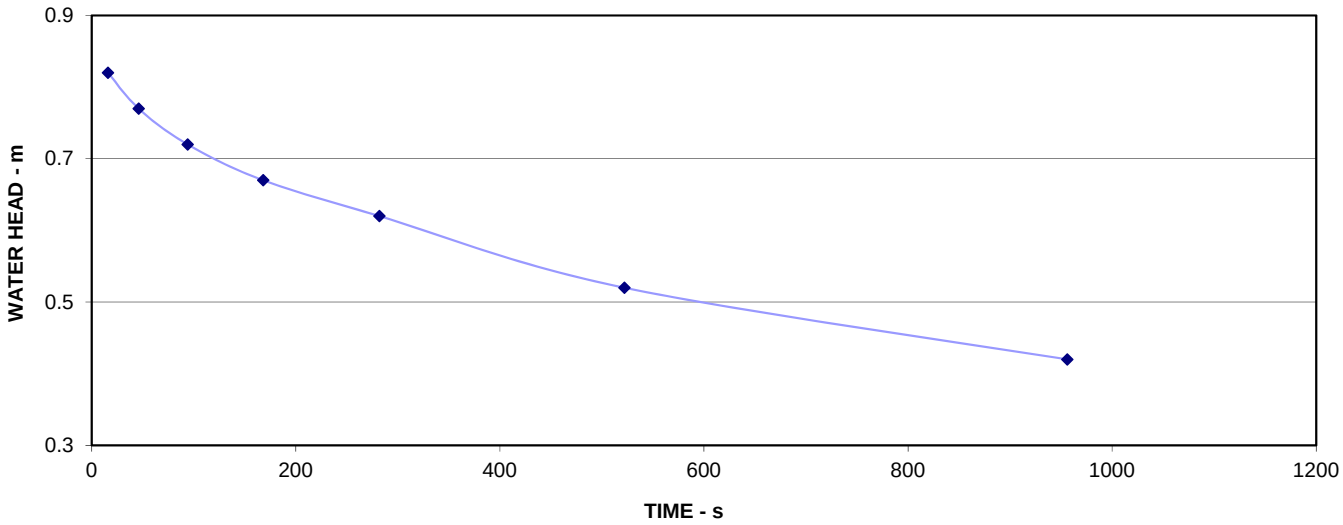
$$\alpha = \frac{\pi d}{\left(\frac{\pi d^2}{2}\right)} = 22.2$$

Elapsed Time (s)	t2 - t1 (secs)	Piezometric Head h (m)	*Avg head* I (m)	log (h_1/h_2)	Hydraulic Conductivity k (m/sec)	k (m/day)
7		1.1				
40	33	1.06	1.08	0.02	2.11E-05	2
86	46	1	1.03	0.03	2.37E-05	2
146	60	0.95	0.98	0.02	1.60E-05	1
232	86	0.9	0.93	0.02	1.17E-05	1
362	130	0.85	0.88	0.02	8.18E-06	1
552	190	0.8	0.83	0.03	5.92E-06	1
843	291	0.75	0.78	0.03	4.10E-06	0
1280	437	0.7	0.73	0.03	2.91E-06	0
2228	948	0.6	0.65	0.07	2.98E-06	0
				Average =	1.07E-05	1

CLIENT: BOMBARA FAMILY
PROJECT: LOTS 3, 650 & 1199 THOMAS ROAD
LOCATION: CASUARINA
JOB NUMBER: 2014-0337
TEST DATE: 15/09/2014

CMW Geosciences Pty Ltd
Chapman Morton Woodward

FALLING HEAD PERMEABILITY TEST 1 RESULT - HA04



STRATIGRAPHIC LOG

SAND (SP): 0.3 m to 1.4 m

Bottom of soakage test hole = 1.40 m
Groundwater table at 1.7 m

Reference: Appendix 4, Control of Groundwater for Temporary Works (CIRIA Report No. 113)

Borehole diameter = 90 mm

Hydraulic conductivity $$k = \left(\frac{log\left(\frac{h_1}{h_2}\right) - log\left(\frac{\alpha h_1 + 1}{\alpha h_2 + 1}\right)}{(t_2 - t_1)} \right) \times I$$

where I = average piezometric head over chosen time interval

$$= \frac{(h_1 + h_2)}{2}$$

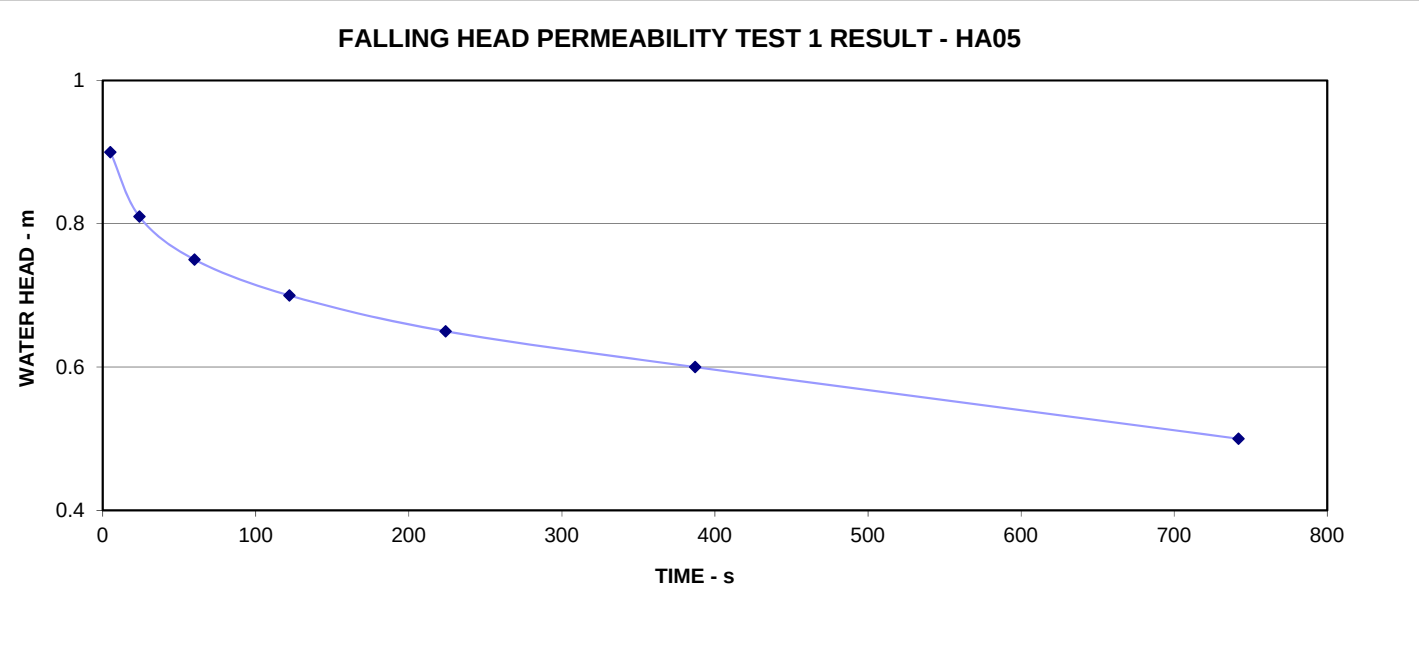
h_1 = piezometric head at start of chosen interval (m)

h_2 = piezometric head at end of chosen interval (m)

Elapsed Time (s)	t2 - t1 (secs)	Piezometric Head h (m)	*Avg head* I (m)	log (h_1/h_2)	Hydraulic Conductivity k (m/sec)	k (m/day)
16		0.82				
46	30	0.77	0.80	0.03	3.88E-05	3
94	48	0.72	0.75	0.03	2.58E-05	2
168	74	0.67	0.70	0.03	1.79E-05	2
282	114	0.62	0.65	0.03	1.24E-05	1
522	240	0.52	0.57	0.08	1.33E-05	1
956	434	0.42	0.47	0.09	8.84E-06	1
				Average =	1.95E-05	2

CLIENT: BOMBARA FAMILY
PROJECT: LOTS 3, 650 & 1199 THOMAS ROAD
LOCATION: CASUARINA
JOB NUMBER: 2014-0337
TEST DATE: 15/09/2014

CMW Geosciences Pty Ltd
Chapman Morton Woodward



STRATIGRAPHIC LOG

SAND (SP): 0.1 m to 1.4 m

Bottom of soakage test hole = 1.40 m

Reference: Appendix 4, Control of Groundwater for Temporary Works (CIRIA Report No. 113)

Borehole diameter = 90 mm

Hydraulic conductivity $$k = \left(\frac{log\left(\frac{h_1}{h_2}\right) - log\left(\frac{\alpha h_1 + 1}{\alpha h_2 + 1}\right)}{(t_2 - t_1)} \right) \times I$$

where I = average piezometric head over chosen time interval

$$= \frac{(h_1 + h_2)}{2}$$

h_1 = piezometric head at start of chosen interval (m)

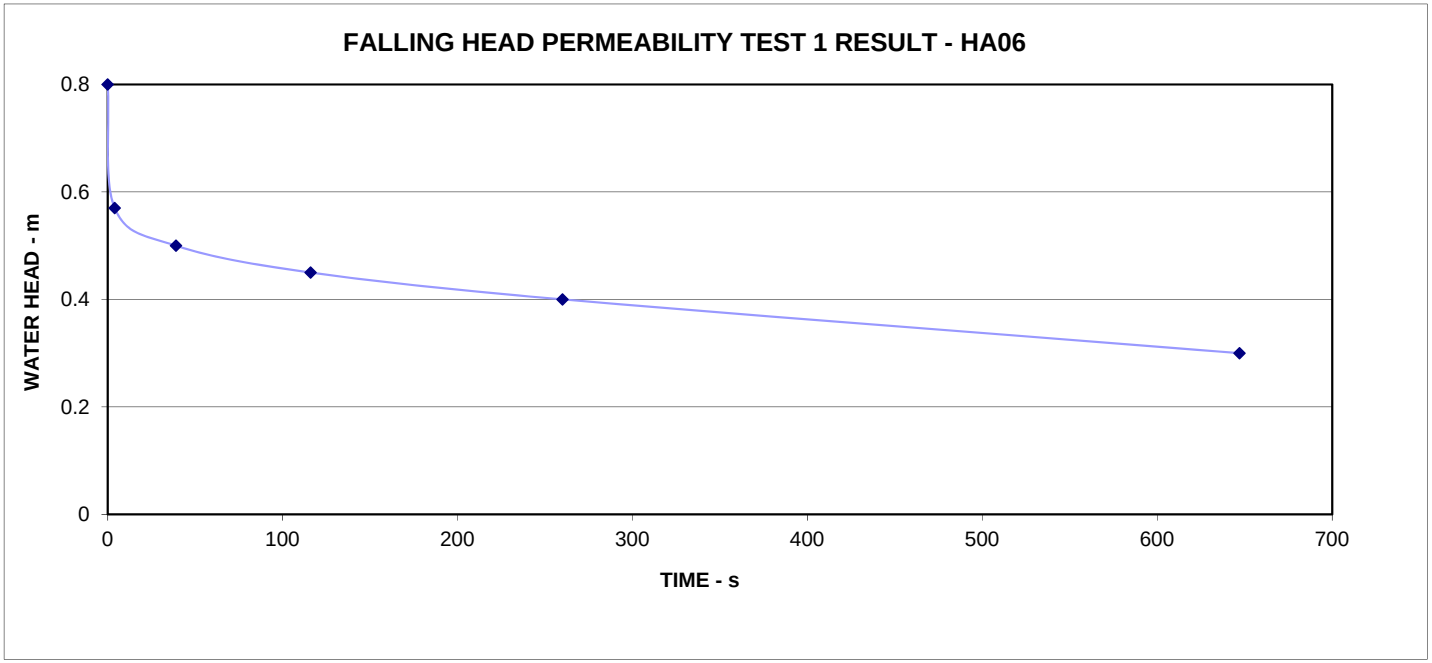
h_2 = piezometric head at end of chosen interval (m)

Elapsed Time (s)	t2 - t1 (secs)	Piezometric Head h (m)	*Avg head* I (m)	log (h_1/h_2)	Hydraulic Conductivity k (m/sec)	k (m/day)
5		0.9				
24	19	0.81	0.86	0.05	1.03E-04	9
60	36	0.75	0.78	0.03	3.95E-05	3
122	62	0.7	0.73	0.03	2.05E-05	2
224	102	0.65	0.68	0.03	1.33E-05	1
387	163	0.6	0.63	0.03	8.96E-06	1
742	355	0.5	0.55	0.08	9.32E-06	1
				Average =	3.25E-05	3

CLIENT: BOMBARA FAMILY
PROJECT: LOTS 3, 650 & 1199 THOMAS ROAD
LOCATION: CASUARINA
JOB NUMBER: 2014-0337
TEST DATE: 15/09/2014

CMW Geosciences Pty Ltd
Chapman Morton Woodward

FALLING HEAD PERMEABILITY TEST 1 RESULT - HA06



STRATIGRAPHIC LOG

SAND (SP): 0.1 m to 1.4 m

Bottom of soakage test hole = 1.40 m

Reference: Appendix 4, Control of Groundwater for Temporary Works (CIRIA Report No. 113)

Borehole diameter = 90 mm

Hydraulic conductivity $$k = \left(\frac{log\left(\frac{h_1}{h_2}\right) - log\left(\frac{\alpha h_1 + 1}{\alpha h_2 + 1}\right)}{(t_2 - t_1)} \right) \times I$$

where I = average piezometric head over chosen time interval

$$= \frac{(h_1 + h_2)}{2}$$

h_1 = piezometric head at start of chosen interval (m)

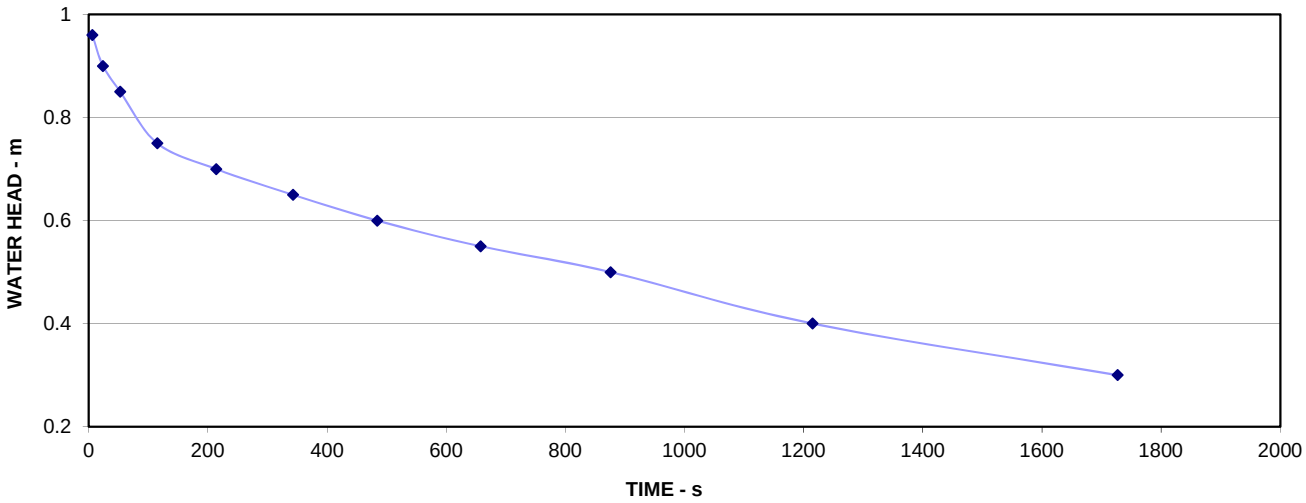
h_2 = piezometric head at end of chosen interval (m)

Elapsed Time (s)	t2 - t1 (secs)	Piezometric Head h (m)	*Avg head* I (m)	log (h_1/h_2)	Hydraulic Conductivity k (m/sec)	k (m/day)
0		0.8				
4	4	0.57	0.69	0.15	1.58E-03	137
39	35	0.5	0.54	0.06	6.77E-05	6
116	77	0.45	0.48	0.05	2.45E-05	2
260	144	0.4	0.43	0.05	1.45E-05	1
647	387	0.3	0.35	0.12	1.30E-05	1
				Average =	2.99E-05	3

CLIENT: BOMBARA FAMILY
PROJECT: LOTS 3, 650 & 1199 THOMAS ROAD
LOCATION: CASUARINA
JOB NUMBER: 2014-0337
TEST DATE: 15/09/2014

CMW Geosciences Pty Ltd
Chapman Morton Woodward

FALLING HEAD PERMEABILITY TEST 1 RESULT - HA07



STRATIGRAPHIC LOG	
	SAND (SP): 0.05 m to 1.4 m
Bottom of soakage test hole = 1.40 m	

Reference: Appendix 4, Control of Groundwater for Temporary Works (CIRIA Report No. 113)

Borehole diameter = 90 mm

Hydraulic conductivity $$k = \left(\frac{log\left(\frac{h_1}{h_2}\right) - log\left(\frac{\alpha h_1 + 1}{\alpha h_2 + 1}\right)}{(t_2 - t_1)} \right) \times I$$

where I = average piezometric head over chosen time interval

$$= \frac{(h_1 + h_2)}{2}$$

h_1 = piezometric head at start of chosen interval (m)

h_2 = piezometric head at end of chosen interval (m)

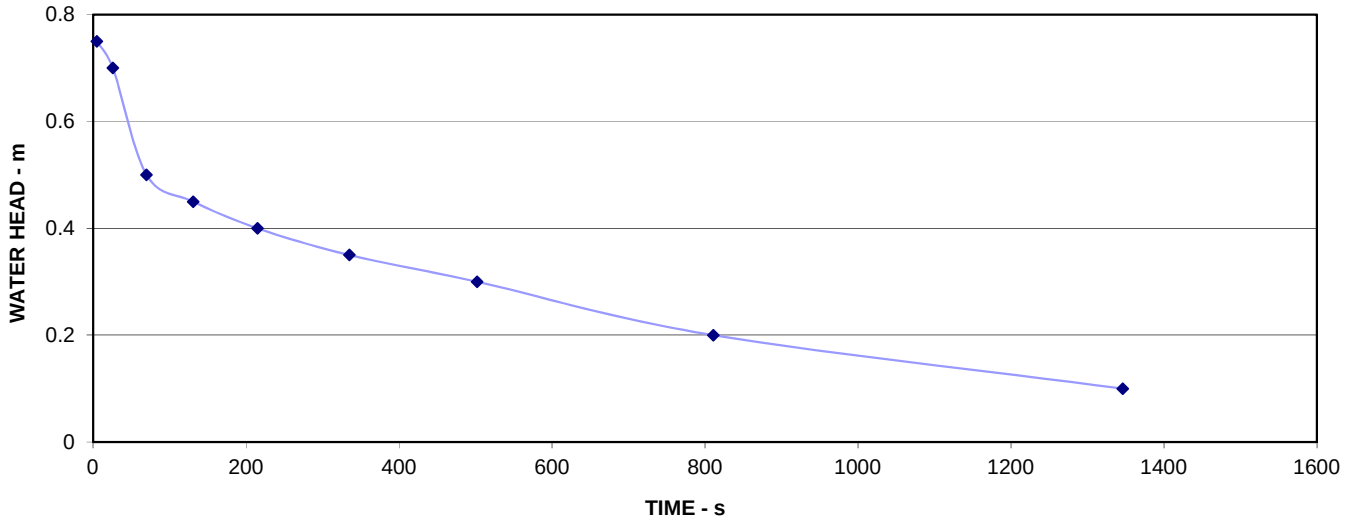
$t_2 - t_1$ = chosen time interval (seconds)

Elapsed Time (s)	t2 - t1 (secs)	Piezometric Head h (m)	*Avg head* *I* (m)	log (h_1/h_2)	Hydraulic Conductivity k (m/sec)	k (m/day)
6		0.96				
24	18	0.9	0.93	0.03	6.69E-05	6
53	29	0.85	0.88	0.02	3.67E-05	3
115	62	0.75	0.80	0.05	3.74E-05	3
214	99	0.7	0.73	0.03	1.28E-05	1
343	129	0.65	0.68	0.03	1.05E-05	1
484	141	0.6	0.63	0.03	1.04E-05	1
658	174	0.55	0.58	0.04	9.07E-06	1
876	218	0.5	0.53	0.04	7.88E-06	1
1215	339	0.4	0.45	0.10	1.18E-05	1
1727	512	0.3	0.35	0.12	9.84E-06	1
				Average =	2.13E-05	2

CLIENT: BOMBARA FAMILY
PROJECT: LOTS 3, 650 & 1199 THOMAS ROAD
LOCATION: CASUARINA
JOB NUMBER: 2014-0337
TEST DATE: 15/09/2014

CMW Geosciences Pty Ltd
Chapman Morton Woodward

FALLING HEAD PERMEABILITY TEST 1 RESULT - HA08



STRATIGRAPHIC LOG

SAND (SP): 0.0 m to 1.4 m

Bottom of soakage test hole = 1.40 m

Reference: Appendix 4, Control of Groundwater for Temporary Works (CIRIA Report No. 113)

Borehole diameter = 90 mm

Hydraulic conductivity $$k = \left(\frac{log\left(\frac{h_1}{h_2}\right) - log\left(\frac{\alpha h_1 + 1}{\alpha h_2 + 1}\right)}{(t_2 - t_1)} \right) \times I$$

where I = average piezometric head over chosen time interval

$$= \frac{(h_1 + h_2)}{2}$$

h_1 = piezometric head at start of chosen interval (m)

h_2 = piezometric head at end of chosen interval (m)

Elapsed Time (s)	t2 - t1 (secs)	Piezometric Head h (m)	*Avg head* I (m)	log (h_1/h_2)	Hydraulic Conductivity k (m/sec)	k (m/day)
5		0.75				
26	21	0.7	0.73	0.03	6.05E-05	5
70	44	0.5	0.60	0.15	1.41E-04	12
131	61	0.45	0.48	0.05	3.09E-05	3
215	84	0.4	0.43	0.05	2.48E-05	2
335	120	0.35	0.38	0.06	1.95E-05	2
502	167	0.3	0.33	0.07	1.59E-05	1
811	309	0.2	0.25	0.18	2.22E-05	2
1346	535	0.1	0.15	0.30	2.05E-05	2
				Average =	4.20E-05	4

Appendix D

Laboratory Results

mpl Laboratories
Part of the Envirolab Group
16 - 18 Hayden Court, Myaree, Western Australia 6154
PO Box 4023 Myaree BC, Western Australia 6960
Tel: +61 8 9317 2505 / Fax: +61 8 9317 4163
email: laboratory@mpl.com.au
www.envirolabservices.com.au
Envirolab Services (WA) Pty Ltd ABN 53 140 099 207

CERTIFICATE OF ANALYSIS 155938

Client:
CMW Geosciences
Unit 19 Wembley Green Offices
127 Herdsman Parade
WA 6104

Attention: Stuart Archer

Sample log in details:

Your Reference:	**2014-0337 Thomas Road, Casuarina**
No. of samples:	5 Soil
Date samples received:	17/09/2014
Date completed instructions received:	17/09/2014
Location:	

Analysis Details:
Please refer to the following pages for results, methodology summary and quality control data.
Samples were analysed as received from the client. Results relate specifically to the samples as received.
Results are reported on a dry weight basis for solids and on an as received basis for other matrices.
Please refer to the last page of this report for any comments relating to the results.

Report Details:

Date results requested by:	24/09/14
Date of Preliminary Report:	Not issued
Issue Date:	23/09/14

NATA accreditation number 2901. This document shall not be reproduced except in full.
Accredited for compliance with ISO/IEC 17025.
Tests not covered by NATA are denoted with *.

Results Approved By:

Joshua Lim
Operations Manager

Miscellaneous Inorg - soil						
Our Reference:	UNITS	155938-1	155938-2	155938-3	155938-4	155938-5
Your Reference	----------	TP01	TP31	TP45	TP54	TP54
Depth	----------	0.0-0.2	0.0-0.4	0.0-0.2	0.1-0.3	0.3-0.6
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	22/09/14	22/09/14	22/09/14	22/09/14	22/09/14
Date analysed	-	22/09/14	22/09/14	22/09/14	22/09/14	22/09/14
Loss on Ignition	%	0.4	0.4	0.8	1.8	1.7

Method ID	Methodology Summary
INORG-092	LOI - Sample is dried, then ignited in a furnace.

QUALITY CONTROL Miscellaneous Inorg - soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date prepared	-			22/09/14	[NT]	[NT]	LCS	22/09/14
Date analysed	-			22/09/14	[NT]	[NT]	LCS	22/09/14
Loss on Ignition	%	0.1	INORG-092	<0.1	[NT]	[NT]	[NR]	[NR]

Report Comments:

Asbestos was analysed by Approved Identifier: Not applicable for this job
Airborne fibres were analysed by Approved Counter: Not applicable for this job

INS: Insufficient sample for this test; NT: Not tested; PQL: Practical Quantitation Limit; <: Less than; >: Greater than
RPD: Relative Percent Difference; NA: Test not required; LCS: Laboratory Control Sample;
NS: Not specified; NEPM: National Environmental Protection Measure
DOL: Sample rejected due to particulate overload

Quality Control Definitions

Blank: This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.

Duplicate: This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.

Matrix Spike : A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.

LCS (Laboratory Control Sample) : This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.

Surrogate Spike: Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however were analysed at a frequency to meet of exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD a matrix spike recoveries for the sample batch were within laboratory acceptance criteria.
Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction. Spikes for Physical and Aggregate Tests are not applicable
For VOCs in water samples, three vials are required for duplicate or spike analysis
Duplicates: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.
Matrix Spike and LCS: Generally 70-130% for inorganics/metals; 60-140% for organics;
10-140% for SVOC and Speciated Phenols; and 40-120% for low level organics is acceptable.
Surrogates: 60-140% is acceptable for general organics and 10-140% for SVOC and Speciated Phenols.
In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.
When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

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PO BOX 5004, Bunbury DC, WA 6230, Australia
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Perth Base Laboratory
6A Downing Street, Carlise WA, 6101
(08) 9355 2678
perth.tech@geotechsoil.com.au

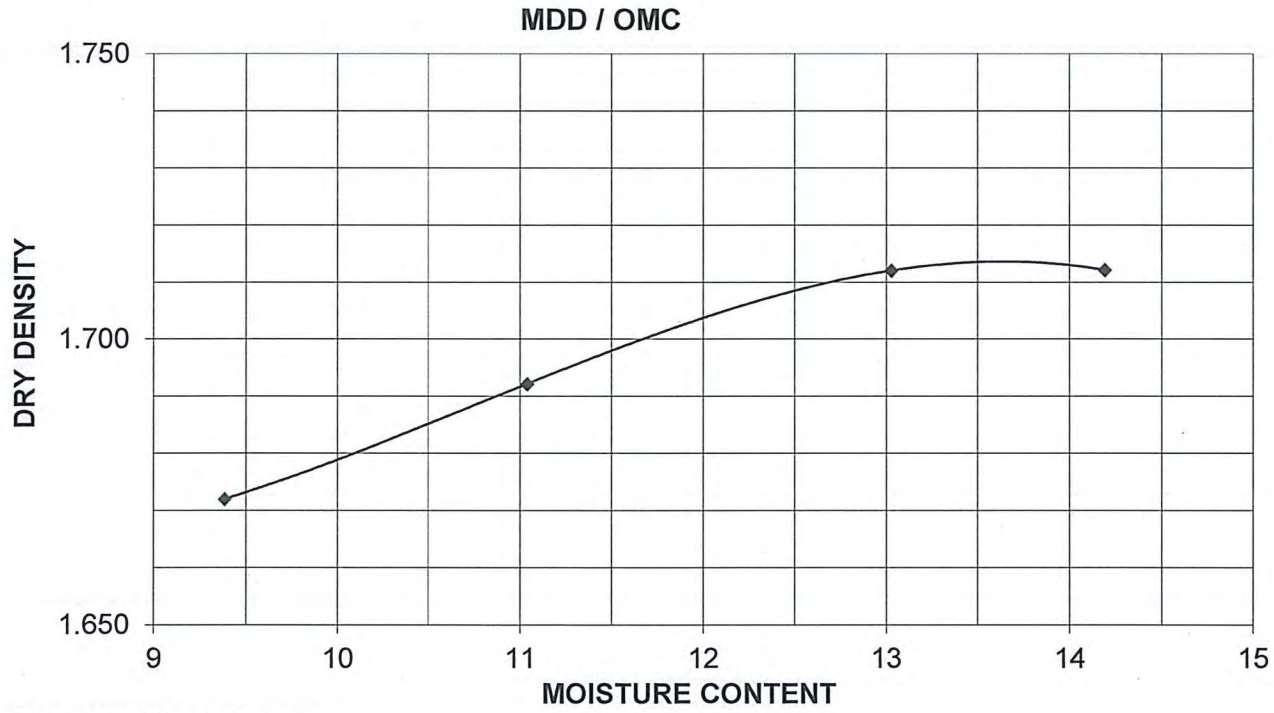
TEST CERTIFICATE

SUMMARY OF COMPACTION CONTROL TESTS - MAXIMUM DRY DENSITY

AS1289 5.2.1 - Modified Compactive Effort

Client: CMW
Project: 2014-0337 **Test Request No:** PO525

Project Location:	Thomas Rd, Casuarina				
Test Location:	TP12 Depth 0.6-1.0m				
Field Site #:	1	**Northing:** -	**Easting:** -	**RL:** -	
Material Description:	Yellow SAND				
Sampled By:	Client			**Date Sampled:**	N/A
Tested By:	C. Connelly			**Date Tested:**	23-Sep-14
Sampling Method:	Sample supplied by Client, and prepared in accordance with AS 1289 1.2.1				
Lab Prefix:	**14-PER**				
Sample No:	**5516**				



LABORATORY COMPACTION DATA

Maximum Dry Density (t/m³):	1.71
Optimum Moisture Content (%):	13.5
Adjusted Max. Dry Density (t/m³):	-
Adjusted Optimum Moisture Content (%):	-
Retained on 19.0mm Wet (%):	0
Retained on 37.5mm Dry (%):	0

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Approved Signatory: R. Rowlands
Date: 03-Oct-14

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TEST CERTIFICATE
CONSISTENCY LIMITS - ATTERBERG METHOD
AS 1289 3.1.1, 3.2.1, 3.3.1 & 3.4.1

Client:	CMW				
Project:	2014-0337			**Test Request No:**	PO 525
Project Location:	Thomas Road, Casuarina				
Test Location:	TP05 Depth 0.5-1.2m				
Field Site #:	1	**Easting:** -	**Northing:** -	**RL:**	-
Material Description:	Grey Clay				
Sampled By:	Client			**Date Sampled:**	N/A
Tested By:	D. Spencer-Cotton			**Date Tested:**	02-Oct-14
Sampling Method:	Sample supplied by Client, and prepared in accordance with AS 1289 1.1				
Lab Prefix:	**14-PER**				
Sample No:	**5517**				

LIQUID LIMIT AS 1289 3.1.1	61	%
PLASTIC LIMIT AS 1289 3.2.1	45	%
PLASTICITY INDEX AS 1289 3.3.1	16	%
LINEAR SHRINKAGE AS 1289 3.4.1	6.0	%

Linear Shrinkage Condition: Specimen: Cracked

Method of preparation: Oven Dried
Dry Sieved

Notes:

Approved Signatory: R. Rowlands
Date: 03-Oct-14

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Cardno Geotech
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(08) 9355 2678
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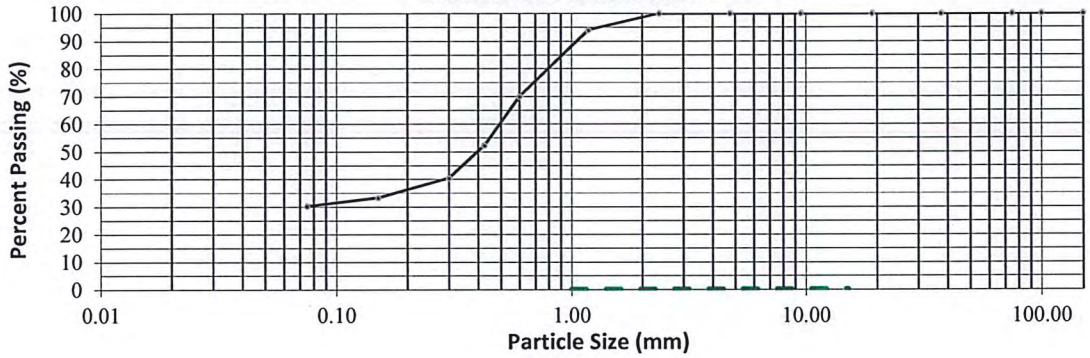
TEST CERTIFICATE
PARTICLE SIZE DISTRIBUTION - AS 1289 3.6.1

Client: CMW
Project: 2014-0337 **Test Request No:** PO525

Project Location: Thomas Rd, Casuarina
Test Location: TP05 Depth 0.5-1.2m
Field Site #: 1 Easting: - Northing: - RL: -
Material Description: Grey Clay
Sampled By: Client **Date Sampled:** N/A
Tested By: D. Spencer-Cotton **Date Testing Commenced:** 26-Sep-14
Sampling Method: Sample supplied by Client, and prepared in accordance with AS 1289 1.1

Lab Prefix: 14-PER
Sample No: 5518

Particle Size Distribution



PSD RESULTS

Sieve Size (mm)	Percent Passing (%)
200.0	
150.0	
100.0	
75.0	
37.5	
19.0	
9.50	
4.75	
2.36	100
1.180	94
0.600	70
0.425	52
0.300	40
0.150	33
0.075	30

Notes:

Approved Signatory: R. Rowlands
Date: 03-Oct-14

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TEST CERTIFICATE
CONSISTENCY LIMITS - ATTERBERG METHOD
AS 1289 3.1.1, 3.2.1, 3.3.1 & 3.4.1

Client:	CMW				
Project:	2014-0337			**Test Request No:**	PO 525
Project Location:	Thomas Road, Casuarina				
Test Location:	TP08 Depth 0.6-1m				
Field Site #:	1	**Easting:** -	**Northing:** -	**RL:**	-
Material Description:	Grey Clay				
Sampled By:	Client			**Date Sampled:**	N/A
Tested By:	D. Spencer-Cotton			**Date Tested:**	02-Oct-14
Sampling Method:	Sample supplied by Client, and prepared in accordance with AS 1289 1.1				
Lab Prefix:	**14-PER**				
Sample No:	**5519**				

LIQUID LIMIT AS 1289 3.1.1	40	%
PLASTIC LIMIT AS 1289 3.2.1	27	%
PLASTICITY INDEX AS 1289 3.3.1	13	%
LINEAR SHRINKAGE AS 1289 3.4.1	5.0	%

Linear Shrinkage Condition: Specimen: Cracked

Method of preparation: Oven Dried
Dry Sieved

Notes:

Approved Signatory: R. Rowlands
Date: 03-Oct-14

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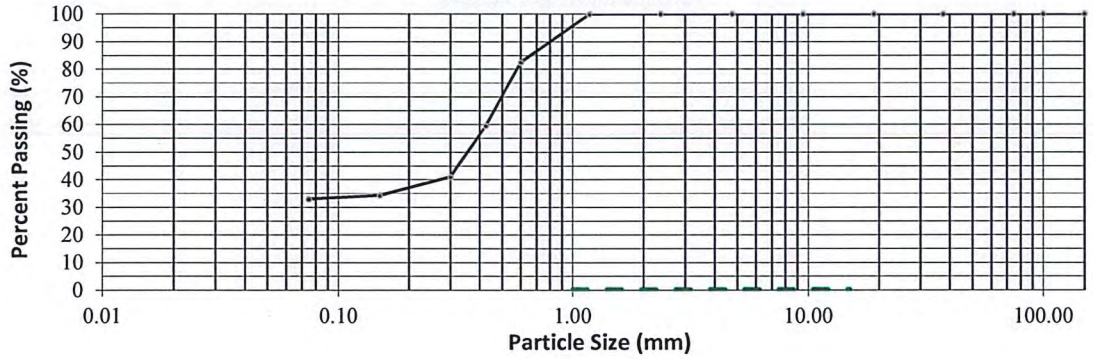
TEST CERTIFICATE
PARTICLE SIZE DISTRIBUTION - AS 1289 3.6.1

Client:	CMW		
Project:	2014-0337	**Test Request No:**	PO 525
Project Location:	Thomas Rd, Casurina		
Test Location:	TP 58 Depth 0.6 - 1m		
Field Site #:	1 Easting: -	Northing: -	RL: -
Material Description:	Grey Clay		
Sampled By:	Client	**Date Sampled:**	N/A
Tested By:	D. Spencer-Cotton	**Date Testing Commenced:**	26-Sep-14
Sampling Method:	Sample supplied by Client, and prepared in accordance with AS 1289 1.1		

Lab Prefix: **14-PER**
Sample No: **5520**

Particle Size Distribution



PSD RESULTS

Sieve Size (mm)	Percent Passing (%)
200.0	
150.0	
100.0	
75.0	
37.5	
19.0	
9.50	
4.75	
2.36	100
1.180	100
0.600	83
0.425	60
0.300	41
0.150	34
0.075	33

Notes:

Approved Signatory: R. Rowlands
Date: 03-Oct-14

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TEST CERTIFICATE

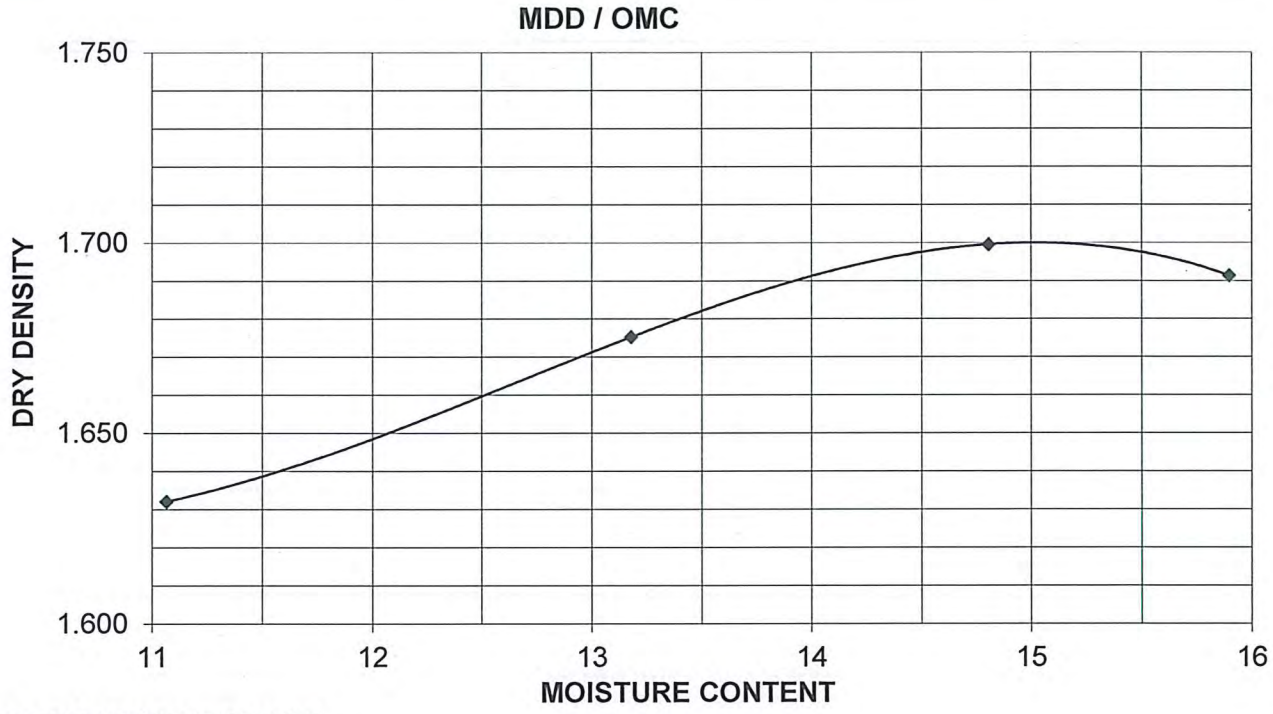
SUMMARY OF COMPACTION CONTROL TESTS - MAXIMUM DRY DENSITY

AS1289 5.2.1 - Modified Compactive Effort

Client: CMW
Project: 2014-0337 **Test Request No:** PO 525

Project Location: Thomas Road, Casuarina
Test Location: TP45 Depth 0.6-1.2m
Field Site #: 1 **Northing:** - **Easting:** - **RL:** -
Material Description: Grey SAND
Sampled By: Client **Date Sampled:** N/A
Tested By: D. Spencer-Cotton **Date Tested:** 22-Sep-14
Sampling Method: Sample supplied by Client, and prepared in accordance with AS 1289 1.2.1

Lab Prefix: **14-PER**
Sample No: **5521**



LABORATORY COMPACTION DATA

Maximum Dry Density (t/m³):	1.70
Optimum Moisture Content (%):	15.0
Adjusted Max. Dry Density (t/m³):	-
Adjusted Optimum Moisture Content (%):	-
Retained on 19.0mm Wet (%):	0
Retained on 37.5mm Dry (%):	0

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Approved Signatory: R. Rowlands
Date: 03-Oct-14

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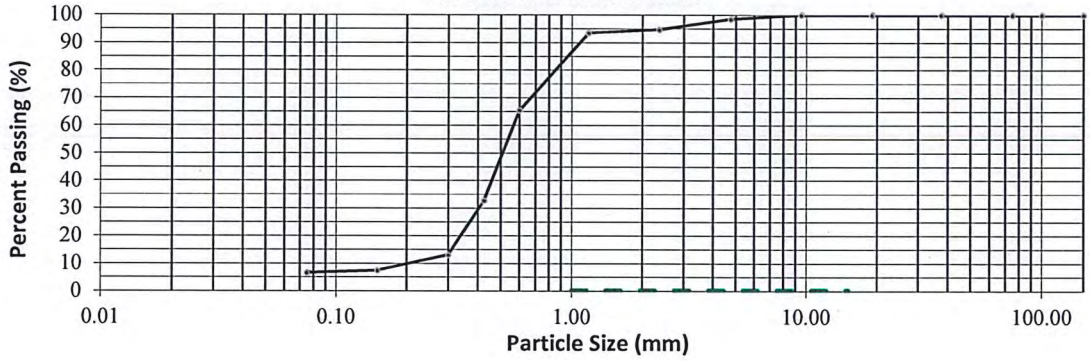
TEST CERTIFICATE
PARTICLE SIZE DISTRIBUTION - AS 1289 3.6.1

Client: CMW
Project: 2014-0337 **Test Request No:** PO 525

Project Location: Thomas Rd, Casuarina
Test Location: TP 49 Depth 0.4 - 1m
Field Site #: 1 Easting: - Northing: - RL: -
Material Description: Black/Brown SAND
Sampled By: Client **Date Sampled:** N/A
Tested By: D. Spencer-Cotton **Date Testing Commenced:** 24-Sep-14
Sampling Method: Sample supplied by Client, and prepared in accordance with AS 1289 1.1

Lab Prefix: 14-PER
Sample No: 5522

Particle Size Distribution



PSD RESULTS

Sieve Size (mm)	Percent Passing (%)
200.0	
150.0	
100.0	
75.0	
37.5	
19.0	
9.50	100
4.75	99
2.36	95
1.180	93
0.600	66
0.425	33
0.300	13
0.150	7
0.075	7

Notes:

Approved Signatory: R. Rowlands
Date: 03-Oct-14

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APPENDIX C

Geotechnical Report Review
Douglas Partners, 2016)

Douglas Partners
Geotechnics / Environment / Groundwater

Douglas Partners Pty Ltd
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36 O'Malley Street
Osborne Park WA 6017
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Fax (08) 9204 3522

Aigle Royal Properties
Level 8, 22 St Georges Terrace
PERTH WA 6000

Ref: 88727.R.001.Rev1
11 May 2018
DR

Attention: Mr Wayne Lawrence

Email: wlawrence@aigleroyal.com.au

Dear Sirs

Geotechnical Investigation Report Review
Lots 3, 650 and 1199 Thomas Road
Casuarina, WA

1. Introduction

This letter presents the results and comments of a review of the Geotechnical Investigation Report prepared by CMW Geosciences for Lots 3, 650 and 1199 Thomas Road, Casuarina (Report ref: 2014-0337AB Rev 1, dated 24 October 2014) with regard to the proposed development of the site by Aigle Royal Properties. This work was commissioned by Mr Wayne Lawrence of Aigle Royal Properties in an email dated 25 February 2016, and was undertaken in accordance with Douglas Partners' proposal dated 17 February 2016. The report was initially prepared and issued on 11 March 2016. A revised report was issued on 11 May 2018, to reference an updated Structure Plan for the development.

It is understood that Aigle Royal Properties has acquired the subject site, and based on the attached Local Structure Plan (Drawing No. 17-769 ST-1 A) and our understanding of the proposed development, are planning on constructing a commercial precinct across the western part of the site, primarily comprising large format retail buildings with associated car parking areas, and with some fast food and other convenience outlets. It is also understood that there will possibly be some areas of residential development considered for the site.

2. Available Information

The following information has been reviewed:

- CMW Report Ref: 2014-0337AB Rev 1;
- Results of geotechnical investigations of the adjacent sites to the south and to the west (on the western side of the Freeway), previously undertaken by Douglas Partners and investigations undertaken by other parties; and
- Information regarding the proposed development provided by Aigle Royal and indicated on Local Structure Plan Drawing No. 17-769 ST-1 A, attached.

3. Results of the Review and Comments

Results of the review of the CMW geotechnical report suggests that the site is generally considered suitable for the proposed development, however, Douglas Partners has some reservations regarding some aspects of the report, which we suggest require some further consideration. These include:

- The frequency and location of the tests undertaken across the site, with particular regard to Aigle Royal's proposed development concept.
- Aspects of the determination of the current site classification and recommended site preparation relating to the occurrence of very loose to loose sand over large portions of the site.
- The suggested thicknesses of sand filling provided in the report to improve the site classification.
- The impact on site drainage of the use of material with fines content of up to 12% during the bulk earthworks.

The above issues are further discussed below:

1. The frequency and location of the tests undertaken across the site, with particular regard to Aigle Royal's proposed development concept.

It is noted that the proposed development layout across the site has changed substantially from the time of the former geotechnical investigation, which has resulted in some information gaps when applied to Aigle Royal's current development concept. In particular, the test locations undertaken as part of the investigation are considered relatively sparse across some areas of the current development, and specifically there are no test locations undertaken within the north-west corner of the site. Moreover, insufficient test locations have been undertaken within the south-western portion of the site noted as containing a seasonal swamp (defined as 'Area B' within the report and on CMW's Drawing 2, attached) to provide a suitable assessment of this area of the site for the proposed development.

Furthermore, the results of investigations undertaken by Douglas Partners, and review of investigations undertaken by others, of the site immediately south of 'Area B' (i.e. the southern side of Peel Sub P1 Drain) indicate that black organic clay and materials described by others as highly compressible peat, peaty sand and peaty clay underlie this site to depths of between 1.0 m and 4.5 m. Such materials were not identified by CMW at the subject site, although as noted, there are limited test locations in this area.

It is recommended that consideration be given to undertaking further testing within the general area defined as 'Area B' within the report, as the area is referred to within the report as a seasonal swamp, and as such, may contain areas of poor ground conditions, possibly similar to those described at the site immediately to the south, and may present some risk or constraints to the proposed development of the area.

In addition, it may be prudent to suggest that some testing is undertaken in other areas of the site not investigated by CMW, such as the north-western corner, and areas noted as being areas of dense vegetation. However the results of the available testing around these areas do not tend to indicate that adverse ground conditions would be likely in these areas.

2. Aspects of the determination of the current site classification and recommended site preparation relating to the occurrence of very loose to loose sand over large portions of the site.

It is considered that the very loose to loose sand, recorded across a substantial portion of the site, defined as 'Area A', to depths of up to 2.5 m in some parts, warrants a current site classification of 'P' in accordance with the requirements of AS 2870-2011 Section 2.1.2. It is considered that a revised classification of 'A' should be suitable for this area of the site, following suitable site preparation.

We recommend that the density of the very loose to loose materials should be improved to form a suitable foundation for the proposed development, prior to any filling, and following any cut, if loose materials still remains. The provision of 1 m thickness of compacted filling over deep areas of very loose to loose sand, as suggested in the geotechnical report (CMW Report Section 9.2.2) for another type of development, is likely to result in intolerable differential and total settlements for the proposed large retail structures currently proposed for the site. However, the suggested preparation may be suitable for areas of car park.

Based on previous experience, it is suggested that compaction using heavy (minimum 17 tonne deadweight) vibrating smooth drum rollers be trialled at selected areas across the site to assess the improvement of the density of the sand. These trial areas should be continually rolled until deformation ceases. Testing, such as deep Perth Sand Penetrometer tests, should be undertaken across these trial areas to confirm if the compaction works have succeeded in achieving an appropriate level of compaction. It is recommended that this testing be supervised by a geotechnical engineer. If the trial areas prove successful in achieving the required compaction levels, these methods could be applied to the remainder of the loose areas of the site.

Post construction testing will be required to confirm that appropriate compaction has been achieved to the required depths. If heavy vibrating rollers fail to achieve the required levels of compaction, the requirement for ground improvement using impact rolling is anticipated at this stage. A ground improvement approach that includes excavation and replacement was also considered during this review, however the depth of loose material, large site area and high groundwater level in some areas is anticipated to make this approach impractical. Douglas Partners will be pleased to provide further information regarding impact rolling, should it be considered.

3. The suggested thicknesses of sand filling provided in the report to improve the site classification.

Using the available information within the report, and based on Douglas Partners experience and calculations, it is considered that the thickness of sand filling provided in the report (CMW Report Section 9.1.5) to improve the site classification, should be revised in order to be in accordance with the requirements of AS 2870-2011 as follows:

- In 'Area B', to achieve a classification 'S', 0.8 m of clean sand is required rather than 0.6 m. However, it should also be noted that the preferred approach of determining the shrink/swell index (I_{ss}) required for these calculations, such as by laboratory testing, has not been undertaken, and instead an assumed correlation has been adopted, which has resulted in a classification of 'M' for 'Area B'. In Douglas Partners experience, such correlations tend to be conservative, and it may be worth undertaking some shrink/swell testing to verify whether the reactivity of the soil is

representative of a class 'S' site, rather than 'M', and consequently not require any filling to meet the requirements of class 'S'; and

- In Areas C and D, to achieve a classification 'A', 1.8 m of clean sand is required rather than 1.2 m.

It should also be noted that further revision of the above values may be possible following further investigation at the site. In this regard the testing frequency and laboratory testing programme undertaken as part of the geotechnical investigation are considered somewhat limited. In Douglas Partners experience, the use of such limited information, although cost effective in terms of investigation costs, can have a significant impact on bulk earthworks costs.

4. The impact of the use of material with fines content of up to 12% during the bulk earthworks, on site drainage (CMW Report Section 9.2.3).

It is suggested that material containing up to 12% fines content will provide a suitable foundation material, however the use of such material may have an adverse impact on site drainage in comparison with 'free-draining' filling material, such as sand with less than say 5% fines. Implications may include poor performance of drainage systems such as soakwells or drainage cells, or the requirement for larger systems to be installed.

Douglas Partners would be pleased to meet with Aigle Royal to discuss the outcomes of this review in further detail, should you consider it beneficial.

Please do not hesitate to contact us if you have any queries or if you require further information.

Yours faithfully

Douglas Partners Pty Ltd Reviewed by

Dan Reaveley
Senior Associate

Frederic Verheyde
Principal

Attachments: Notes about this report
Local Structure Plan Drawing No. 17-769 ST-1 A
CMW Report Drawing 2

About this Report

Introduction

These notes have been provided to amplify DP's report in regard to classification methods, field procedures and the comments section. Not all are necessarily relevant to all reports.

DP's reports are based on information gained from limited subsurface excavations and sampling, supplemented by knowledge of local geology and experience. For this reason, they must be regarded as interpretive rather than factual documents, limited to some extent by the scope of information on which they rely.

Copyright

Borehole and Test Pit Logs

The borehole and test pit logs presented in this report are an engineering and/or geological interpretation of the subsurface conditions, and their reliability will depend to some extent on frequency of sampling and the method of drilling or excavation. Ideally, continuous undisturbed sampling or core drilling will provide the most reliable assessment, but this is not always practicable or possible to justify on economic grounds. In any case the boreholes and test pits represent only a very small sample of the total subsurface profile.

Interpretation of the information and its application to design and construction should therefore take into account the spacing of boreholes or pits, the frequency of sampling, and the possibility of other than 'straight line' variations between the test locations.

Groundwater

Where groundwater levels are measured in boreholes there are several potential problems, namely:

- In low permeability soils groundwater may enter the hole very slowly or perhaps not at all during the time the hole is left open;
- A localised, perched water table may lead to an erroneous indication of the true water table;
- Water table levels will vary from time to time with seasons or recent weather changes. They may not be the same at the time of construction as are indicated in the report; and
- The use of water or mud as a drilling fluid will mask any groundwater inflow. Water has to be blown out of the hole and drilling mud must first be washed out of the hole if water measurements are to be made.

More reliable measurements can be made by installing standpipes which are read at intervals over several days, or perhaps weeks for low permeability soils. Piezometers, sealed in a particular stratum, may be advisable in low permeability soils or where there may be interference from a perched water table.

Reports

The report has been prepared by qualified personnel, is based on the information obtained from field and laboratory testing, and has been undertaken to current engineering standards of interpretation and analysis. Where the report has been prepared for a specific design proposal, the information and interpretation may not be relevant if the design proposal is changed. If this happens, DP will be pleased to review the report and the sufficiency of the investigation work.

Every care is taken with the report as it relates to interpretation of subsurface conditions, discussion of geotechnical and environmental aspects, and recommendations or suggestions for design and construction. However, DP cannot always anticipate or assume responsibility for:

- Unexpected variations in ground conditions. The potential for this will depend partly on borehole or pit spacing and sampling frequency;
- Changes in policy or interpretations of policy by statutory authorities; or
- The actions of contractors responding to commercial pressures.

If these occur, DP will be pleased to assist with investigations or advice to resolve the matter.

About this Report

Site Anomalies

In the event that conditions encountered on site during construction appear to vary from those which were expected from the information contained in the report, DP requests that it be immediately notified. Most problems are much more readily resolved when conditions are exposed rather than at some later stage, well after the event.

Information for Contractual Purposes

Where information obtained from this report is provided for tendering purposes, it is recommended that all information, including the written report and discussion, be made available. In circumstances where the discussion or comments section is not relevant to the contractual situation, it may be appropriate to prepare a specially edited document. DP would be pleased to assist in this regard and/or to make additional report copies available for contract purposes at a nominal charge.

Site Inspection

The company will always be pleased to provide engineering inspection services for geotechnical and environmental aspects of work to which this report is related. This could range from a site visit to confirm that conditions exposed are as expected, to full time engineering presence on site.

Plan 1: Local Structure Plan

Lots 9011, 9012, 9013, 1199 & 3 Thomas Road, Casuarina

0 50 100m

Project Manager: MC
Drawn: OP
Checked: MC
Date: 14 Aug 2018
Scale: 1:5,000 @ A3
Drawing No. 17-769 ST-1 A

element.
the art and science of place

Level 18, 191 St Georges Terrace
Perth Western Australia 6000
Telephone +61 08 9289 8300
Facsimile +61 08 9321 4786
www.elementwa.com.au

LEGEND:

HA 01	DENOTES HAND AUGER (HA) LOCATION
TP 01	DENOTES TEST PIT (TP) LOCATION
PSP/DCP 01	DENOTES PERTH SAND PENETROMETER (PSP) / DYNAMIC CONE PENETROMETER (DCP) LOCATION
	DENOTES SITE BOUNDARY LOCATION
	DENOTES AREA OF DENSER VEGETATION

KEY:

	AREA A - SAND THROUGH DEPTH INVESTIGATED
	AREA B - CLAYEY SAND UP TO 1.75m DEPTH
	AREA C - CLAYEY SAND UP TO 1m DEPTH
	AREA D - CLAYEY SAND OF VARIABLE DEPTH
18	DENOTES EXISTING GROUND CONTOUR (m AHD)

1:4000 0 40 80 120 160 200 m

NOTE:
BASE PLAN ADAPTED FROM: CLE TOWN PLANNING, DEVELOPMENT CONCEPT PLAN - OPTION 1 (CLEARED TREES, REFERENCE: 2195-35-01, DATED: 04/02/2014

CMW Geosciences Pty Ltd
Chapman Morton Woodward

CLIENT: BOMBARA FAMILY		DRAWN: CJ	PROJECT: 2014-0337
PROJECT: LOTS 3, 650 & 1199 THOMAS ROAD CASUARINA, WA		CHECKED: MW	FIGURE: 02
		REVISION: 1	SCALE: 1:4000
TITLE: SITE INVESTIGATION PLAN		DATE: 01/10/2014	SHEET: A3

C:\USERS\CARLJ\.LOGICALDOC\CHECKIN\2014-0337-002 SITE INV REV 1 011014.DWG

Lot 9011, 9012, 9013, 1199 & 3
Thomas Rd, Casuarina
LWMS

APPENDIX D

Pre-Development Surface Water Quality Monitoring Data (360 Environmental)

Casuarina
Surface Water Quality Data

		Appearance	Field Parameters							Nutrients/inorganics							Metals												
		Colour, turbidity, odour	Temperature	Dissolved Oxygen	Dissolved Oxygen	Electrical Conductivity	Salinity	pH	Redox Potential	Ammonia as N	Kjeldahl Nitrogen Total	Nitrate and Nitrite (as N)	Nitrogen (Total)	Phosphate total (P)	Phosphorus	Total Suspended Solids	Arsenic	Boron	Cadmium	Calcium	Chromium (III+VI)	Cobalt	Copper	Lead	Manganese	Mercury	Molybdenum	Nickel	Selenium	Zinc
			°C	%	mg/L	µS/cm	ppt	unit	mV	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Field ID	Sample Date	LOR	0.1	0.1	0.01	1	0.01	0.01	1	0.01	0.2	0.05	0.2	0.05	0.5	1	0.001	0.05	0.0002	0.5	0.001	0.001	0.001	0.001	0.005	0.0001	0.005	0.001	0.001	0.001
Wetlands ANZECC & ARMCANZ (2000)								7-8.5		0.04	----	0.1	1.5	0.06	----	----	0.013	0.37	0.0002	----	----	----	0.0014	0.0034	1.9	0.0006	----	0.011	0.011	0.008
SW1	3/09/2014	Clear, colourless, odourless	17.9	2.0	21.5	1281	1	6.85	96	0.24	4.10	0.28	4.4	4.20	<0.5	120.00	----	----	----	----	----	----	----	----	----	----	----	----	----	----
	26/09/2014	Clear, colourless, odourless	16.9	0.4	4.0	1569	0.95	7.06	-87	0.12	3.70	<0.05	3.7	0.55	<0.5	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
	23/07/2015	Clear, colourless, odourless	11.4	78.0	8.5	52.6	0.03	6.61	92.7	0.13	0.30	0.17	0.4	0.17	<0.5	13	< 0.001	< 0.05	< 0.0002	4.2	< 0.001	< 0.001	0.01	< 0.001	0.006	< 0.0001	< 0.005	< 0.001	< 0.001	0.055
	26/10/2015	Clear, colourless, odourless	13.5	8.6	82.8	767	0.49	8.54	-107.7	0.06	1.60	<0.05	1.6	0.09	<0.5	26	----	----	----	----	----	----	----	----	----	----	----	----	----	----

Lot 9011, 9012, 9013, 1199 & 3
Thomas Rd, Casuarina
LWMS

APPENDIX E

Pre-Development Groundwater Quality Monitoring Data (360 Environmental)

		Appearance	Field Parameters							Nutrients/Inorganics						Metals											
		Colour, turbidity, odour	Temperature	Dissolved Oxygen	Dissolved Oxygen	Electrical Conductivity	Salinity	pH	Redox Potential	Nitrogen (Total Oxidised)	Nitrogen (Total)	Ammonia as N	Kjeldahl Nitrogen Total	Phosphorus	Phosphate total (P)	Arsenic	Boron	Cadmium	Calcium	Chromium (III+VI)	Cobalt	Copper	Lead	Manganese	Mercury	Molybdenum	Nickel	Selenium	Zinc
			°C	%	mg/L	µS/cm	ppt	unit	mV	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Field ID	Sample Date	LOR	0.1	0.1	0.01	1	0.01	0.01	1	0.05	0.2	0.01	0.2	0.5	0.05	0.001	0.05	0.0002	0.5	0.001	0.001	0.001	0.001	0.005	0.0001	0.005	0.001	0.001	0.001
Wetlands ANZECC & ARMCANZ (2000)								7-8.5		0.1	1.5	0.04	----	----	0.06	0.013	0.37	0.0002	----	----	----	0.0014	0.0034	1.9	0.0006	----	0.011	0.011	0.008
TR1	29/05/2014	Brown, no odour, high turbidity	21.8	1.2	0.11	197	----	6.06	20.4	<0.05	2.10	0.17	2.1	<0.5	0.53	----	----	----	----	----	----	----	----	----	----	----	----	----	----
	30/10/2014	Brown, no odour, low turbidity	18.5	36.2	2.92	230	0.13	4.50	251.0	0.19	----	0.07	1.8	<0.5	0.15	----	----	----	----	----	----	----	----	----	----	----	----	----	----
	30/01/2015	Brown, high turbidity, no odour	25.2	30.2	2.50	157	0.07	5.83	100.7	<0.05	----	0.34	0.7	<5	0.52	----	----	----	----	----	----	----	----	----	----	----	----	----	----
	13/04/2015	Brown, high turbidity, no odour	23.0	10.2	0.88	187	0.09	4.90	52.0	<0.05	1.20	0.26	1.2	<5	0.42	----	----	----	----	----	----	----	----	----	----	----	----	----	----
	23/07/2015	Brown/grey, high turbidity, no odour	17.8	28.7	2.72	792	0.45	5.28	161.4	0.07	1.00	0.58	1.0	<0.5	0.11	<0.01	<0.5	<0.002	63	0.13	<0.01	0.014	0.051	0.081	<0.001	<0.05	0.015	0.011	0.019
	19/11/2015	Pale brown, low turbidity, no odour	18.9	30.8	2.86	13	0.01	4.11	51.8	0.17	0.80	0.10	0.7	----	0.07	----	----	----	----	----	----	----	----	----	----	----	----	----	----
TR2	29/05/2014	Brown, no odour, low turbidity	21.9	2.8	0.25	128	----	5.44	32.1	<0.05	2.50	0.25	2.5	<0.5	0.19	----	----	----	----	----	----	----	----	----	----	----	----	----	----
	30/10/2014	Brown, no odour, low turbidity	19.3	47.1	4.35	382	0.20	6.75	53.6	5.50	----	0.03	1.8	<0.5	<0.05	----	----	----	----	----	----	----	----	----	----	----	----	----	----
	30/01/2015	Brown, high turbidity, no odour	23.0	29.9	2.55	236	0.12	6.01	77.9	2.20	----	0.02	0.2	<0.5	0.60	----	----	----	----	----	----	----	----	----	----	----	----	----	----
	13/04/2015	Brown, high turbidity, no odour	22.4	16.8	1.47	226	0.11	5.76	67.0	0.16	1.40	0.02	1.3	<0.5	0.32	----	----	----	----	----	----	----	----	----	----	----	----	----	----
	23/07/2015	Pale brown, low turbidity, no odour	19.3	25.9	2.39	194	0.10	6.32	125.2	1.80	2.00	<0.01	0.2	<0.5	0.1	0.004	<0.05	<0.0002	18	0.005	<0.001	0.005	0.005	<0.005	<0.0001	<0.005	0.001	0.011	0.004
	19/11/2015	Pale brown, low turbidity, no odour	19.4	13.9	1.28	245	0.13	6.51	-65.0	4.90	5.90	0.02	1.0	----	0.12	----	----	----	----	----	----	----	----	----	----	----	----	----	----
TR3	29/05/2014	Light brown, no odour, low turbidity	20.6	1.6	0.14	589	----	6.16	-135.9	<0.05	1.40	0.38	1.4	<0.5	0.07	----	----	----	----	----	----	----	----	----	----	----	----	----	----
	30/10/2014	Brown, no odour, low turbidity	19.0	40.1	3.80	805	0.44	6.13	-92.0	<0.05	----	0.49	2.3	<0.5	0.09	----	----	----	----	----	----	----	----	----	----	----	----	----	----
	30/01/2015	Brown, high turbidity, no odour	25.4	14.7	1.20	780	0.38	5.94	-68.1	<0.05	----	0.44	1.6	<0.5	0.15	----	----	----	----	----	----	----	----	----	----	----	----	----	----
	13/04/2015	Brown, high turbidity, no odour	20.6	13.5	1.21	2902	1.51	6.10	-90.0	<0.05	1.70	0.41	1.7	<5	0.21	----	----	----	----	----	----	----	----	----	----	----	----	----	----
	23/07/2015	Dark brown, very high turbidity, sulfur odour	18.8	23.1	2.15	623	0.35	6.67	-58.7	0.08	1.90	0.45	1.8	<0.5	0.1	0.003	<0.05	<0.0002	69	0.019	0.003	0.013	0.018	0.029	0.0002	<0.005	0.006	0.007	0.012
	19/11/2015	Pale brown, moderate turbidity, no odour	19.0	3.3	0.31	900	0.50	7.48	-136.6	<0.05	1.40	0.55	1.4	----	0.2	----	----	----	----	----	----	----	----	----	----	----	----	----	----
TR4	29/05/2014	Light brown, no odour, low turbidity	19.9	22.6	0.26	1004	----	5.71	-44.5	<0.05	5.60	2.30	5.6	<0.5	0.41	----	----	----	----	----	----	----	----	----	----	----	----	----	----
	30/10/2014	Brown, no odour, low turbidity	17.6	29.0	2.73	976	0.48	3.94	340.0	17.00	----	0.19	5.8	1.10	1.30	----	----	----	----	----	----	----	----	----	----	----	----	----	----
	30/01/2015	Brown, high turbidity, no odour	23.4	22.6	1.96	478	0.24	3.84	265.0	0.07	----	0.86	3.9	<0.5	4.80	----	----	----	----	----	----	----	----	----	----	----	----	----	----
	13/04/2015	Brown, high turbidity, no odour	20.0	25.3	2.33	845	0.42	4.93	101.0	0.07	5.00	2.10	4.9	<5	2.70	----	----	----	----	----	----	----	----	----	----	----	----	----	----
	23/07/2015	Brown, high turbidity, no odour	17.4	25.2	2.41	861	0.50	6.38	-21.8	0.07	3.20	1.90	3.1	<0.5	0.37	<0.005	<0.25	<0.001	76	0.030	<0.005	0.012	0.012	0.094	<0.0005	<0.025	<0.005	<0.005	0.012
	19/11/2015	Pale brown, low turbidity, no odour	17.7	1.6	0.15	456	0.26	6.05	55.5	1.90	3.90	0.26	2.0	----	2.7	----	----	----	----	----	----	----	----	----	----	----	----	----	----
TR5	29/05/2014	Light brown, no odour,low turbidity	20.4	0.8	0.07	1087	----	5.95	-112.0	<0.05	2.80	1.50	2.8	<0.5	0.23	----	----	----	----	----	----	----	----	----	----	----	----	----	----
	30/10/2014	Brown, no odour, low turbidity	18.3	29.0	2.34	846	0.42	4.42	150.0	<0.05	----	0.31	5.5	0.50	0.90	----	----	----	----	----	----	----	----	----	----	----	----	----	----
	30/01/2015	Brown, high turbidity, no odour	24.8	21.9	1.81	1807	0.92	5.82	11.6	0.06	----	2.30	3.2	<0.5	0.28	----	----	----	----	----	----	----	----	----	----	----	----	----	----
	13/04/2015	Brown, high turbidity, no odour	20.7	26.0	2.41	1462	0.74	6.05	-9.0	<0.05	4.00	1.70	4.0	<5	1.20	----	----	----	----	----	----	----	----	----	----	----	----	----	----
	23/07/2015	Brown, high turbidity, no odour	18.9	22.3	2.07	1138	0.65	6.60	-50.3	0.08	2.20	1.40	2.2	<0.5	0.36	<0.005	<0.25	<0.001	120	0.032	<0.005	0.006	0.018	0.100	<0.0005	<0.025	<0.005	<0.005	0.015
	19/11/2015	Destroyed																										
TR6	29/05/2014	Light brown, no odour, low turbidity	21.2	4.2	0.37	3003	----	6.13	-158.3	<0.05	2.10	0.88	2.1	<0.5	0.09	----	----	----	----	----	----	----	----	----	----	----	----	----	----
	30/10/2014	Brown, no odour, low turbidity	18.7	31.8	2.96	823	0.40	3.42	322.0	0.19	----	0.53	3.4	<0.5	0.16	----	----	----	----	----	----	----	----	----	----	----	----	----	----
	30/01/2015	Brown, high turbidity, no odour	23.9	16.8	1.42	884	0.43	3.31	349.0	<0.05	----	0.96	11.0	<5	0.43	----	----	----	----	----	----	----	----	----	----	----	----	----	----
	13/04/2015	Brown, high turbidity, no odour	21.7	24.4	2.22	1815	0.95	5.23	74.0	0.07	6.40	0.82	6.3	<5	0.48	----	----	----	----	----	----	----	----	----	----	----	----	----	----
	23/07/2015	Dark brown, very high turbidity, no odour	17.1	42.0	4.03	1046	0.62	6.32	6.8	0.08	1.70	0.64	1.6	<0.5	0.21	0.008	<0.25	<0.001	83	0.130	<0.005	0.014	0.025	<0.025	<0.0005	<0.025	0.008	0.012	0.010
	19/11/2015	Pale brown, low turbidity, no odour	19.2	2.5	0.23	1032	0.58	0.48	441.8	0.92	2.70	1.20	1.8	----	<0.05	----	----	----	----	----	----	----	----	----	----	----	----	----	----
TR7	29/05/2014	Light brown, no odour, medium turbidity	21.0	10.2	0.81	287	----	5.45	-127.9	<0.05	2.70	0.23	2.7	<0.5	0.14	----	----	----	----	----	----	----	----	----	----	----	----	----	----
	30/10/2014	Brown, low turbidity, no odour	19.0	15.2	0.49	579	0.29	5.42	42.6	<0.05	----	0.31	1.3	<0.5	0.08	----	----	----	----	----	----	----	----	----	----	----	----	----	----
	30/01/2015	Brown, high turbidity, no odour	28.7	31.9	2.48	506	0.24	6.52	-41.7	<0.05	----	0.30	1.6	<0.5	0.26	----	----	----	----	----	----	----	----	----	----	----	----	----	----
	13/04/2015	Brown, high turbidity, no odour	21.8	25.8	2.26	221	0.10	5.29	-1.0	<0.05	2.50	0.34	2.5	<5	0.32	----	----	----	----	----	----	----	----	----	----	----	----	----	----
	23/07/2015	Dark brown, very high turbidity, no odour	19.0	76.8	7.12	5.6	0.00	6.06	439.4	0.12	3.20	0.30	3.1	<0.5	0.24	0.017	<0.25	<0.001	20	0.130	0.006	0.007	0.066	<0.025	0.0011	<0.025	0.013	0.01	0.016
	19/11/2015	Brown, low turbidity, no odour	19.2	0.7	0.07	297	0.16	6.39	-68.4	0.08	1.40	0.21	1.3	----	0.13	----	----	----	----	----	----	----	----	----	----	----	----	----	----
TR8	29/05/2014	Light brown, no odour, low turbidity	19.9	1.6	0.15	302	----	5.04	-38.5	<0.05	5.20	0.35	5.2	<0.5	0.24	----	----	----	----	----	----	----	----	----	----	----	----	----	----
	30/10/2014	Brown, no odour, low turbidity	18.0	56.0	5.12	428	0.21	5.00	29.0	<0.05	----	0.31	3.2	<0.5	0.22	----	----	----	----	----	----	----	----	----	----	----	----	----	----
	30/01/2015	Brown, medium turbidity, no odour	26.0	61.0	5.20	252	0.11	5.52	-4.2	<0.05	----	0.59	1.9	<0.5	0.21	----	----	----	----	----	----	----	----	----	----	----	----	----	----
	13/04/2015	Brown, high turbidity, no odour	20.7	24.2	2.17	339	0.16	5.22	-42.0	0.06	3.00	0.66	2.9	<5	0.40	----	----	----	----	----	----	----	----	----	----	----	----	----	----
	23/07/2015	Dark brown, very high turbidity, sulfur odour	17.1	25.0	2.41	358.9	0.20	5.98	-26.9	0.10	3.10	0.77	3.0	<0.5	0.2	0.002	<0.05	<0.0002	15	0.054	<0.001	0.013	0.014	0.006	0.0002	0.008	0.004	0.002	0.010
	19/11/2015	Pale brown, low turbidity, sulfur odour	18.3	1.7	0.16	309	0.17	5.03	-85.9	0.12	1.40	0.56	1.4	----	0.2	----	----	----	----	----	----	----	----	----	----	----	----	----	----
TR9	29/05/2014	Light brown, no odour, low turbidity	20.6	9.1	0.84	1395	----	5.10	85.4	<0.05	2.40	0.60	2.4	<0.5	<0.05	----	----	----	----	----	----	----	----	----	----	----	----	----	----
	30/10/2014	Brown, no odour, low turbidity	19.0	1.0	18.00	2194	1.13	4.54	130.0	<0.05	----	0.28	1.1	<0.5	<0.05	----	----	----	----	----	----	----	----	----	----	----	----	----	----
	30/01/2015	Brown, high turbidity, no odour	22.0	10.5	0.89	1684	0.85	5.16	-8.9	<0.05	----	0.58	1.4	<0.5	0.47	----	----	----	----	----	----	----	----	----	----	----	----	----	----
	13/04/2015	Brown, high turbidity, no odour	21.0	25.8	2.31	1634	0.83	8.31	48.0	<0.05	21.00	0.65	21.0	<5	0.28	----	----	----	----	----	----	----	----	----	----	----	----	----	----
	23/07/2015	Dark brown, high turbidity, organic odour	18.5	32.5	3.03	1397	0.81	5.95	39.3	<0.05	0.70	0.51	0.7	<0.5	0.09	0.020	<0.25	<0.001	160	0.061	0.011	0.006	0.069	0.069	<0.0005	<0.025	0.016	0.011	0.015
	19/11/2015	Dark brown, high turbidity, organic odour	18.8	25.5	2.36	1375	0.79	5.17	-57.9	<0.05	1.10	0.57	1.1	----	0.5	----	----	----	----	----	----	----	----	----	----	----	----	----	----
TR10	29/05/2014	Light brown, no odour, low turbidity	20.5	5.0	0.45	878	----	5.28	-63.9	<0.05	3.00	0.77	3.0	<0.5	0.07	----	----	----	----	----	----	----	----	----	----	----	----	----	----
	30/10/2014	Brown, no odour, low turbidity	19.0	10.0	0.82	982	0.48	5.03	124.0	<0.05	----	0.74	2.4	<0.5	0.14	----	----	----	----	----	----	----	----	----	----	----	----	----	----
	30/01/2015	Brown, high turbidity, no odour	21.9	20.0	1.76	696	0.34	4.94	9.5	<0.05	----	0.54	1.6	<5	0.28	----	----	----	----	----	----	----	----	----	----	----	----	----	----
	13/04/2015	Brown, high turbidity, no odour	21.1	23.4	2.09	887	0.44	5.29	21.0	<0.05	1.80	0.84	1.8	<5	0.38	----	----	----	----	----	----	----	----	----	----	----	----	----	----
	23/07/2015	Dark brown, high turbidity, organic odour	18.1	26.3	2.47	732	0.42	5.88	18.1	0.10	2.50	0.62	2.4	<0.5	0.17	0.006	<0.25	<0.001	81	0.060	<0.005	0.009	0.03	0.067	<0.0005	<0.025	0.011	0.007	0.043
	19/11/2015	Dark brown, high turbidity, organic odour	18.2	36.0	3.39	813	0.46	4.70	-36.8	0.10	1.30	0.53	1.2	----	0.32	----	----	----	----	----	----	----	----	----	----	----	----	----	----

Lot 9011, 9012, 9013, 1199 & 3
Thomas Rd, Casuarina
LWMS

APPENDIX F

XP STORM Modelling Parameters

TABLE F1: XP-SWMM Modelling Assumptions

Key Elements	Parameter			Value
IFD Data	BOM IFD Calculator			Casuarina Area
Runoff Assumptions	Land Use	Mixed Business	Initial Loss (mm)	15
			Proportional Loss (%) all ARI	40
			Manning's n for pervious area	0.022
		Drainage	Initial Loss (mm)	0
			Proportional Loss (%) all ARI	5
			Manning's n for pervious area	0.05
		Road Reserve / HV Transmission Corridor	Initial Loss (mm)	15
			Proportional Loss (%) all ARI	20
			Manning's n for pervious area	0.02
		Sub P Living Stream	Initial Loss (mm)	0
			Proportional Loss (%) all ARI	5
			Manning's n for pervious area	0.05
	Catchment Grade			0.004
	Runoff routing method used			Laurenson's method ($S=BQ^{n+1}$)
	Evaporation			3 mm per day
Simulation Parameters	Dry time step			86400 Seconds (1 day)
	Transition time Step			30 Seconds
	Wet time step			30 Seconds
	Simulation period			6 Days
Hydraulics	Culverts		Manning's n	0.013
			Headwall type	45 Degree Wingwall Flares
			Entrance/Exit loss Coefficients	0.5, 1
	Peel Sub P Drain		Centre channel Manning's n	0.05
			Over bank Manning's n	0.05
			Assumed Swale Infiltration	0.00

Lot 9011, 9012, 9013, 1199 & 3 Thomas Rd, Casuarina LWMS

APPENDIX G

UNDO Nutrient Modelling Output Results

Data Source: Nearmap Digital Imagery (7 June 2017);

Coordinate System: GDA 94, Zone 50

JDA

Job No. J6447
Scale: 1:5,000 @A4

0 100 200 300 400 Meters

N

Aigle Royal Developments
Lots 9011, 9012, 9013, 1199 & 3 Thomas Road, Casuarina Structure Plan - LWMS
Figure G1: UNDO Modelling Pre-Development Areas

Government of Western Australia
Department of Water and Environmental Regulation

Project: J6447b

Date: 12/12/2017

Version: Version 1.1.2.17327

Subregion name: PreDevArea

Landuse	Percent (%)	Area (ha)	Input load Nitrogen (kg)	Input load Phosphorus (kg)
Residential	0	0.00	0.00	0.00
Industrial, commercial & schools	0	0.00	0.00	0.00
Rural living	100	25.76	1267.39	87.58
Public open space	0	0.00	0.00	0.00
Road reserve	0	0.00	0.00	0.00

Total area	Total percent (%)
25.76	100

Nitrogen input (kg/ha/yr)	Phosphorus input (kg/ha/yr)
54.43	3.55

Nitrogen export (kg/ha/yr)	Phosphorus (kg/ha/yr)
0.77	0.05

Rural living

Landuse	Percent (%)	Area (ha)
Unrestricted	0	0.00
No livestock	100	25.76
No clearing apart from the housing pad	0	0.00

Total area	Total percent (%)
25.76	100

Nitrogen input (kg)	Phosphorus input (kg)
1267.39	87.58

Note: Commercial horticultre is not permitted in the rural living zone, due to spray drift buffers.

Soil and drainage information

Type of drainage	**Open channel drains**	**Does it contain imported fill?**	**No**
Soil type	**Bassendean**	**Does subregion contain onsite sewage diposal system?**	**N**
Depth to groundwater (m)	**1.5**		
Groundwater slope (%)	**0.01**		
Soil PRI	**5.0**		

Note: Please attach the results of soil tests to this report when submitting.

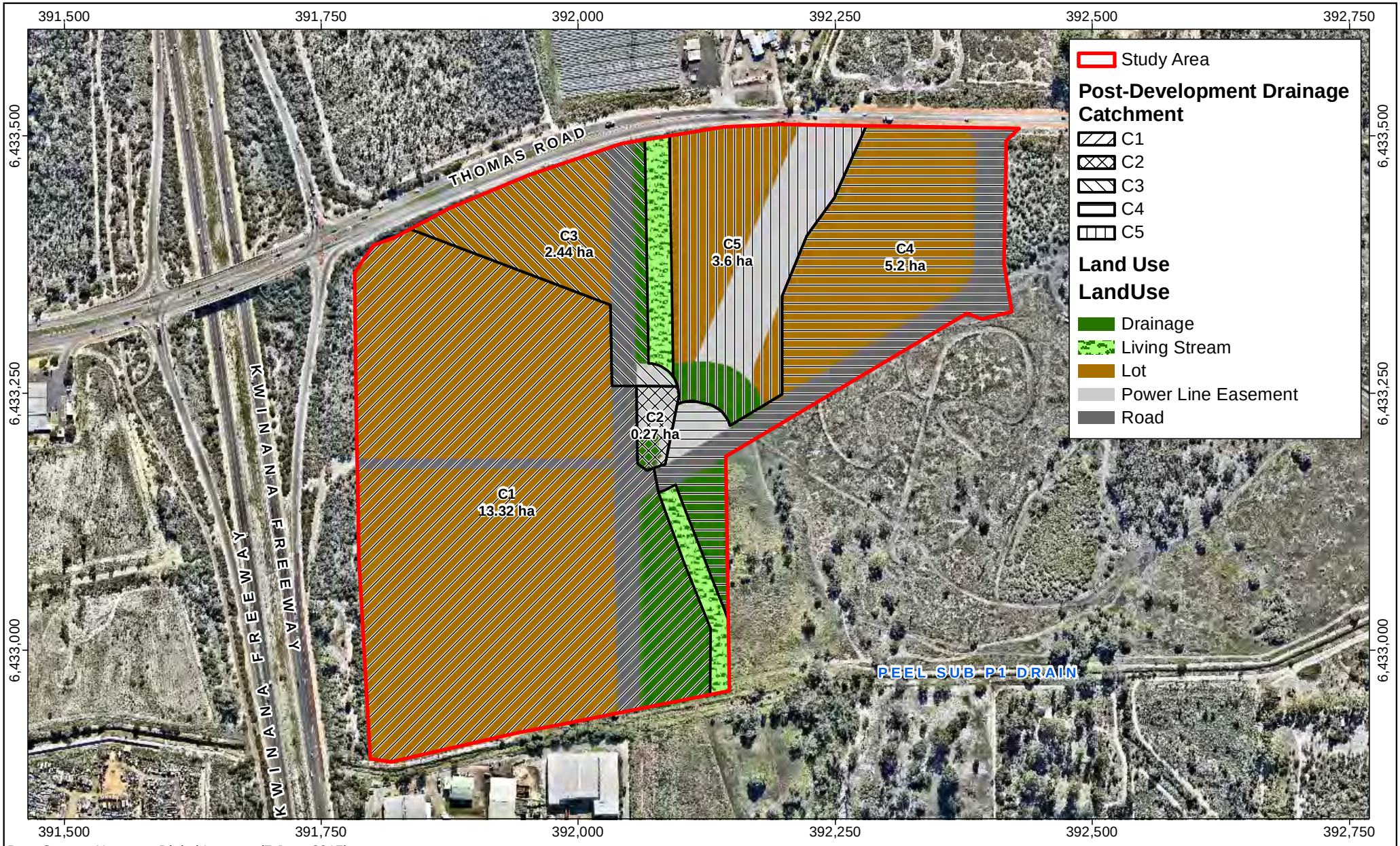
Summary: Nutrient stripping devices

Treatment Name	Size (m²)	Treated area (ha)	Treating	N removed (kg/ha/yr)	P removed (kg/ha/yr)
Load removed				**0.00**	**0.00**
Net export				**0.77**	**0.05**

Summary: Nutrient load exports

Region	Area (ha)	P export (kg/ha/yr)	N export (kg/ha/yr)
PreDevArea	25.76	0.05	0.77

PRE-TREATMENT LOAD (kg/ha/yr)		LOAD REMOVED (kg/ha/yr)		NET LOAD EXPORT (kg/ha/yr)	
NITROGEN	PHOSPHORUS	NITROGEN	PHOSPHORUS	NITROGEN	PHOSPHORUS
0.77	**0.05**	**0.00**	**0.00**	**0.77**	**0.05**



Data Source: Nearmap Digital Imagery (7 June 2017);

Coordinate System: GDA 94, Zone 50

JDA

Job No. J6447

Scale: 1:5,000 @A4

0 100 200 300 400 Meters

N

Aigle Royal Developments

Lots 9011, 9012, 9013, 1199 & 3 Thomas Road, Casuarina Structure Plan - LWMS

Figure G2: UNDO Modelling Post-Development Areas

Government of Western Australia
Department of Water and Environmental Regulation

Project: 10

Date: 12/12/2017

Version: Version 1.1.2.17327

Subregion name: C1

Landuse	Percent (%)	Area (ha)	Input load Nitrogen (kg)	Input load Phosphorus (kg)
Residential	0	0.00	0.00	0.00
Industrial, commercial & schools	91	11.16	159.65	32.38
Rural living	0	0.00	0.00	0.00
Public open space	0	0.00	0.00	0.00
Road reserve	9	1.10	3.09	0.10

Total area	Total percent (%)
12.27	54

Nitrogen input (kg/ha/yr)	Phosphorus input (kg/ha/yr)
18.50	2.80

Nitrogen export (kg/ha/yr)	Phosphorus (kg/ha/yr)
0.91	0.13

Commercial, Industry and Schools

Landuse	Percent (%)	Area (ha)
Light industrial	100	11.16
Heavy industrial	0	0.00
Commercial / Offices	0	0.00
Schools	0	0.00
Public buildings	0	0.00

Total area	Total percent (%)
11.16	91

Nitrogen input (kg)	Phosphorus input (kg)
159.65	32.38

Road reserve

Landuse	Percent (%)	Area (ha)
Roads	90	0.99
Road reserve - impervious	0	0.00
Road reserve - native garden	10	0.11
Road reserve - non-native garden	0	0.00
Road reserve - turf	0	0.00
Road reserve - not fertilised	0	0.00

Total area	Total percent (%)
1.104192	9

Nitrogen input (kg)	Phosphorus input (kg)
3.09	3.09

Soil and drainage information

Type of drainage	**Piped drainage**	**Does it contain imported fill?**	**Yes**
Soil type	**Bassendean**	Type of fill imported	**White sands (Bassendean)**
Depth to groundwater (m)	**1.5**	Fill depth (m)	**1.2**
Groundwater slope (%)	**0.01**	Approximate PRI of imported fill	**5**
Soil PRI	**5.0**	**Does subregion contain onsite sewage diposal system?**	**No**

Note: Please attach the results of soil tests to this report when submitting.

Subregion name: C2

Landuse	Percent (%)	Area (ha)	Input load Nitrogen (kg)	Input load Phosphorus (kg)
Residential	0	0.00	0.00	0.00
Industrial, commercial & schools	0	0.00	0.00	0.00
Rural living	0	0.00	0.00	0.00
Public open space	100	0.23	0.00	0.00
Road reserve	0	0.00	0.00	0.00

Total area	Total percent (%)
0.23	1

Nitrogen input (kg/ha/yr)	Phosphorus input (kg/ha/yr)
5.23	0.15

Nitrogen export (kg/ha/yr)	Phosphorus (kg/ha/yr)
0.30	0.01

Public Open Space (POS)

Landuse	Percent (%)	Area (ha)
Native gardens	0	0.00
Non-native gardens	0	0.00
Not fertilised	100	0.23
Nature	0	0.00
Sport	0	0.00
Recreation	0	0.00
Golf course	0	0.00
Bowling green	0	0.00
Impervious	0	0.00
Water body	0	0.00

Total area	Total percent (%)
0.23	100

Nitrogen input (kg)	Phosphorus input (kg)
0.00	0.00

Soil and drainage information

Type of drainage	**Piped drainage**	**Does it contain imported fill?**	**Yes**
Soil type	**Bassendean**	Type of fill imported	**White sands (Bassendean)**
Depth to groundwater (m)	**1.5**	Fill depth (m)	**1.2**
Groundwater slope (%)	**0.01**	Approximate PRI of imported fill	**5**
Soil PRI	**5.0**	**Does subregion contain onsite sewage diposal system?**	**No**

Note: Please attach the results of soil tests to this report when submitting.

Subregion name: C3

Landuse	Percent (%)	Area (ha)	Input load Nitrogen (kg)	Input load Phosphorus (kg)
Residential	0	0.00	0.00	0.00
Industrial, commercial & schools	74	1.68	24.04	4.88
Rural living	0	0.00	0.00	0.00
Public open space	0	0.00	0.00	0.00
Road reserve	26	0.59	1.65	0.05

Total area	Total percent (%)
2.27	10

Nitrogen input (kg/ha/yr)	Phosphorus input (kg/ha/yr)
16.54	2.32

Nitrogen export (kg/ha/yr)	Phosphorus (kg/ha/yr)
0.84	0.11

Commercial, Industry and Schools

Landuse	Percent (%)	Area (ha)
Light industrial	100	1.68
Heavy industrial	0	0.00
Commercial / Offices	0	0.00
Schools	0	0.00
Public buildings	0	0.00

Total area	Total percent (%)
1.68	74

Nitrogen input (kg)	Phosphorus input (kg)
24.04	4.88

Road reserve

Landuse	Percent (%)	Area (ha)
Roads	90	0.53
Road reserve - impervious	0	0.00
Road reserve - native garden	10	0.06
Road reserve - non-native garden	0	0.00
Road reserve - turf	0	0.00
Road reserve - not fertilised	0	0.00

Total area	Total percent (%)
0.59072	26

Nitrogen input (kg)	Phosphorus input (kg)
1.65	1.65

Soil and drainage information

Type of drainage	**Piped drainage**	**Does it contain imported fill?**	**Yes**
Soil type	**Bassendean**	Type of fill imported	**White sands (Bassendean)**
Depth to groundwater (m)	**1.5**	Fill depth (m)	**1.2**
Groundwater slope (%)	**0.01**	Approximate PRI of imported fill	**5**
Soil PRI	**5.0**	**Does subregion contain onsite sewage diposal system?**	**No**

Note: Please attach the results of soil tests to this report when submitting.

Subregion name: C4

Landuse	Percent (%)	Area (ha)	Input load Nitrogen (kg)	Input load Phosphorus (kg)
Residential	0	0.00	0.00	0.00
Industrial, commercial & schools	70	3.34	47.76	9.69
Rural living	0	0.00	0.00	0.00
Public open space	0	0.00	0.00	0.00
Road reserve	30	1.43	4.01	0.13

Total area	Total percent (%)
4.77	21

Nitrogen input (kg/ha/yr)	Phosphorus input (kg/ha/yr)
16.08	2.21

Nitrogen export (kg/ha/yr)	Phosphorus (kg/ha/yr)
0.80	0.10

Commercial, Industry and Schools

Landuse	Percent (%)	Area (ha)
Light industrial	100	3.34
Heavy industrial	0	0.00
Commercial / Offices	0	0.00
Schools	0	0.00
Public buildings	0	0.00

Total area	Total percent (%)
3.34	70

Nitrogen input (kg)	Phosphorus input (kg)
47.76	9.69

Road reserve

Landuse	Percent (%)	Area (ha)
Roads	90	1.29
Road reserve - impervious	0	0.00
Road reserve - native garden	10	0.14
Road reserve - non-native garden	0	0.00
Road reserve - turf	0	0.00
Road reserve - not fertilised	0	0.00

Total area	Total percent (%)
1.43136	30

Nitrogen input (kg)	Phosphorus input (kg)
4.01	4.01

Soil and drainage information

Type of drainage	**Piped drainage**	**Does it contain imported fill?**	**Yes**
Soil type	**Bassendean**	Type of fill imported	**White sands (Bassendean)**
Depth to groundwater (m)	**1.5**	Fill depth (m)	**1.2**
Groundwater slope (%)	**0.01**	Approximate PRI of imported fill	**5**
Soil PRI	**5.0**	**Does subregion contain onsite sewage diposal system?**	**No**

Note: Please attach the results of soil tests to this report when submitting.

Subregion name: C5

Landuse	Percent (%)	Area (ha)	Input load Nitrogen (kg)	Input load Phosphorus (kg)
Residential	0	0.00	0.00	0.00
Industrial, commercial & schools	100	3.18	45.49	9.22
Rural living	0	0.00	0.00	0.00
Public open space	0	0.00	0.00	0.00
Road reserve	0	0.00	0.00	0.00

Total area	Total percent (%)
3.18	14
Nitrogen input (kg/ha/yr)	**Phosphorus input (kg/ha/yr)**
19.53	3.05
Nitrogen export (kg/ha/yr)	**Phosphorus (kg/ha/yr)**
0.98	0.14

Commercial, Industry and Schools

Landuse	Percent (%)	Area (ha)
Light industrial	100	3.18
Heavy industrial	0	0.00
Commercial / Offices	0	0.00
Schools	0	0.00
Public buildings	0	0.00

Total area	Total percent (%)
3.18	100
Nitrogen input (kg)	**Phosphorus input (kg)**
45.49	9.22

Soil and drainage information

Type of drainage	**Piped drainage**	**Does it contain imported fill?**	**Yes**
Soil type	**Bassendean**	Type of fill imported	**White sands (Bassendean)**
Depth to groundwater (m)	**1.5**	Fill depth (m)	**1.2**
Groundwater slope (%)	**0.01**	Approximate PRI of imported fill	**5**
Soil PRI	**5.0**	**Does subregion contain onsite sewage diposal system?**	**No**

Note: Please attach the results of soil tests to this report when submitting.

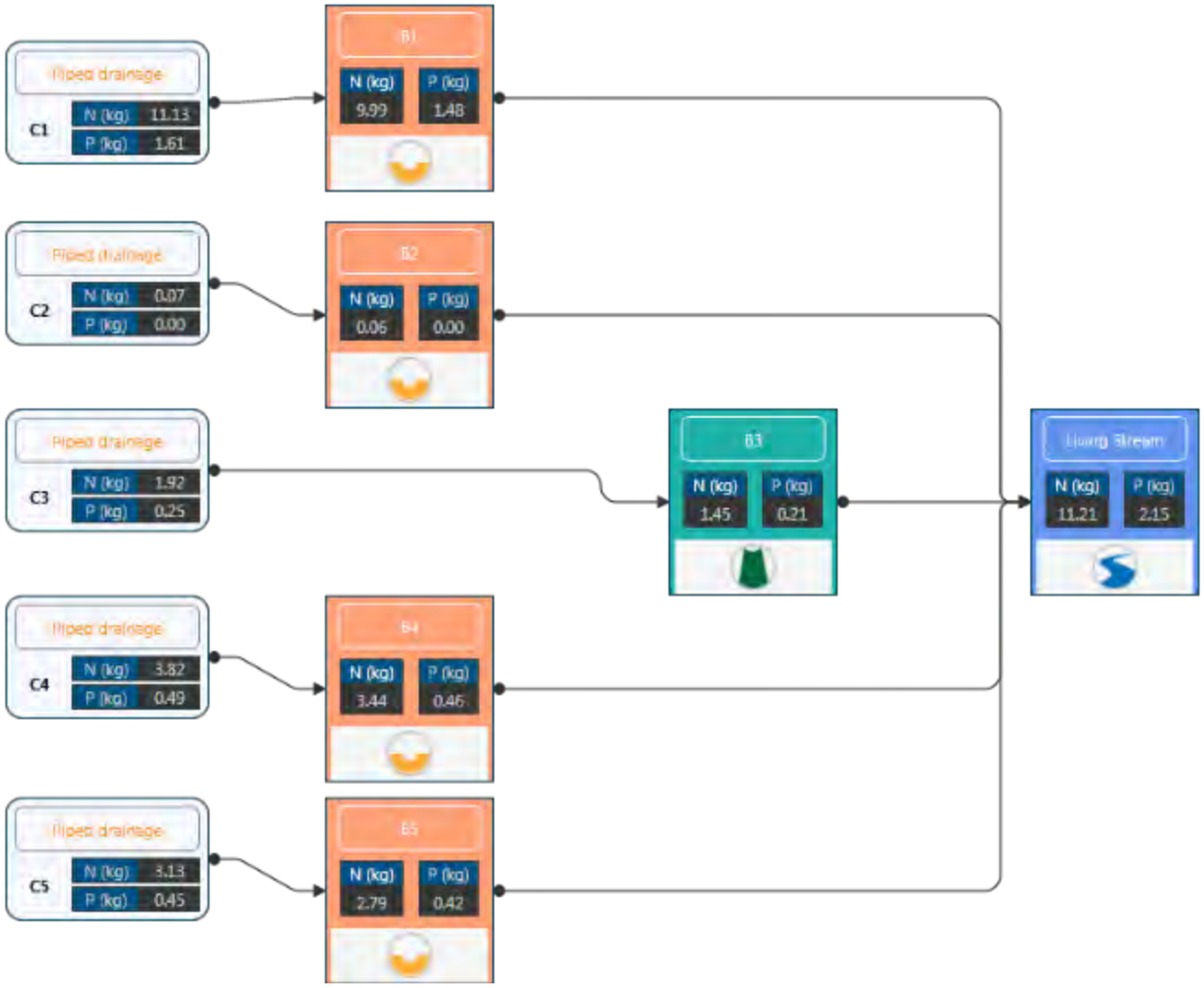
Summary: Nutrient stripping devices						
Treatment	**Name**	**Size (m²)**	**Treated area (ha)**	**Treating**	**N removed (kg/ha/yr)**	**P removed (kg/ha/yr)**
Swale	B3	2600.00	2.27	Sandy soils – Runoff only (full lot connection)	0.21	0.02
Detention / infiltration basin	B1	10600.00	12.27	Sandy soils – Runoff only (full lot connection)	0.09	0.01
Detention / infiltration basin	B2	600.00	0.23	Sandy soils – Runoff only (full lot connection)	0.03	0.00
Detention / infiltration basin	B4	3900.00	4.77	Sandy soils – Runoff only (full lot connection)	0.08	0.01
Detention / infiltration basin	B5	3400.00	3.18	Sandy soils – Runoff only (full lot connection)	0.11	0.01
Living stream	Living Stream	2842.00	22.72	Sandy soils – runoff, subsoils and groundwater	1.22	0.07
Load removed					**0.39**	**0.03**
Net export					**0.49**	**0.09**

Summary: Nutrient load exports

Region	Area (ha)	P export (kg/ha/yr)	N export (kg/ha/yr)
C1	12.27	0.13	0.91
C2	0.23	0.01	0.30
C3	2.27	0.11	0.84
C4	4.77	0.10	0.80
C5	3.18	0.14	0.98

PRE-TREATMENT LOAD (kg/ha/yr)		LOAD REMOVED (kg/ha/yr)		NET LOAD EXPORT (kg/ha/yr)	
NITROGEN	PHOSPHORUS	NITROGEN	PHOSPHORUS	NITROGEN	PHOSPHORUS
0.88	0.12	0.39	0.03	0.49	0.09

Treatment diagram



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Appendix D

Engineering Services Report

Cossill & Webley
CONSULTING ENGINEERS

Aigle Royal Landholding
Lots 9011, 9012, 9013, 1199 & 3
Thomas Road, Casuarina

Engineering Servicing Report

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Contents

1. INTRODUCTION

The following report has been prepared by Cossill & Webley Pty Ltd (CW) and summarises the results of a preliminary assessment of the engineering aspects of the proposed urban development of Lots 9011, 9012, 9013, 1199 & 3 Thomas Road, Casuarina in support of a Local Structure Plan application. The eastern part of the site is subject to future planning.

The Structure Plan Area is identified by the red boundary presented below in Figure 1. The Structure Plan Area is described within this report as the Site.

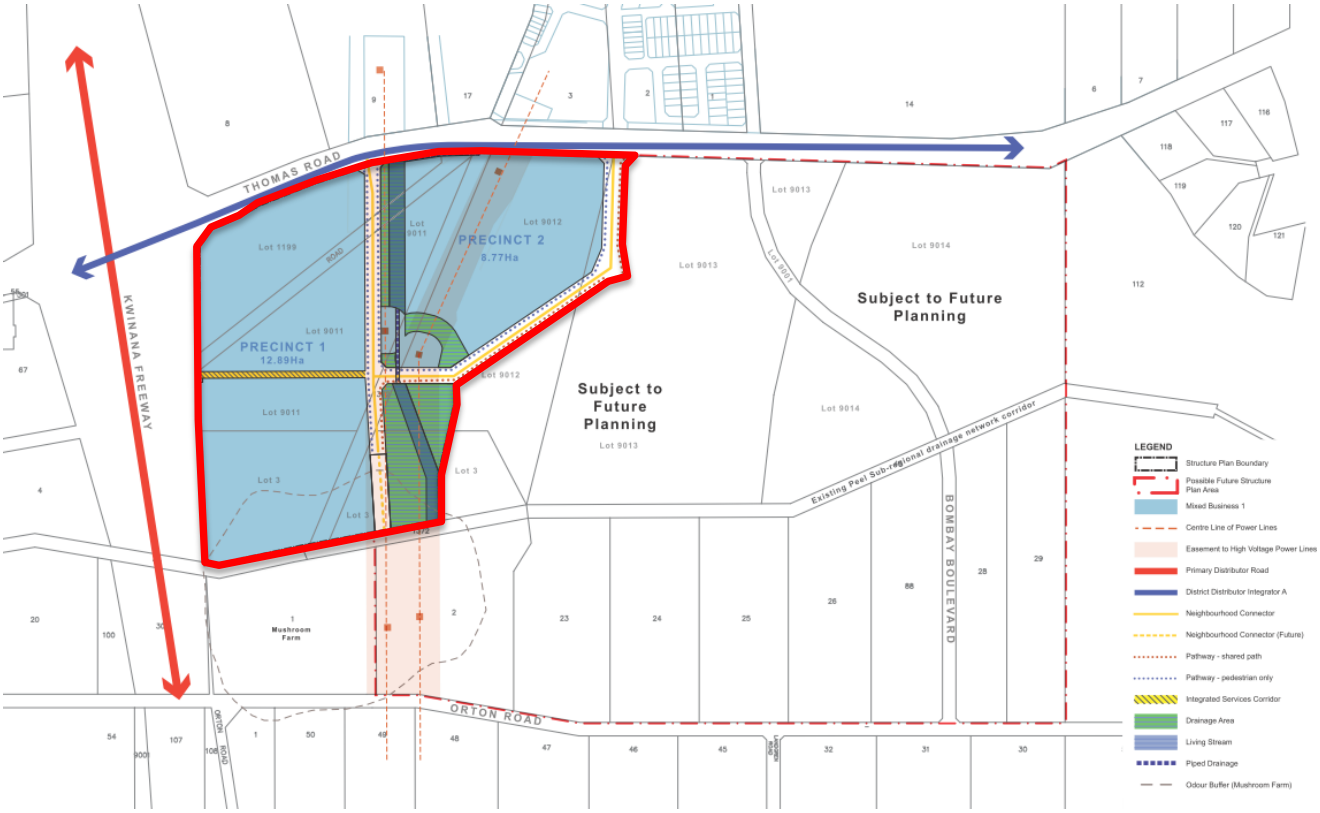

Figure 1 – Structure Plan Area (TPG 2018)

Development of the Site will require a coordinated approach. Service constraints to the Site are outlined in this report.

2. SITE DESCRIPTION

The Site is approximately 34.6 hectares in area, located 31km south of the Perth CBD and is within the City of Kwinana.

The Site is bound by Thomas Road to the north, the balance of Aigle Royal's landholding to the east, Kwinana Freeway to the west and existing rural properties to the south as presented in Figure 2 below.

Figure 2 – Aerial Photography (Spookfish 2017)

2.1 Planning Background

The Site is zoned 'Urban' under the Metropolitan Region Scheme (MRS) and 'Development' under the City of Kwinana's (CoK) Town Planning Scheme No. 2. The MRS zoning is identified in Figure 3 below.

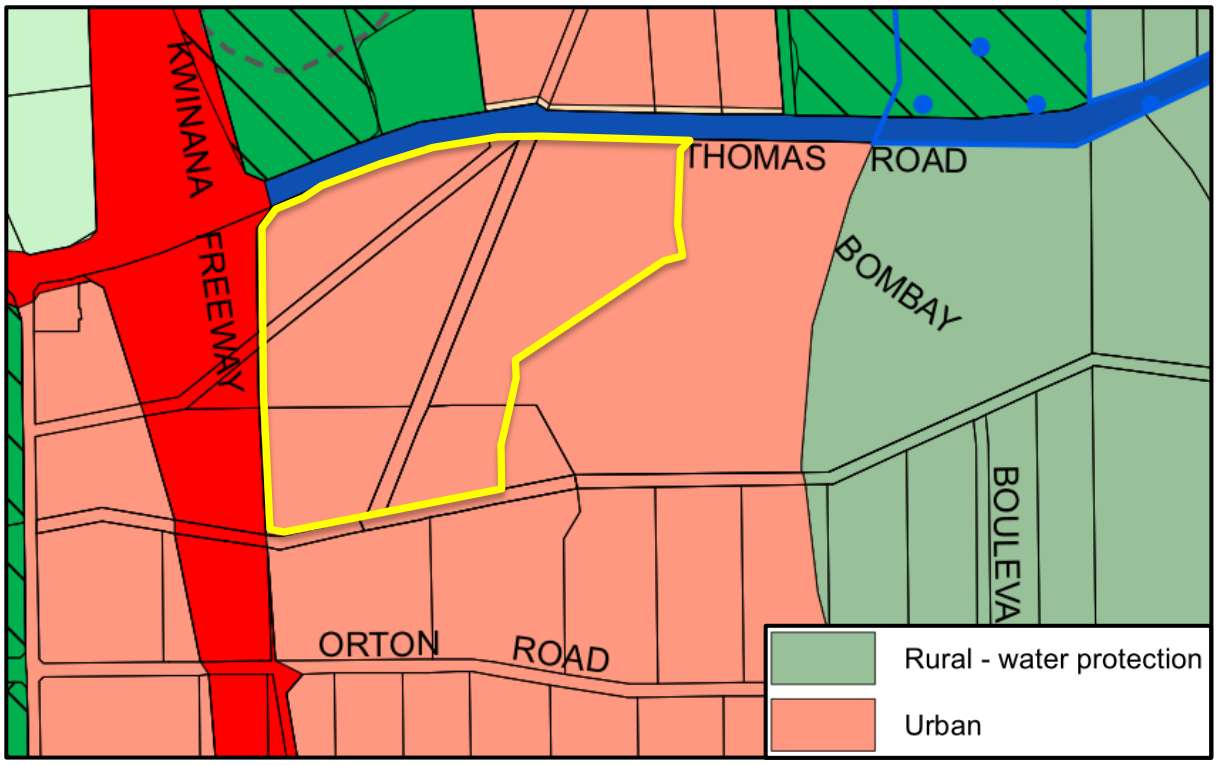

Figure 3 - Site Zoning (MRS)

The Site is located within proposed Development Contribution Plan areas. These include:

- Development Contribution Area for Community Infrastructure (DCA10 Casuarina/ Anketell), and
- Development Contribution Area for Standard Infrastructure (DCA3 Casuarina).

Both of these documents were released as drafts for public comment on 16th October 2015 and are yet to be finalised.

2.2 Existing Reserves/Easements

The Site contains four existing reserves/easements that will require consideration during development.

The first is a 25m wide reserve for the Water Corporation's open main drain that traverses the Site from Thomas Road towards Orton Road.

The second is a 20m wide combined service reserve containing gas and power infrastructure, traversing the Site from the Freeway Reserve north east to Thomas Road.

The other two easements are for Western Power Transmission lines and are detailed further in Section 0.

2.3 Geology and Landform

The Geological Survey of Western Australia Perth Metropolitan Region Soils Maps indicates that the majority of the Site is generally characterised by a thin veneer of Bassendean sand over Guildford Formation (S_{10}) with a small portion of the Site to the west consisting of Bassendean Sand (S_8). Both these soil types are generally well suited to urbanisation.

Figure 4 below presents the geology across the Site.

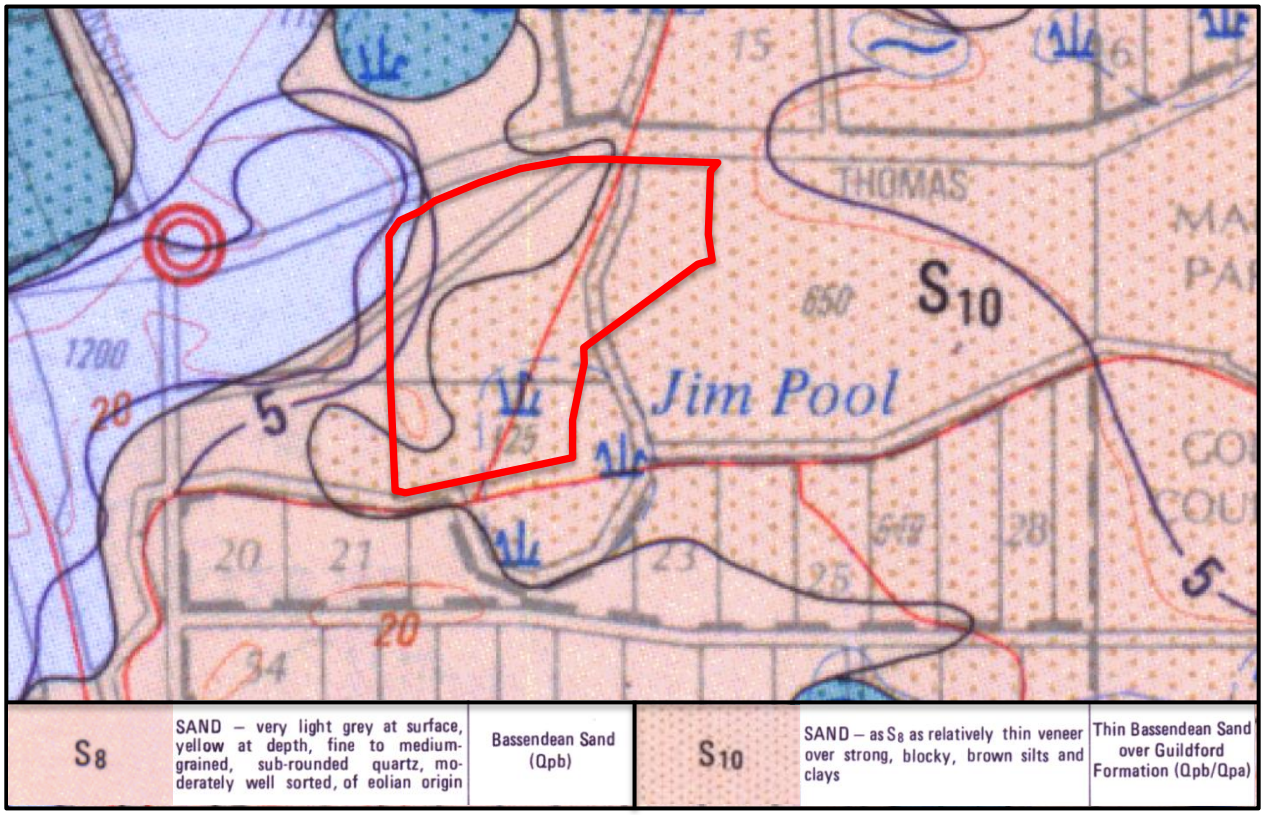

Figure 4 - Geotechnical Information (Geological Survey of WA)

Based on level information from Department of Water and Environmental Regulation (DWER) topographical contours, the Site natural surface levels vary from RL 14m AHD to RL 20m AHD, although much of the Site is gently graded, particularly to the east. The western half of the Site has mounds that peak at RL 19m AHD and RL 20m AHD, and an open channel drain traversing the Site at RL 14-15m AHD. This is presented below in Figure 5.

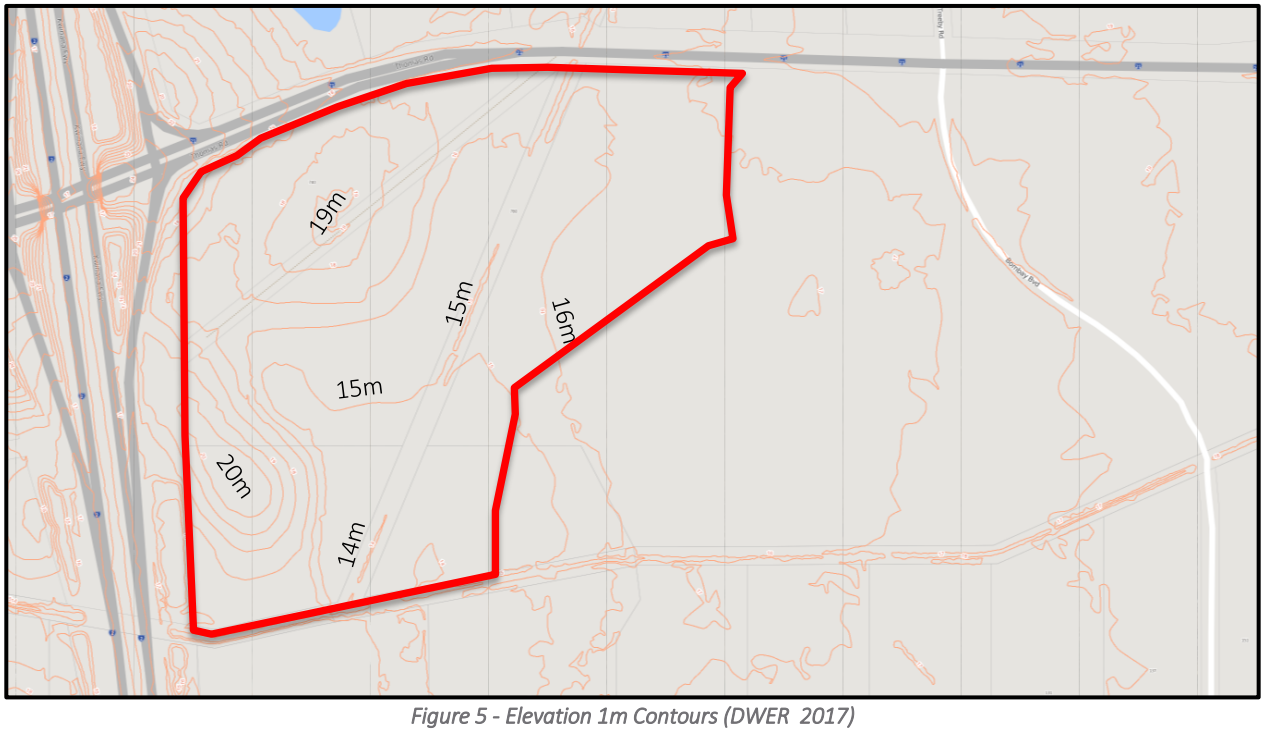

Figure 5 - Elevation 1m Contours (DWER 2017)

2.4 Groundwater

A desk top review of the DWER's Perth Groundwater Map indicates that the Average Annual Maximum Groundwater Levels (AAMGLs) ranges from RL12-13m AHD at the north western corner of the site to RL15-16m AHD at the eastern boundary of the Site. This is presented in Figure 6 below.

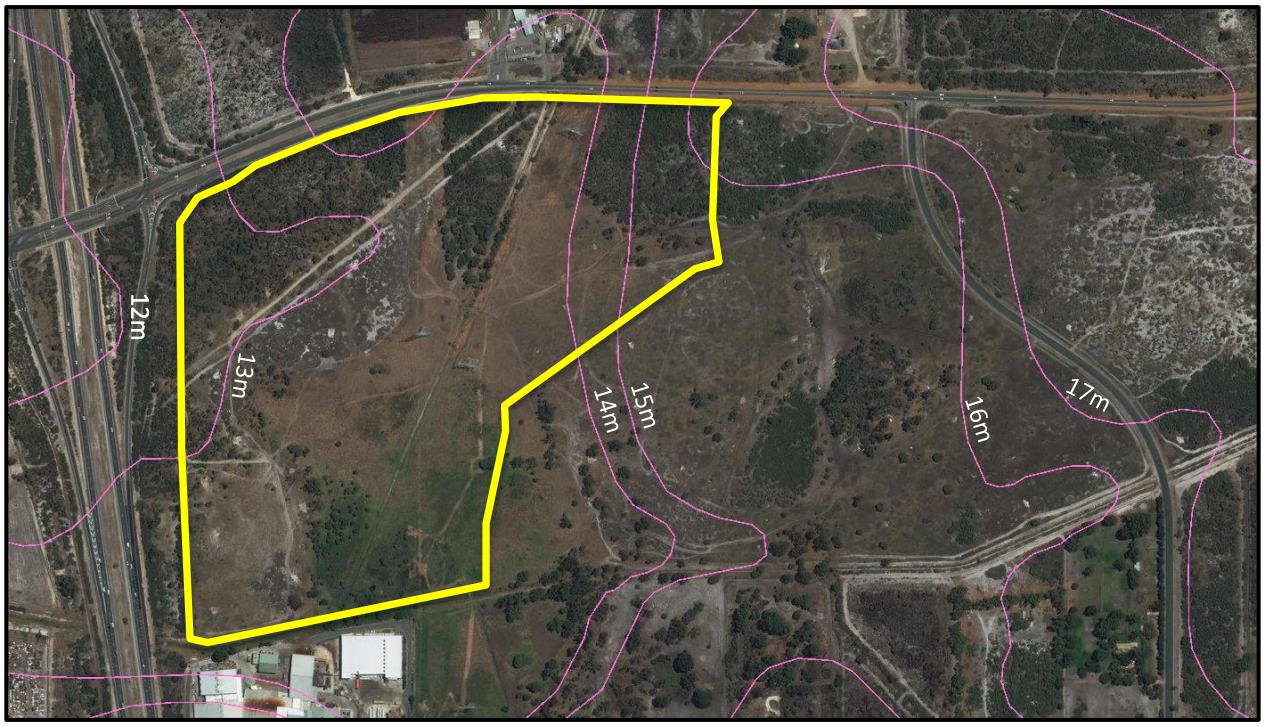

Figure 6 - Average Annual Maximum Ground Water Level (DWER 2017)

2.5 Geotechnical investigation

CMW Geosciences carried out a geotechnical investigation of the site for a previous owner in 2014 and provided a report entitled "*Geotechnical Investigation Report, Lots 3, 650, and 1199 Thomas Road, Casuarina*", dated 24 October 2014.

Based on the investigation results, the subsurface profile varies across the site, but generally comprises topsoil overlying Tamala Sand, Bassendean Sand and the clayey sands of the Guildford Formation. It is important to note that the eastern part the site (east of the Peel Sub P Drain) contains between approximately 0.5 m and 2.5 m of very loose to loose sand.

The site is considered suitable for the proposed development subject to the recommendations which are provided in the report and summarised as follows:

- Site classifications ranging from Class A to Class M (AS2870);
- Earthworks comprising topsoil stripping, proof rolling and compaction of sand fill in layers must be carried out in accordance with AS3798;
- Mucking out and backfilling of the existing drain must be carried out in accordance with AS3798;
- A design subgrade CBR value of 10% to 12% for the sandy soils and 5% to 8% for the clayey sands across the site is considered suitable;
- Low lying ground in the southwest is not considered suitable for in situ soakage systems due to the clayey sand soils and the presence of a high groundwater table. However, for the balance of the site a preliminary coefficient of permeability of 2 m/day to 4 m/day for concept design is recommended;

- A site subsoil class of Ce (shallow soil site) to AS1170.4 is recommended for seismic design purposes; and
- Potential Acid Sulphate Soils (ASS) encountered during the investigation be investigated further following the development of the bulk earthworks and civil design plans.

Douglas Partners were engaged in March 2016 to review the CMW report, and consequently provided advice as to areas of the site which need further geotechnical investigation, and on methods for compaction of loose sand.

2.6 Acid Sulphate Soils

A desk top review of the Department of Environment and Conservation's ASS Risk Map for the South Metropolitan Region for potential for acid sulphates soils (ASS) indicates the entire Site is generally classified as having moderate to low risk of ASS potentially occurring within 3m of the natural soil surface.

Given the risk rating, it is recommended further testing is undertaken to determine the presence of ASS on the Site by a suitably qualified environmental consultant.

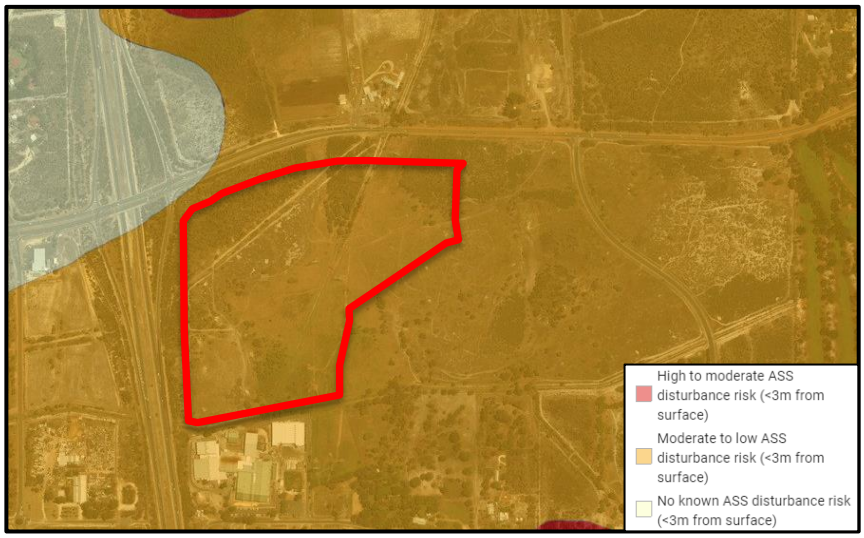

Figure 7: Acid Sulfate Soil Risk Map (DWER 2017)

2.7 Landscape

2.7.1 Geomorphic Wetlands

The Site contains a portion of native vegetation in the north west corner of the Site.

Figure 8 shows the Geomorphic Wetlands contained on the Site. The majority of the site is identified as Multiple Use with an area of Resource Enhancement to the east.

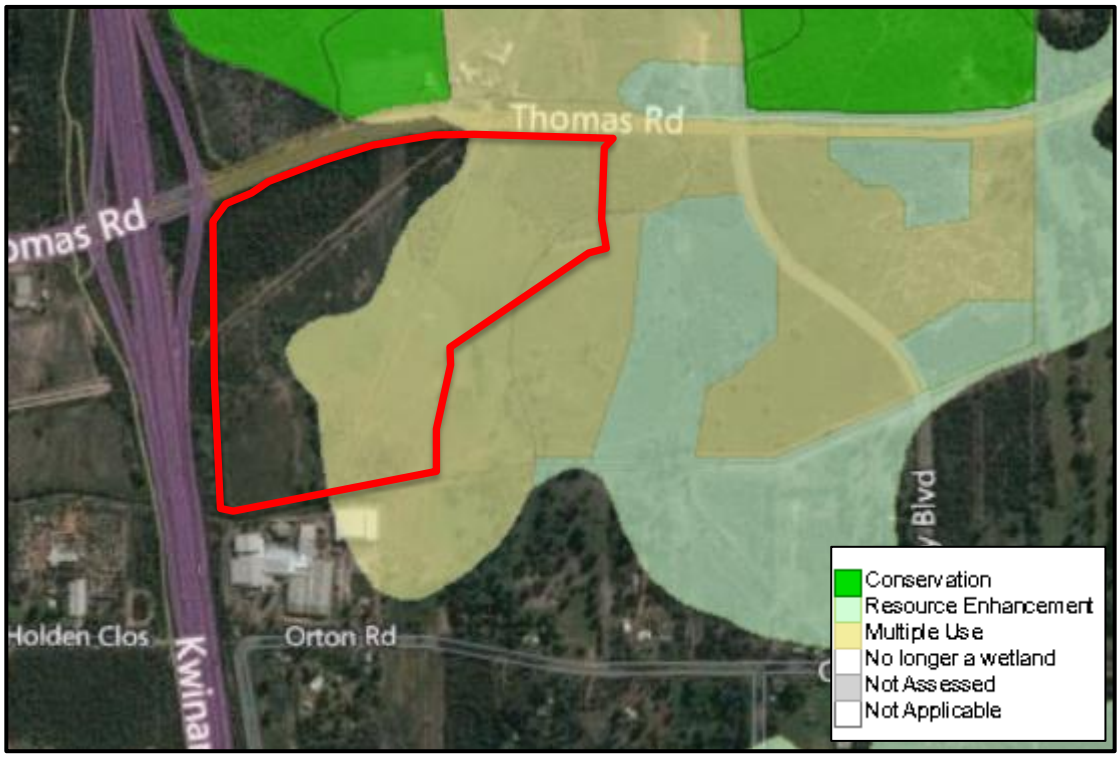

Figure 8 - Areas of Geomorphic Wetlands (DPAW 2017)

3. EARTHWORKS

Prior to a preliminary earthworks model being prepared, CW can only make general assumptions about the earthworks strategy.

It is anticipated that the low lying areas to the south west, the existing resource enhancement wetlands, and the minimal clearance to groundwater levels will dictate the design earthworks levels across the Site. As such, it is likely that imported fill will be required to achieve minimum clearances to groundwater although some fill may be able to be sourced from the higher western areas of the site.

The magnitude of import fill will need to be confirmed following an earthworks model being prepared, and confirmation from the developer of the desired site classification.

4. ROADWORKS & FOOTPATHS

All newly created roads, drainage and footpaths will need to be designed and constructed to the satisfaction of the City of Kwinana. Upgrading works along Thomas Road will need to be approved by Main Roads WA.

4.1 Thomas Road

The MRS identifies Thomas Road as a 'blue' road (Other Regional Road) and will therefore be subject to Main Roads WA approvals.

Within City of Kwinana's draft Developer Contribution Plan No.3 report for Casuarina/ Anketell, Thomas Road is classified as a District Distributor A Road. It is currently constructed as a single carriageway road in the vicinity of the Site and is required to be upgraded to a dual carriageway with a four way roundabout intersection and three other left-in, left out access points. The draft report also indicates that both Thomas Road and Mortimer Road to the south will be subject of development contributions to cover the costs of these roads where they adjoin Development Area 3. Costs are proposed to be shared on the basis of proportional land area.

Timing of the development of the Site will dictate the size and layout of the intersection that will provide the Site with its primary access off Thomas Road. If development of the Site proceeds prior to the Thomas Road upgrade, the developer will likely be required to construct a temporary or interim roundabout to provide the Site with access. If development follows the Thomas Road upgrade, it is assumed the ultimate intersection will have been constructed.

4.2 Bombay Boulevard

Bombay Boulevard is a rural-style private road outside the Site that currently provides access for a small number of properties in the area, with the majority of the traffic stemming from Casuarina Prison staff and visitors travelling from the Kwinana Freeway. Bombay Boulevard is constructed within private land and not within a road reserve.

4.3 Other Infrastructure

The Water Corporation's open cut main drain will need to be retained or realigned. Road crossings across the drain would need to ensure the predevelopment flows are catered for adequately.

It is anticipated that due to the close proximity of the Site to Kwinana Freeway, a noise wall may be required along the western boundary. However, due to the proposed land use being for commercial development, this may not be necessary. A suitable qualified acoustic engineer should be engaged during detailed design.

5. DRAINAGE

The Site is located within the Jandakot Drainage and Water Management Plan for the Peel Main Drain Catchment. The "Peel Sub P Drain" is a Water Corporation open cut main drain that flows through the Site within a 20m wide reserve.

A Local Water Management Strategy (LWMS) for the Structure Plan Area is being prepared simultaneously with this report, and as such, the generic advice below may change to accord with the LWMS.

Stormwater runoff from the Site will be collected and conveyed via a combination of open swale and piped drainage network prior to discharge into the "Peel Sub P Drain". Modifications to the drain, such as reshaping and landscaping for aesthetic appeal, will need to ensure that the capacity of the drain to convey large storm events from upstream is maintained to pre-development conditions. This will need to be confirmed by the hydrologist preparing the LWMS.

Prior to entering the main drain, stormwater flows will need to be compensated to reduce the peak outflow discharge rate. Also, stormwater quality should be improved through the adoption of 'Best Management Practices' which promote the disposal of runoff via water pollution control facilities, including vegetated swales, basins and gross pollutant traps and the implementation of non-structural source controls, including street sweeping, community education and low fertiliser landscaping regimes.

The Structure Plan provides areas for drainage either side of the main drain, to facilitate discharge attenuation and environmental requirements.

Within allotments, soakwells should be constructed when properties are developed to contain stormwater runoff generated from new buildings and hardstand areas. Drainage from newly created public roads would be collected via conventional gullies or open swales depending on the nature of the adjacent land uses, grades and the extent of traffic and pedestrian activity.

A condition of subdivision for the Site will be the preparation and approval of an Urban Water Management Plan (UWMP) prior to the commencement of development.

6. WATER RETICULATION

The Water Corporation has advised that preliminary water reticulation planning for the site has been undertaken and is attached as Appendix A. There is an existing DN250 water pipeline recently constructed from Johnson Road through the northern part of the Site which supplies the Treeby Park development north of Thomas Road. The existing DN250 water pipeline can also provide water supply to the Site.

The DN250 water pipeline traverses through future Precinct 1 within an unmade road reserve along with power and gas services, and therefore it may be preferable to realign the road reserve and services to provide better utilization of Precinct 1. A possible realignment for the services and road reserve is along the southern boundary of lot 9011.

Ultimately, the DN250 water pipeline will extend south along Bombay Boulevard and connect onto a future distribution main on Orton Road. Planning information provided in Appendix A indicates a DN500 steel main along Orton Road. Water Corporation has advised the sizing, timing and staging of the distribution main has yet to be determined and will depend on the demand for water supply following the development of nearby land.

For the water reticulation network to have the capacity to service the ultimate demand of the Site, it is possible that the distribution main on Orton Road will need to be constructed. Although not included on the Water Corporation Capital Investment Program (CIP), it is likely the Water Corporation will fund this infrastructure through the CIP. However, this would need to be confirmed with Water Corporation closer to the time development takes place.

Supply of potable water to the Site for the initial stages of development, and potentially the entirety of the development, can be achieved by constructing smaller reticulation sized mains that feed off the existing DN250 pipeline within the site and Thomas Road.

7. SEWER RETICULATION

Water Corporation's wastewater planning strategy for the area is attached as Appendix B. The Site's sewer strategy will involve grading into the future Kwinana Type 90 Wastewater Pump Station (WWPS) 'L' which is planned to be located 100m south of the Site.

WWPS 'L' will pump wastewater via a pressure main to Orton Road and head west before eventually discharging into a gravity sewer manhole on Datchet Turn. The pressure main route is 1,700m long and will require boring in several locations to minimize disturbance in existing suburban areas.

The pressure main and WWPS 'L' are not currently on the Water Corporation's CIP. The developer will need to apply to have WWPS 'L' placed on the CIP in the early stages of planning during Water Corporation's yearly review of the CIP.

Proceeding with development of the Site prior to the inclusion of WWPS 'L' on the CIP will result in tankering for an unknown length of time, or funding of the WWPS construction by the developer.

Based on recent sewer design (November 2016) undertaken north of Thomas Road, it appears part of the Site along Thomas Road may be gravity fed to a sewer catchment north of Thomas Road. Refer Urbanise Plan in Appendix B.

8. POWER

8.1 Western Power Transmission Lines

There are two 330kV high voltage overhead transmission lines traversing the Site that contain 30m easements either side of the centre of the tower. Refer Figure 9 below. Where the alignments of the transmission lines become parallel, the easement width becomes 110m total, including 30m either side of both lines. A large portion of the easement contains the existing Water Corporation open cut main drain, conveniently allowing for an overlap in land use, and influencing where a majority of the site's POS may be located.

The project team met with Western Power Transmission team on 23rd October 2017 to discuss the draft Structure Plan which was issued to Western Power prior to the meeting. Western Power indicated their objectives in assessing development within their easements included:

1. **Access** for maintenance of WP assets needs to be provided, particularly access to transmission towers;
2. **Safety** of the public is a priority. Clearances to conductors will also need to be checked with respect to possible encroachments caused by the development (eg road crossings). An Earth Potential Rise (EPR) study will also be required at subdivision stage.
3. **Environmental** objectives, which are to be addressed by the project team in conjunction with the Structure Planning documentation.

It is noted the Structure Plan includes a road running parallel to a transmission line, providing an environment to generate electromagnetically induced currents in parallel conductors. A Low Frequency Induction (LFI) study will need to be undertaken at subdivision stage to assess the possible generation of induced currents in metallic elements (pipes, fences etc) which run parallel to the transmission lines.

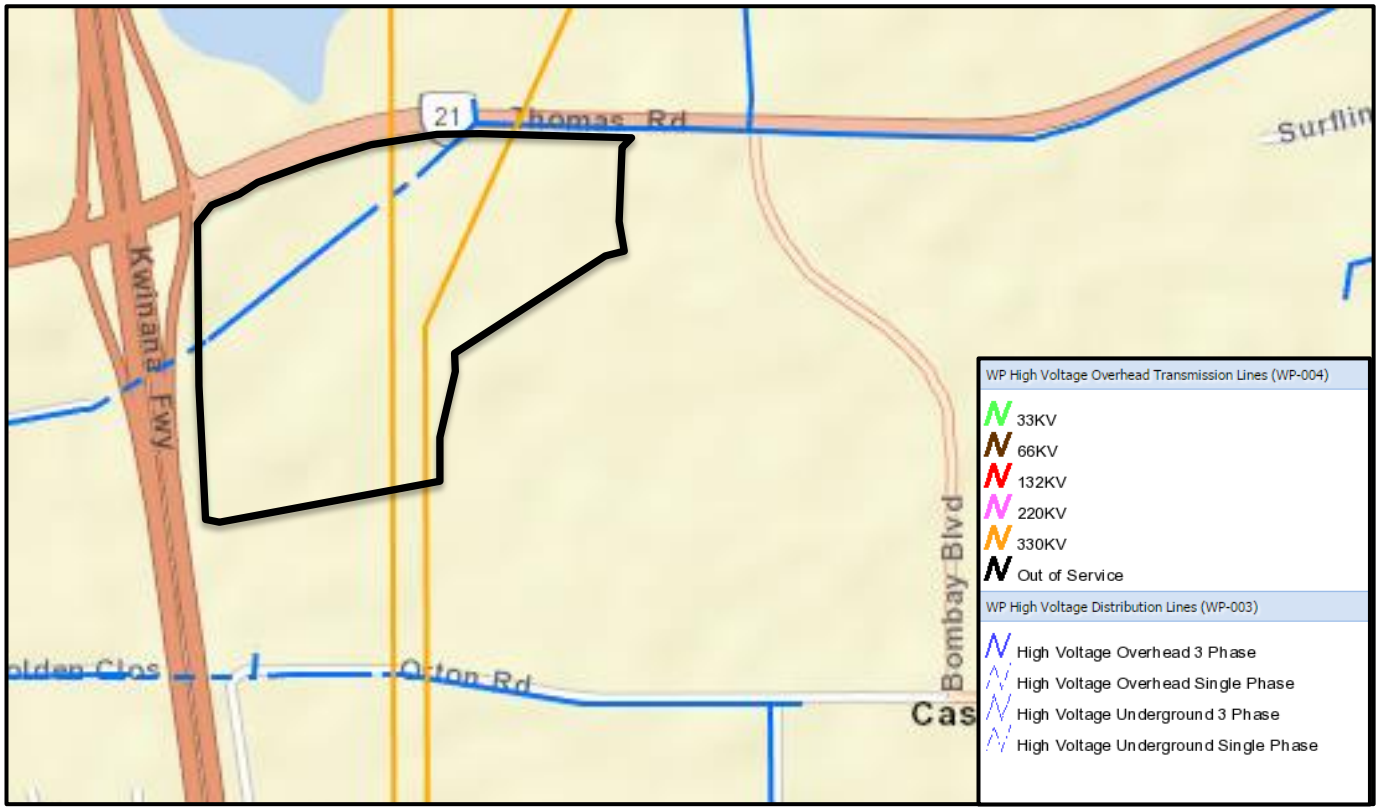

Figure 9 – Existing Overhead Power Infrastructure (Western Power 2017)

8.2 Power Supply

It is anticipated that the high voltage overhead power adjacent the Site on Thomas Road will be capable of supplying the development of the Site with power and that undergrounding the portion of overhead power adjacent the Site will be a condition of development. Refer Figure 9 above.

The existing high voltage overhead power line on Thomas Road is fed from the power infrastructure on Johnson Road west of the Freeway, which is undergrounded and enters the Site before transferring to above ground power lines approximately 135m from the northern Site boundary.

The angle of the existing combined services easement within the Site runs adjacent to an area of natural bushland offset by approximately 20m. There is an opportunity to keep the existing power alignment if the area adjacent the bushland is created as a road that runs parallel. Barring that, the power will need to be relocated within the Site before eventually connecting to its original location near the freeway reserve. As discussed in section 6, a possible realignment for the services and road reserve is along the southern boundary of lot 9011.

There is also high voltage overhead power line on Orton Road that could potentially supply the Site with power if extended up Bombay Boulevard. This option however, would require extending the power through existing roads and feature quite a significant extension distance.

9. GAS SUPPLY

There is an existing 160mm diameter PE gas main contained within an unmade road reserve extending from the Freeway reserve through the Site onto Thomas Road. Refer Figure 10 below .It is anticipated that this gas main has sufficient capacity to service the Site, as there is currently minimal demand from the development to the north of Thomas Road.

The gas main may need to be relocated within the Site, similarly to existing water and power services. As discussed in section 6, a possible realignment for the services and road reserve is along the southern boundary of lot 9011.

A proposal to relocate the existing DN160 PE gas was discussed with ATCO Gas in October 2017. There appears to be no fatal flaw in the proposed relocation. ATCO Gas will consider the proposal in detail when submitted as part of subdivision civil works.

The ultimate servicing of the Site may require infrastructure upgrades, and given it is a commercial development this infrastructure is anticipated to be at the Developer's expense, although subject to negotiation with a gas utility service provider such as ATCO.

There is an additional 80mm diameter steel gas main on Orton Road that may be extended to the Site if required.

ATCO will need to confirm the servicing strategy prior to development.

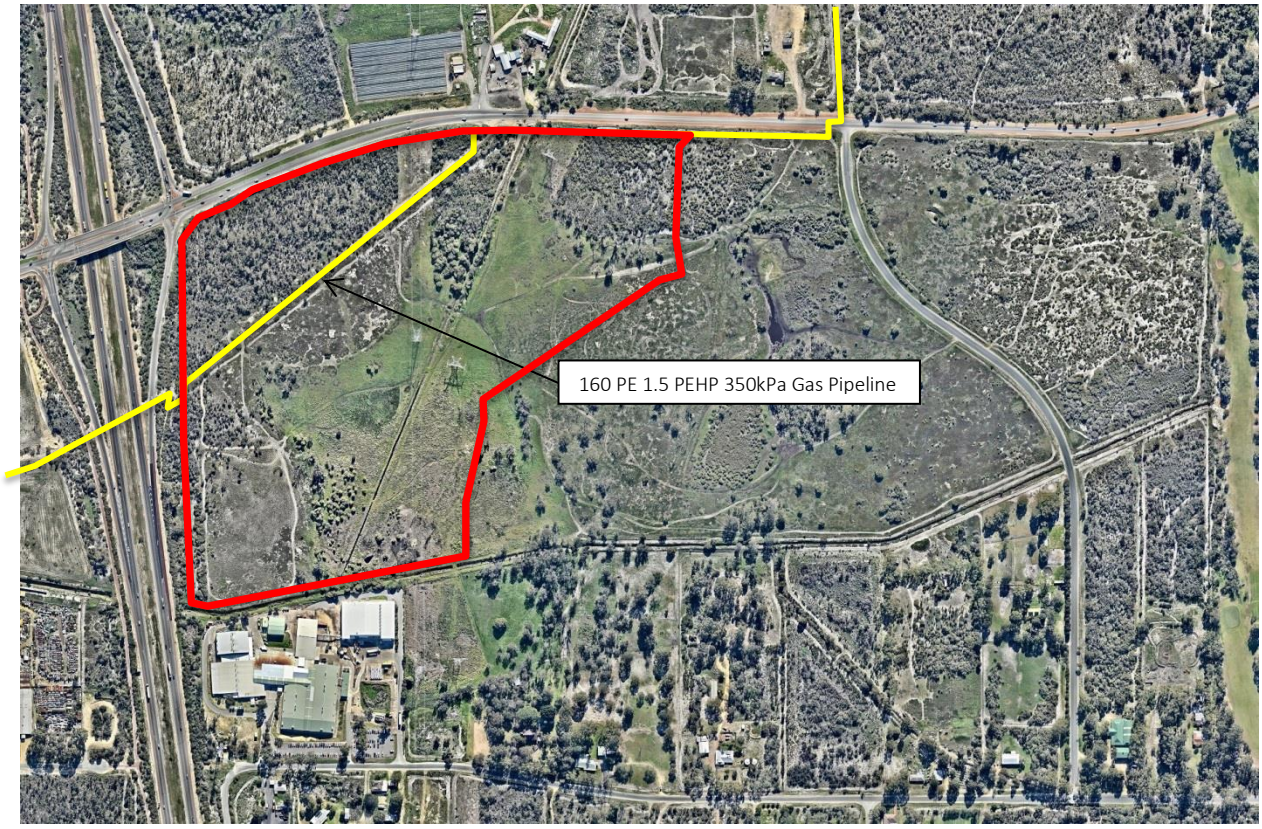

Figure 10 – Location of Existing Gas Infrastructure within the Site (ATCO Gas 2017)

10. TELECOMMUNICATIONS

NBN Co has advised that due to the size of the Structure Plan area and likelihood of density, NBN Co will be aiming to install fixed line Fibre to the Premise network. There are a number of NBN new developments along Thomas Road and cable exists in the area. An assessment of backhaul requirements can be made closer to the time of development. Backhaul charges would apply to the development in accordance with NBN Co's policy.

Alternative telecommunication providers could also be considered to service the Site.

An existing Optus cable traverses the Site in a north–south direction as shown in Figure 11 below. The cable will need to be surveyed to determine the exact location and depth. Subject to results of the survey, the cable may also need to be relocated, either vertically or horizontally or both, in close proximity with the existing alignment in order to accommodate development objectives such as site regrading, road crossings, living stream excavation and services installations.

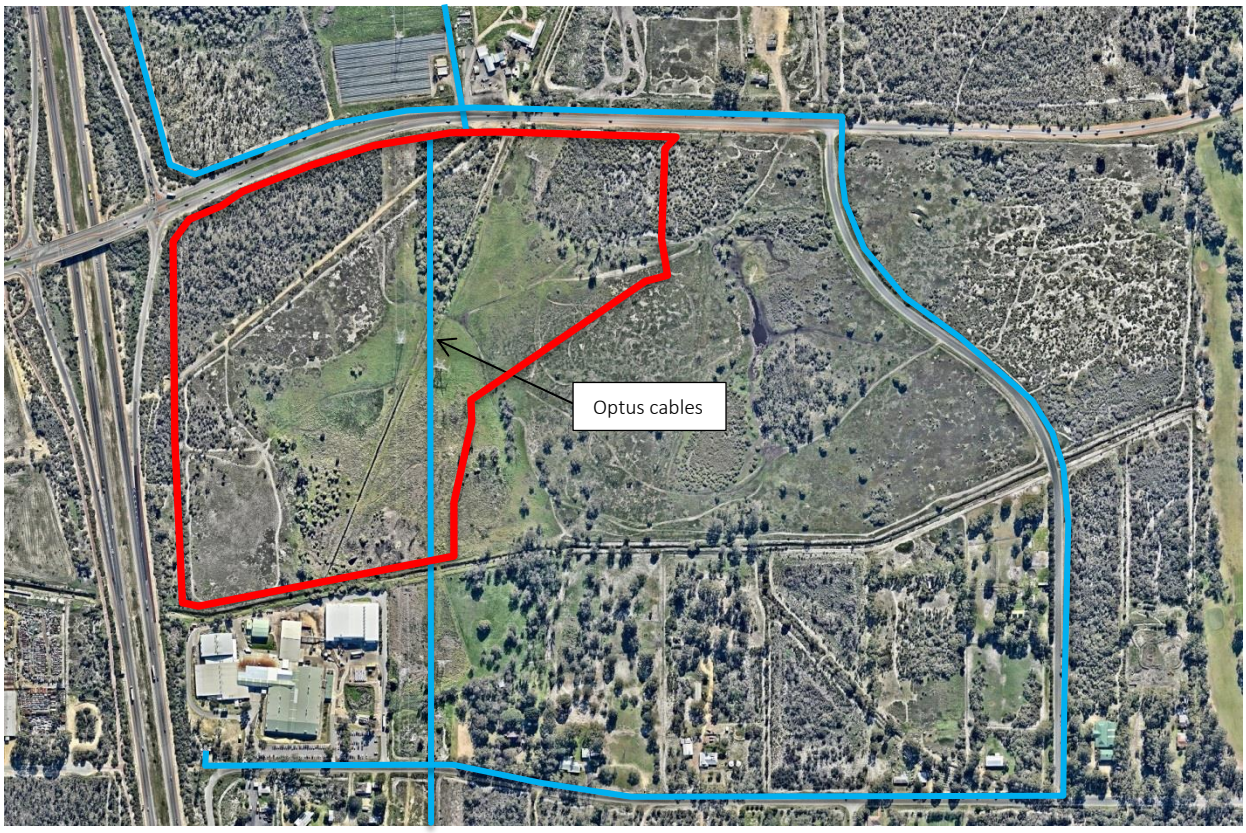

Figure 11 – Location of existing Telecommunications cables within the Site (Optus 2017)

11. REFERENCES

The following documents were referred in the preparation of this Engineering report.

- TPG Planners, December 2017, Structure Plan Lots 9011, 9012, 9013, 1199 & 3 Thomas Road, Casuarina.
- Dial Before You Dig, September 2017, Western Power existing assets.
- Dial Before You Dig, September 2017, ATCO Gas existing assets.
- Dial Before You Dig, September 2017, Telstra existing assets.
- Dial Before You Dig, September 2017, Optus existing assets.
- Dial Before You Dig, September 2017, NBN Co existing assets
- Water Corporation, August 2017, Existing Water and Drainage Infrastructure.
- Water Corporation, June 2014, *Water Corporation Wastewater Scheme Planning Sheet, Kwinana – SD042, provided by Water Corporation in September 2017*
- CMW Geosciences, *Geotechnical Investigation Report, Lots 2, 650 and 1199 Thomas Road, Casuarina,* 24 October 2014
- Douglas Partners, *Geotechnical Investigation Report Review, Lots 3, 650 and 1199 Thomas Road, Casuarina*, 11 March 2016

12. CONCLUSION

Following our preliminary investigation, the Site can be developed for urban purposes, including commercial purposes, with service planning in place to extend infrastructure to the Site.

It is recommended that further geotechnical and hydrological investigations are undertaken to confirm the existing soil conditions, groundwater levels, main drain hydrology and the likely impact on development.

From an engineering perspective, the development costs will be influenced by the quantity of import fill required, and the timing of nearby developments which may contribute to the extension of services infrastructure.

Please contact either of the parties below if you have further queries relating to this report.

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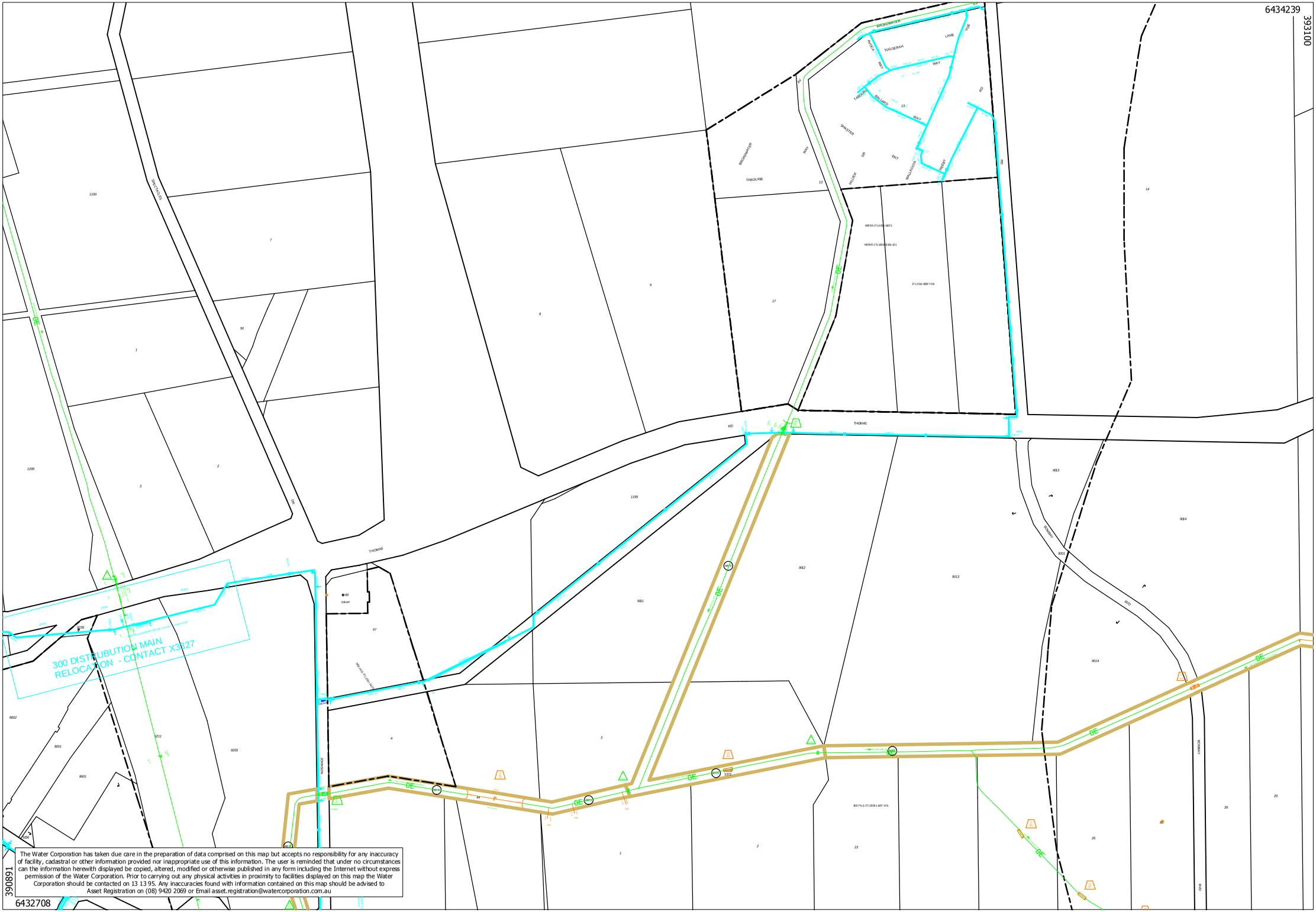
Title:	Associate	Principal Engineer
Telephone:	08 9422 5800	08 9422 5800
Email:	nathanb@cosweb.com.au	markb@cosweb.com.au

APPENDICES

APPENDIX A

Water Corporation Water Reticulation Planning



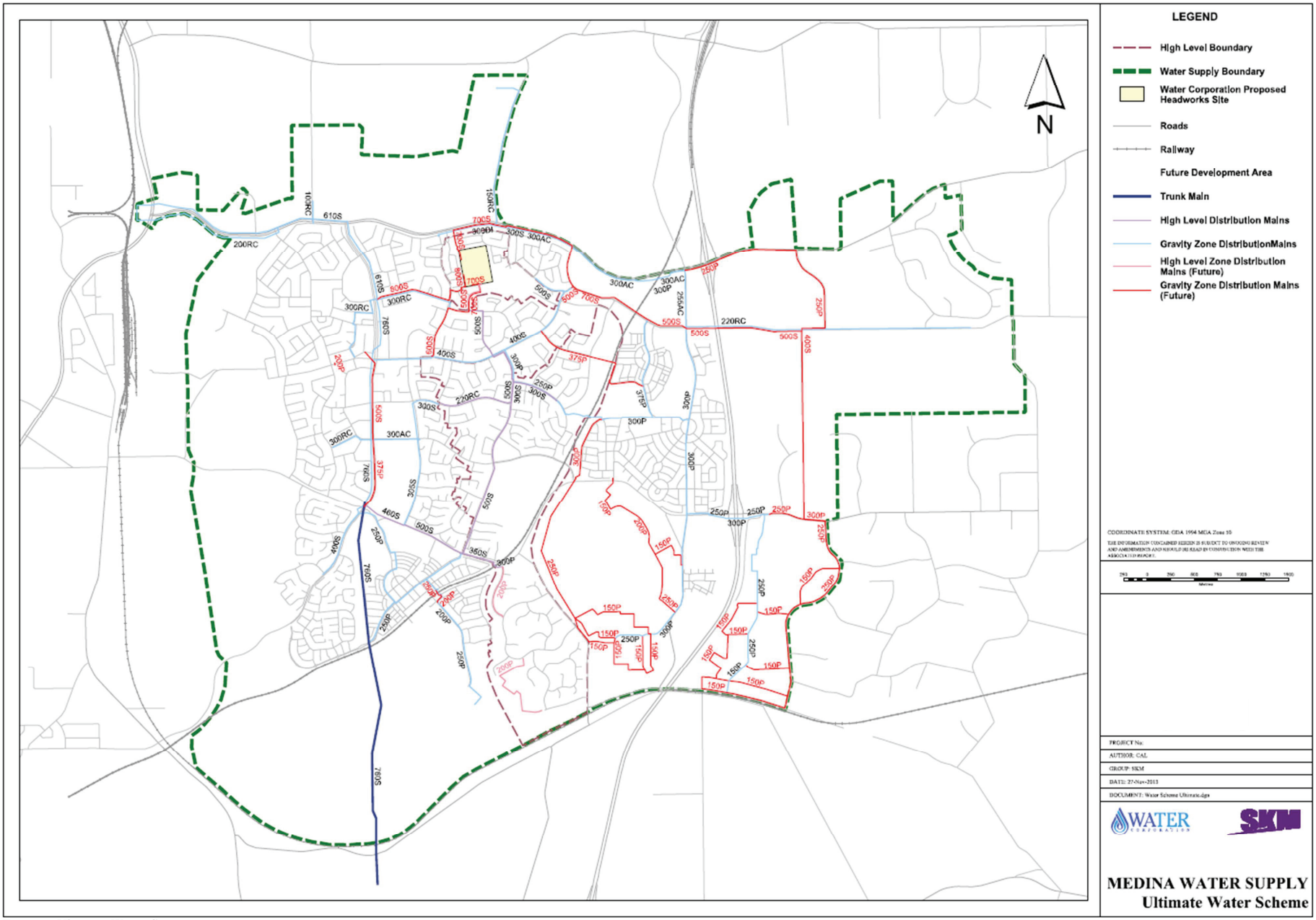
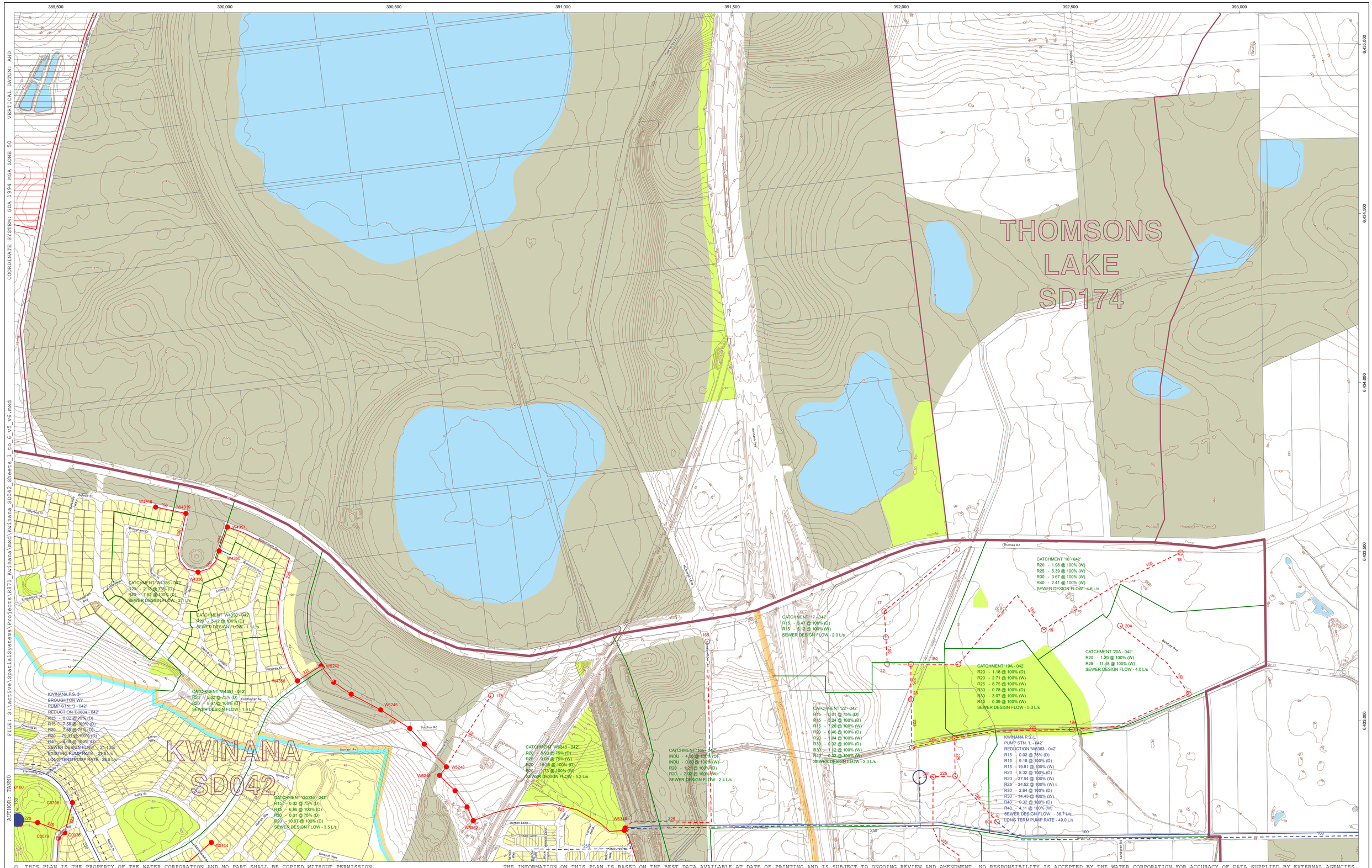


Figure 8: Ultimate Water System

APPENDIX B

Water Corporation Sewer Reticulation Planning



THE INFORMATION ON THIS PLAN IS BASED ON THE BEST DATA AVAILABLE AT DATE OF PRINTING AND IS SUBJECT TO ONGOING REVIEW AND AMENDMENT. NO RESPONSIBILITY IS ACCEPTED BY THE WATER CORPORATION FOR ACCURACY OF DATA SUPPLIED BY EXTERNAL AGENCIES.

LEGEND

- Existing Access Chamber
- Proposed Access Chamber
- Existing Vacuum Chamber
- Proposed Vacuum Chamber
- Existing Pump Station
- Proposed Pump Station
- Existing Gravity Sewer
- Proposed Gravity Sewer
- Existing Vacuum Sewer
- Proposed Vacuum Sewer
- Existing Pressure Main
- Proposed Pressure Main
- Node Catchment
- PS and Sewer Catchments
- Sewer District / WWTP Catchment
- Existing Sewered Areas
- Sewered By Private PS
- Parks and Public Open Space
- Bush Forever
- Cut / Fill
- Floodway / Flood Fringe
- Flood Plain

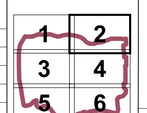
NOTATION

SEWER DISTRICT NUMBER
CATCHMENT NODE
CATCHMENT '7001 - 121'
R15 - 108.4 @75% (W)
'R' CODE ZONING
GROSS AREA (ha)
% OF LAND DEVELOPMENT
(W) - WET CONDITIONS
(D) - DRY CONDITIONS

0 100 200 300 400 500 Metres

DATE	REVISION DESCRIPTION	DRN	APPD
06/14	Added new pumpstation catchment 'O', updated landuse plan, boundary file	LG	TZ
09/13	Portion of Kwinana sewer district now flowing into Thomsons Lake interim PS. Model updated.	LG	TZ
05/13	Land use plan updated	LG	TZ

SHEET INDEX



N

AQUA No. 6578329
AQUA VERSION 6

WATER CORPORATION

ISSUED WITH THE AUTHORITY OF THE MANAGER INFRASTRUCTURE PLANNING BRANCH

629 NEWCASTLE STREET, LEEDERVILLE 6007
WESTERN AUSTRALIA.

TELEPHONE (08) 9420 2420, FAX (08) 9420 3179

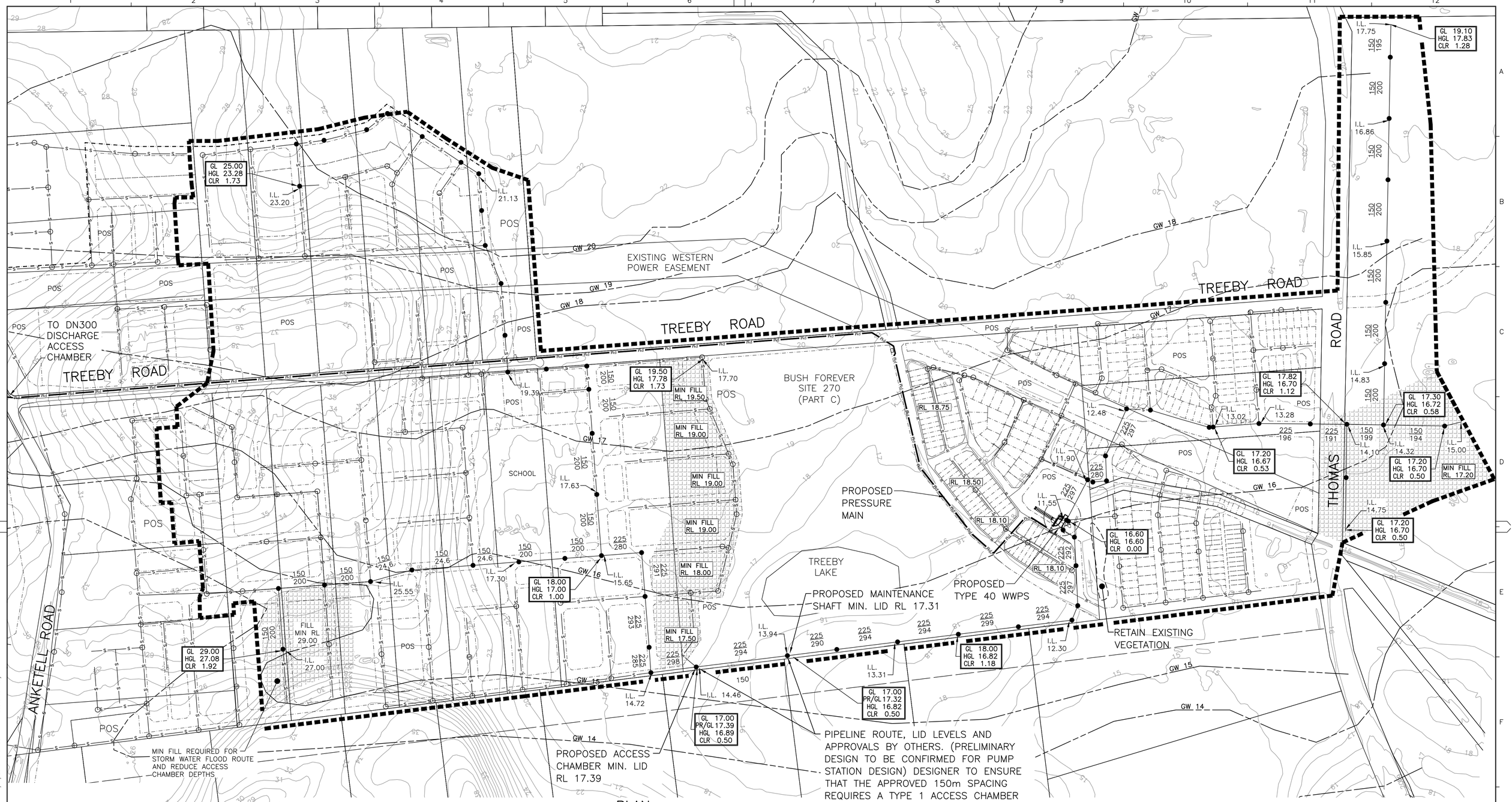
WASTEWATER SCHEME PLANNING SERIES

KWINANA - SD042

CONCEPTUAL PLANNING
LONG TERM SCHEME - Sheet 2 of 6

PLANNING BY	COMPILED BY	ACCEPTED BY
K. AYDOGAN	K. AYDOGAN	T. ZHENG
SCALE: 1:5,000	FULL REVIEW: NOVEMBER 2012	FILE NO.: JT1 2012 11441 V01

A1



PLAN

SCALE (1)

LEGEND

- CATCHMENT AREA BOUNDARY
- PROPOSED CONTROL GRAVITY SEWER MAIN PATH
- PROPOSED / FUTURE GRAVITY SEWER & ACCESS CHAMBERS
- PROPOSED PRESSURE MAIN
- 13.0 EXISTING/DESIGN CONTOURS
- GW 20 AAMGL CONTOURS
- AREA OF MINIMUM FILL REQUIRED
- EMERGENCY OVERFLOW HYDRAULIC GRADE LINE
- GL X.XX — DENOTED EXISTING GROUND LEVEL (GL)
- PR/GL X.XX — DENOTED PROPOSED GROUND LEVEL (USE EXISTING IF NOT DEFINED)
- HGL X.XX — DENOTES CALCULATED HYDRAULIC LEVEL (HGL)
- CLR X.XX — DENOTES CLEARANCE BETWEEN GL & HGL

REFERENCE DRAWINGS

CATCHMENT PLAN – DESIGN DATA AND FLOWS MC34–1–1

NOTES

1. LOCAL AUTHORITY : CITY OF KWINANA
2. ESTIMATED GROUND WATER LEVEL: REFER AAMGL CONTOURS
3. EXISTING SURFACE LEVELS DETERMINED FROM DOLA AND WATER CORPORATION INFORMATION. SUBJECT TO FUTURE SURVEY AND PRELIMINARY DESIGN.
4. ALL PIPE SIZES IN MILLIMETRES (DIA 150 U.N.O.). ALL DISTANCES AND LEVELS IN METRES.
5. CADASTRAL BOUNDARIES DERIVED FROM EXISTING BOUNDARIES AND PLANNERS INFORMATION WHICH MAY BE SUBJECT TO FURTHER CHANGES.
6. FINIAL GROUND LEVELS ARE UNDERSTOOD TO NOT VARY SIGNIFICANTLY FROM EXISTING
7. 1 IN 100 YEAR LEVEL AROUND PUMP SITE IS 17.05
8. ALL DESIGN MIN. LEVELS TO BE 1.2m ABOVE GROUND WATER LEVEL (U.N.O.)
9. LIDS ABOVE EXISTING GROUND LEVELS WITHIN THE FIRE BREAK SHALL HAVE 1.5m SURROUND LEVEL WITH THE LID, THEN BATTERED AT 1 IN 10 TO EXISTING GROUND LEVEL.

(1) 30 15 0 30 60 90 120 150 180 210 m
(SCALE 1:3000 – A1 SHEET)
(SCALE 1:6000 – A3 SHEET)

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URBANISE WA - REVISION RECORD REF# URB0347

No	DATE	DRAFTING CHECK	DESIGN REVIEW	REV'D P.MGR	APP'D P.DIR	AMENDMENT
A2	16/11/16	SAK	RR	RR	PA	PROJECT NAME AMENDED
A1	15/08/16	SAK	RR	RR	PA	ISSUED FOR DETAIL DESIGN REVIEW

ISSUE	DATE	GRID	REVISION	DRN	REC	APPD

DESIGN SURVEY NONE | VERTICAL DATUM AHD | COORDINATE SYS MGA94–50 | DES REF | DES CALC R.REVY | DES CHD P.ALEBAKIS | DRN P.ALEBAKIS | Q.C. CHD S.KENNEDY

NORTH POINT

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210/396 Scarborough Beach Road, Osborne Park, WA 6017
Phone : (08) 9202 8700
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Web : www.urbanise.net.au

RECOMMENDED 17/11/2016 R.REVY CONSULTANT PROJECT MANAGER

APPROVED 17/11/2016 P.ALEBAKIS CONSULTANT PROJECT DIRECTOR

WATER CORPORATION

METROPOLITAN WASTEWATER WAPC 148358
THOMSONS LAKE PUMPING STATION No.174–04 – MIRANDA WAY & PM
CATCHMENT PLAN
SEWER LEVELS AND HGL PLAN

FILE JT1 2015 07601 V01 | PLAN MC34–1–2 | CAD | ISSUE A | ORIGINAL SHEET SIZE A1
PROJECT C–S01026 | MF

G:\Projects\URB0347 – Anketell WWPS\Deliverables\DWG – Detail Design\MC34–1–2 17/11/2016 10:31:50 AM Scott Kennedy

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810

PROJECTS\URB0347 – ANKETELL WWPS\DELIVERABLES\DWG\MC34–085–002–01A 29/07/2016

Appendix E

Traffic Assessment

Lots 9011, 9012, 9013, 1199 & 3 Thomas Road, Casuarina

Transport Impact Assessment

PREPARED FOR:
Aigle Royal

May 2018

Document history and status

Author	Revision	Approved by	Date approved	Revision type
M Rasouli	r01		29/08/2017	Draft
M Rasouli	r01a	B Bordbar	20/12/2017	Final
M Rasouli	r01a		10/05/2018	Revised Final

File name: t17.145mr01b

Author: Mohammad Rasouli

Project manager: Mohammad Rasouli

Client: Aigle Royal

Project: Lots 9011, 9012, 9013, 1199 & 3 Thomas Road, Casuarina

Document revision: r01b

Project number: t17.145

TABLE OF CONTENTS

REPORT FIGURES

REPORT TABLES

1.0 Introduction and Background

Transcore Pty Ltd has been commissioned by Aigle Royal to prepare a Transport Impact Assessment (TIA) report for the proposed Local Structure Plan (LSP) which covers Lots 9011, 9012, 9013, 1199 & 3 Thomas Road, Casuarina.

This report provides an overview of the movement network for the service commercial developments in the proposed LSP area. The future traffic volumes anticipated within the LSP are estimated through transport modelling and traffic analysis and the results are documented with recommendations for an appropriate road hierarchy, pedestrian and cyclist networks and future bus services.

For the purpose of this report Transcore's strategic EMME transport model for the area is utilised. The model incorporates the latest land use data for the subject site, Wandi and Anketell LSPs in order to consider all the traffic volumes in the area.

The subject site is located at the south-east corner of Thomas Road and Kwinana Freeway interchange. **Figure 1** shows the location of the subject site in relation to the different zonings and reservations of the Metropolitan Region Scheme (MRS).

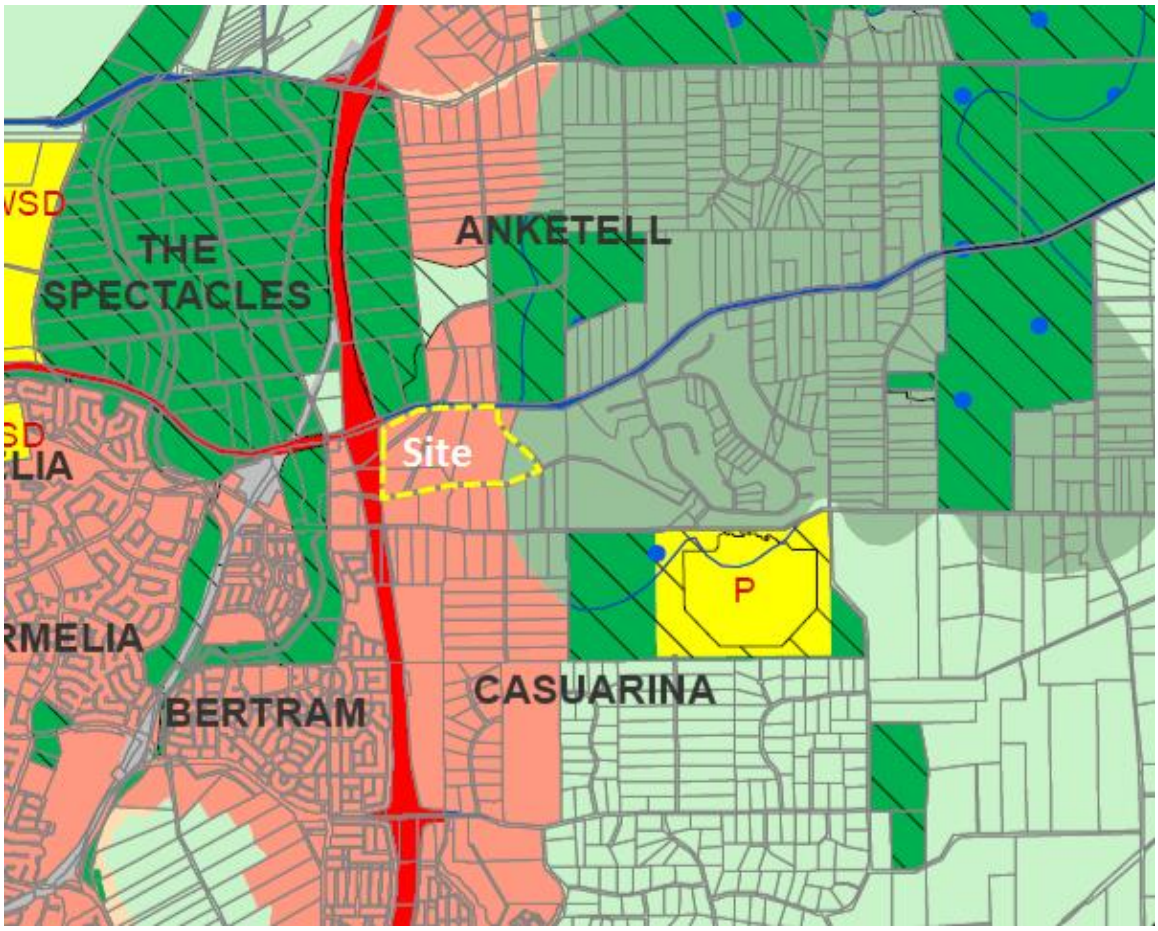


Figure 1: Location of the Subject Site

2.0 Proposed Local Structure Plan

The proposed Local Structure Plan is shown in **Figure 2.** This plan also shows the area to the east of the LSP area which is subject to future planning. The anticipated land uses within the LSP area are large format retail. The LSP includes 2 precincts:

- Precinct 1: 15.33 ha; and,
- Precinct 2: 7. 5ha.

The road network of the proposed LSP includes a connection to the main north-south spine road to the east and one direct connection to Thomas Road to the north.

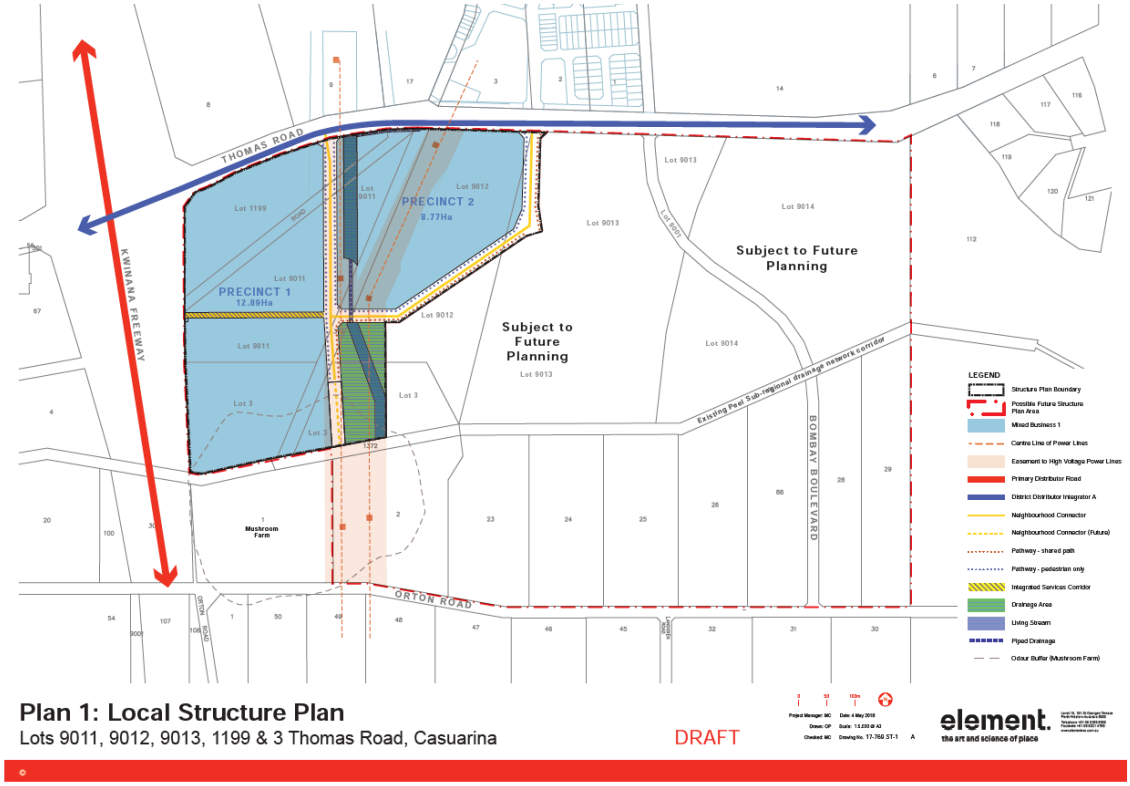


Figure 2: Proposed Local Structure Plan

The proposed intersection of Thomas Road/ Road 1 is a priority controlled T-intersection but without the right turn movement from Road 1 onto Thomas Road. **Figure 3** shows the proposed concept design for the Thomas Road/ Road 1 intersection.

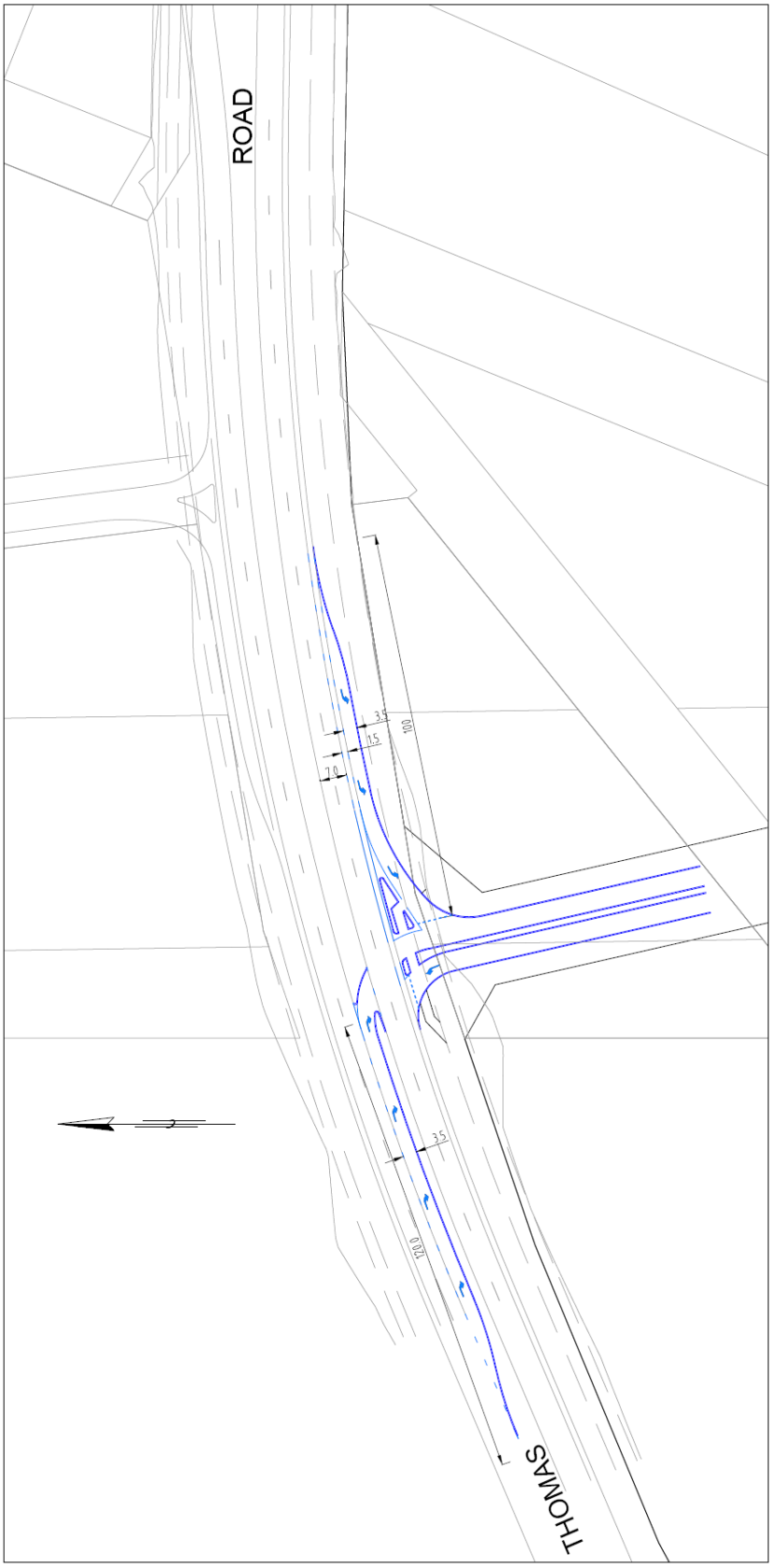


Figure 3: Proposed Concept Design for Thomas Road/ Road 1

3.0 Existing Situation

3.1 Existing Land Use

The site currently is vacant land. Adjacent land uses to the north, east and south are also vacant lands. The Costa Mushrooms Farm is located to the south west corner of the LSP area and The Kwinana Freeway forms the western boundary of it.

3.2 Existing Road Network

Thomas Road is classified as a District Distributor A Road in the Main Roads WA Functional Road Hierarchy document and is constructed as a dual carriageway for about 400m east of the Kwinana Freeway and a single carriageway road further to the east. The current posted speed limit on Thomas Road in this vicinity is 90km/h. Current traffic data from Main Roads WA indicates about 15,200vpd West of Newbold Rd (2014/2015) and about 23,000vpd at the bridge over Kwinana Freeway (2012/2013).

Kwinana Freeway is classified as a Primary Distributor and is reserved as a Primary Regional Road in the MRS. It is currently constructed as four- lanes divided standard in this area and has a posted speed limit of 100km/h. Kwinana Freeway forms an interchange with Thomas Road. The most recent available Main Roads WA traffic count for the Kwinana Freeway in this area shows approximately 88,000vpd (average weekday traffic, north of Thomas Road) in 2013/2014.

Bombay Boulevard is a single carriageway undivided road which connects Thomas Road to Orton Road. The intersections of this road with Thomas Road and Orton Road are in the form of priority controlled T-intersections without any turn pockets on Thomas Road or Orton Road. There are no existing traffic counts available for this road. The existing traffic volumes on Bombay Boulevard are not expected to be significant and should be less than 1,000vpd.

3.3 Public Transport

Currently, there are no bus routes servicing the subject site. The Kwinana Train Station to the west of the Kwinana Freeway is located about 1 km away from the subject site.

The closest existing bus route (east of the Kwinana Freeway) is Bus Route No. 527 which traverses through the new developments to the north of Anketell Road as shown in **Figure 4** and will terminate immediately north of Darling Chase. The nearest bus stop on this bus route is located outside the 400m walking distance to the subject site.

Figure 4: Existing Bus Routes

3.4 Pedestrian and Cyclist Facilities

Currently, there is a 2.5m Principal Shared Path (PSP) on the western side of Kwinana Freeway. The Department of Transport's Perth Bike Map series also shows the existing PSP along Kwinana Freeway in the vicinity of the LSP area.

3.5 Changes to the Surrounding Road Network

According to the information obtained from Main Roads WA, ultimately Thomas Road is planned to be constructed to four lanes divided standard. The planned intersection arrangement along Thomas Road to the east of the Kwinana Freeway for the ultimate situation is illustrated in **Figure 5** which indicates:

- Intersection of main north-south spine road/ Thomas Road is designed to operate as a roundabout; and,
- The intersection of Bombay Blvd and Thomas Road is proposed to be removed.

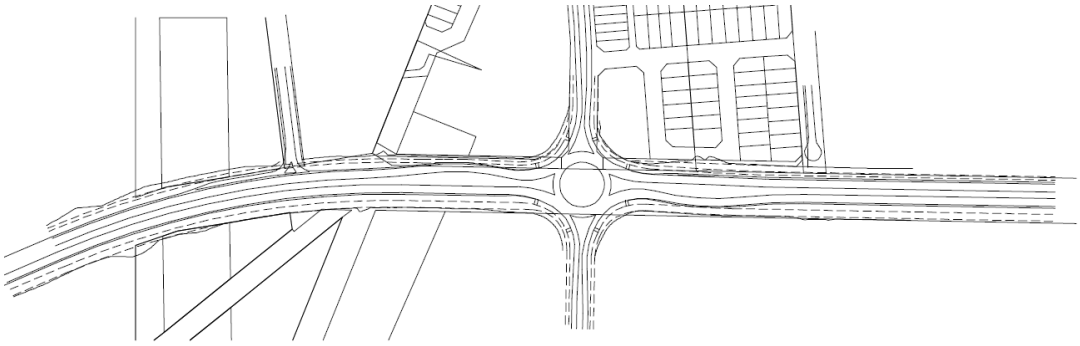


Figure 5: Intersection Arrangements on Thomas Road

The proposed LSP includes a new intersection on Thomas Road west of the main north-south spine road to provide for left in/ left out and a right in movements. The proposed intersection will improve permeability and connectivity of the LSP area and reduces traffic pressure on the future roundabout intersection of main north-south spine road/ Thomas Road to the east.

Transport modelling and traffic analysis undertaken for the LSP area indicate that the proposed right turn movement from Thomas Road into Road 1 would attract about 1,400vpd or 140vph, which in turn results in removal of similar right turn movements from the proposed roundabout intersection which will improve traffic operations and reduces delays and queues.

The proposed T-intersection on Thomas Road also provides for much better connectivity for the commercial land uses within the LSP area. This proposal also removes the truck and service vehicle traffic associated with the LSP area from the internal LSP roads and the proposed roundabout intersection at main north-south spine road/ Thomas Road.

3.6 Public Transport Network Planning

According to the information obtained from Public Transport Authority (PTA), it is anticipated that Bus route 527 would run along the continuation of Honeywood Avenue and would serve Wandi, Anketell and Casuarina including the LSP area and provide connectivity to Aubin Grove and Kwinana train station.

4.0 Proposed Transport Network

4.1 Road Hierarchy

The proposed hierarchy of roads within the proposed LSP area was established through transport modelling undertaken and is illustrated in Figure 6. The proposed road hierarchy was based on traffic projections and the classification of Liveable Neighbourhoods document (2009).

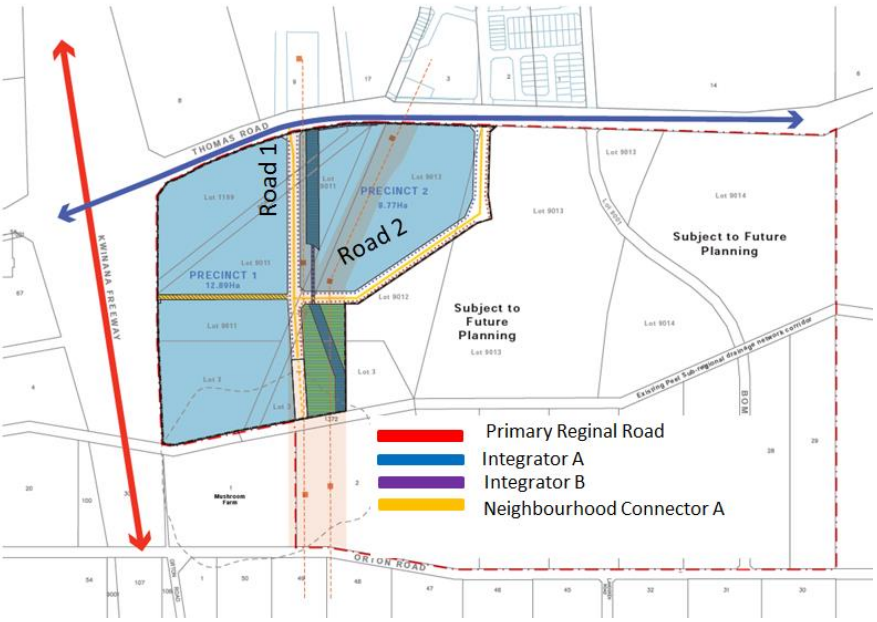


Figure 6: Proposed Road Hierarchy

Some key characteristics of the relevant road classifications have been summarised in **Table 1**. These are generally based on Liveable Neighbourhoods guidelines.

Table 1: Key Characteristics for the Proposed LSP Road Classifications

Road Classification	Indicative upper volume (vpd)	Indicative road reserve width (m)	Indicative road pavement width (m)
Integrator A	35,000	40m	2 x 8.5m (incl. cycle lanes) + 6m median
Integrator B	15,000	25m	2 x 4m (incl. cycle lanes) + median
Neighbourhood Connector A	7,000	24m	2 x 5m (incl. cycle lanes), 2m median and embayed parking

It should be noted that the outlined reservation cross sections and widths are indicative only and are subject to further adjustment in consultation with the Department of Planning, Land and Heritage (DPLH) and City of Kwinana during detailed subdivision design process.

Integrator Roads
Thomas Road is expected to carry about 30,000vpd to 40,000vpd in the vicinity of the proposed LSP area and therefore is classified as Integrator A with dual carriageway standard.

The Main north-south spine road which would be the extension of Honeywood Avenue through Wandi and Anketell LSP areas is classified as Integrator B, with the cross section as illustrated in **Figure 7**. This cross section is constructed along the exiting sections of Honeywood Avenue and would be extended throughout the new developments within Wandi and Anketell localities. The same cross section is proposed for the LSP area for consistency.

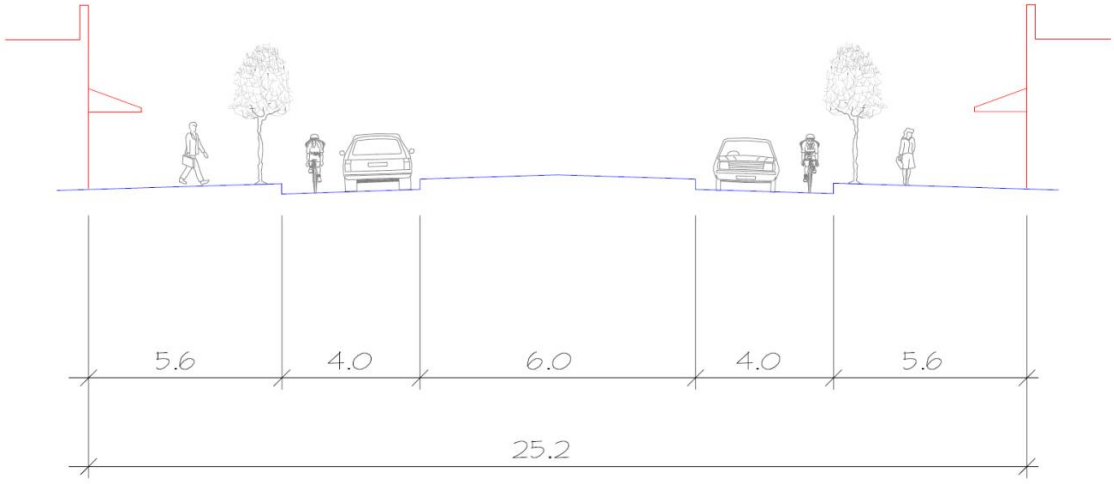


Figure 7: Proposed Cross Section for the Main North South Spine Road (Honeywood Avenue extension)

Neighbourhood Connectors
Road 1 and Road 2 are classified as Neighbourhood Connector A with the total indicative width of 24.4m.

4.2 Public Transport

According to the information obtained from Public Transport Authority (PTA), it is anticipated that all the new developments to the east of the Kwinana Freeway including Wandi, Anketell and Casuarina would be served by bus routes 527 when adequate demand justify it. The existing bus route 527 is most likely to traverse southbound on continuation of Honeywood Avenue alignment towards Anketell and Casuarina LSP areas in future and serve the LSP area.

4.3 *Pedestrian and Cyclist Facilities*

Figure 8 outlines the proposed pedestrian and cyclist network for the proposed LSP area. In accordance with the Liveable Neighbourhoods Guidelines, shared paths are proposed on one side of the main north-south spine road with a footpath on the other side. Road 1 and Road 2 would also have shared paths on one side and footpath on the other side. Thomas Road is proposed to have on-road cycle lanes and shared paths on both sides.

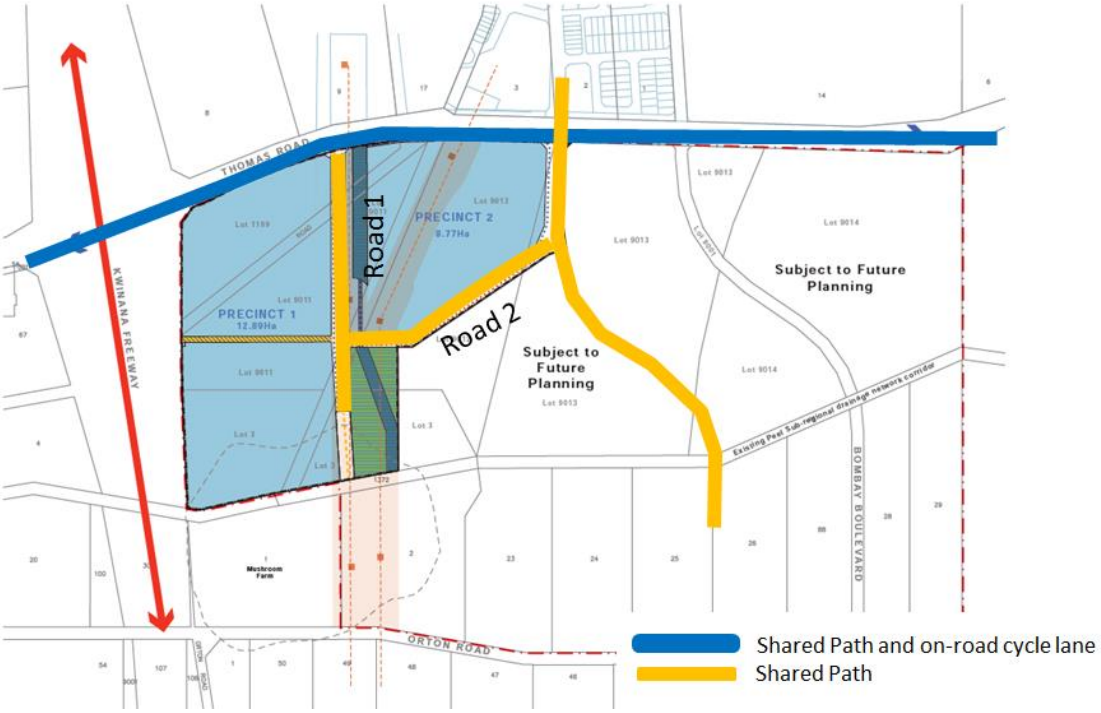


Figure 8: Proposed Pedestrian and Cyclist Road Network

4.4 *Integration with Surrounding Area*

The proposed land uses for the proposed LSP area are predominantly mixed-use business (large format retail) which is in line with the future planning on both sides on Thomas Road.

The road network of the LSP area is proposed to connect to the internal LSP road network system and Thomas Road. A new priority controlled T-intersection (without right turns from Road 1 onto Thomas Road) is proposed on Thomas Road to improve permeability and connectivity of the LSP area and to reduce traffic pressure on the proposed roundabout at the intersection of main north-south spine road/ Thomas Road.

5.0 Analysis of the LSP Transport Network

5.1 Assessment Period

The assessment year that has been adopted for this analysis is 2031, with the assumption of full development of proposed LSP areas to the east of the Kwinana Freeway including Anketell, Wandi and Casuarina.

The proposed developments within the LSP area are predominantly large format retail and, therefore, it is expected that the peak combination of development traffic and road network traffic occur during the typical Saturday mid-day peak period.

5.2 Traffic generation and distribution

Transcore has developed a subregional strategic transport model for year 2031 based on weekday traffic flows for this area using the EMME transport modelling software package.

The daily traffic generation rate for the future surrounding residential areas assumed to be 8 vehicle trips per day (vpd) per dwelling, which corresponds to peak hour trip generation rates recommended in the Western Australian Planning Commission (WAPC) Transport Assessment Guidelines for Development (2016).

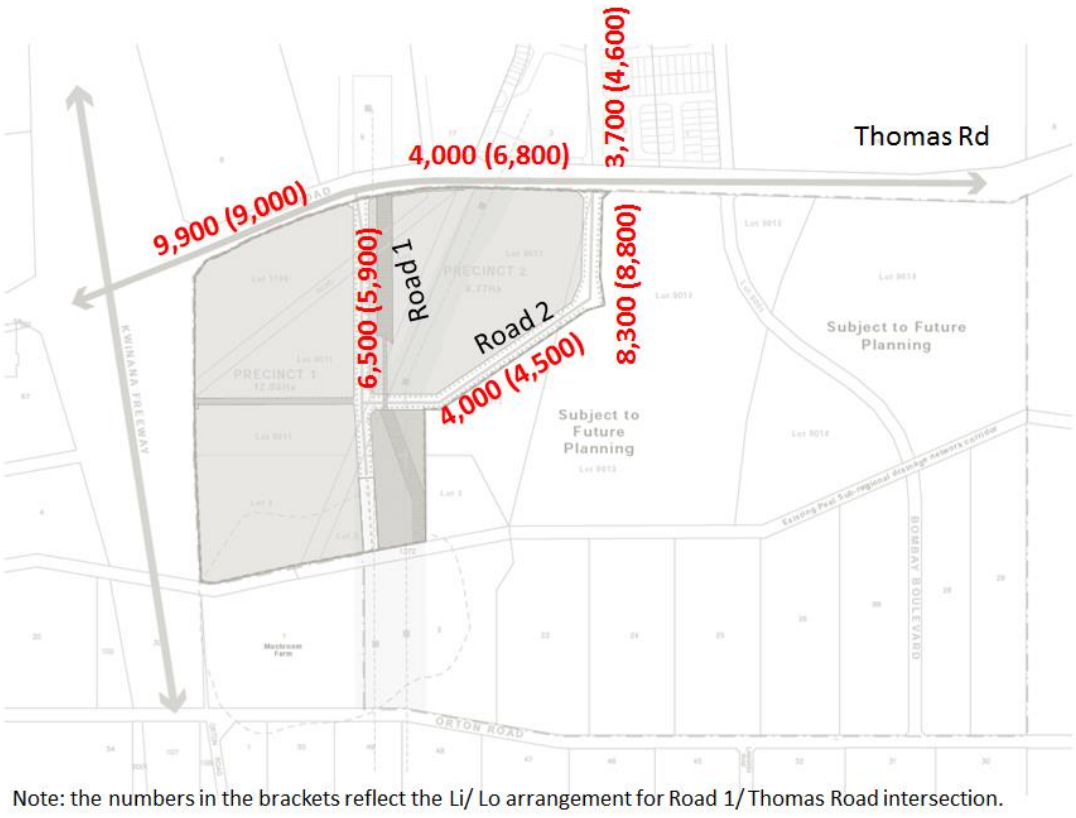
According to the information provided to Transcore, the anticipated land uses for the proposed LSP area are expected to be large format retail and bulky goods. The daily trip rates for these land uses vary from 20vpd to 30vpd. Accordingly an average trip rate of 25vpd has been adopted for the proposed LSP area.

Therefore, the total trip generation of the proposed LSP area is estimated to be approximately 15,000vpd or about 1,500vph.

The distribution of the LSP traffic is determined by the transport model in proportion to the location of trip productions and attractors for work trips, education trips and other trips (shopping, social, recreational, etc.) among all the land uses in the traffic model.

5.3 Traffic Flow Forecasts

Figure 9 illustrates the projected daily traffic volumes for the proposed LSP area for the Left in/ Left out/ Right in intersection at Thomas Road/ Road 1. Additional modelling was also undertaken for the Left in/ Left out option for Thomas Road/ Road 1 intersection. The numbers in the brackets in Figure 10 show the projected traffic volumes for the Left in/ Left out option.



Note: the numbers in the brackets reflect the Li/ Lo arrangement for Road 1/ Thomas Road intersection.

Figure 9: Projected Daily Traffic Volumes - Development Traffic Only

5.4 Roads and Intersections

The proposed road network to accommodate the proposed LSP traffic volumes has been detailed in section 4 of this report, including the details of the proposed road hierarchy in section 4.1. **Figure 10** details the proposed intersection controls for key intersections within the LSP area.

Two roundabouts are proposed at the intersections along the proposed main spine road and Road 1 and intersection of Road 1/ Road 2. These roundabouts will help manage the circulation of traffic flows and assist with speed management on major roads. A Roundabout is also proposed at the intersection of the main spine road/ Thomas Road.

The western access intersection on Thomas Road is a priority controlled T-intersection with a right turn lane on Thomas Road 1 but without right turn out from Road 1 onto Thomas Road.

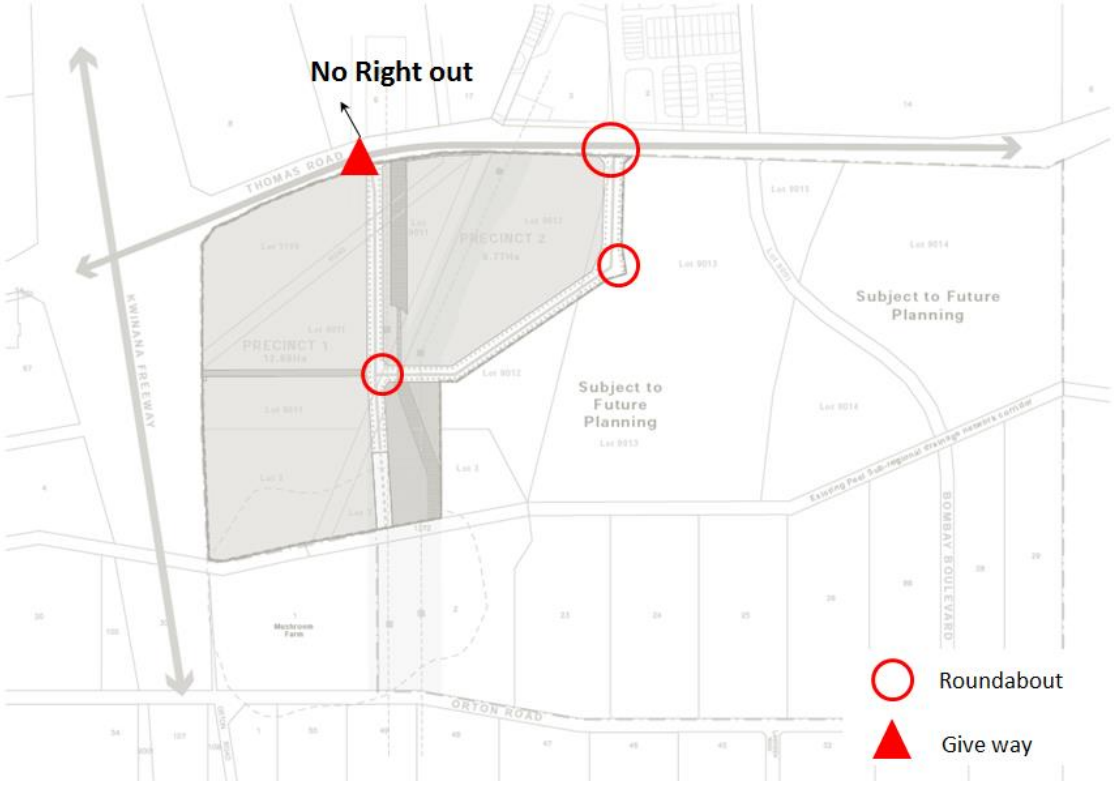


Figure 10: Intersection Treatments

5.5 Intersection Analysis

Intersection analyses was undertaken for the proposed intersection of Thomas Road/ Road 1 for Saturday peak hour. The proposed LSP would generate the highest trips during the Saturday peak hour and combination of development traffic and background traffic would also be higher during the Saturday peak period.

The projected daily traffic volumes at the intersection have been extracted from the transport model and have been converted into peak hours using a conversion factor of 10%. The directional traffic split of 56% (westbound)/ 44% (eastbound) on Thomas Road has been applied as per the existing traffic pattern on Thomas Road during the Saturday peak period.

Capacity analysis was undertaken for the intersection using the SIDRA computer software package. SIDRA is an intersection modelling tool commonly used by traffic engineers for all types of intersections. SIDRA outputs are presented in the form of Degree of Saturation, Level of Service, Average Delay and 95% Queue. These characteristics are defined as follows:

- Degree of Saturation is the ratio of the arrival traffic flow to the capacity of the approach during the same period. The Degree of Saturation ranges

from close to zero for infrequent traffic flow up to one for saturated flow or capacity.

- Level of Service is the qualitative measure describing operational conditions within a traffic stream and the perception by motorists and/or passengers. In general, there are 6 levels of service, designated from A to F, with Level of Service A representing the best operating condition (i.e. free flow) and Level of Service F the worst (i.e. forced or breakdown flow).
- Average Delay is the average of all travel time delays for vehicles through the intersection.
- 95% Queue is the queue length below which 95% of all observed queue lengths fall.

The results of the SIDRA analysis are summarised in **Appendix A**. The proposed Thomas Road/Road 1 intersection layout in SIDRA is also shown in Figure A1**.** The proposed intersection layout entails a right turn lane of about 120m and a left turn lane of about 100m on Thomas Road. As outlined earlier the proposed intersection layout does not allow for right turn movements from the proposed LSP area to Thomas Road.

The SIDRA analysis indicates that the proposed intersection of Thomas Road /Road 1 will operate satisfactorily during the Saturday peak hour. The reported 95% queue for the right turn traffic from Thomas Road into Road 1 is about 26m which can be accommodated within the proposed 120m right turn pocket on Thomas Road.

5.6 Access to Frontage Properties

The WAPC *Liveable Neighbourhoods* policy requires that "*Developments along integrator B and neighbourhood connector streets with ultimate vehicle volumes over 5000 vehicles per day should be designed either so vehicles entering the street can do so travelling forward, or are provided with alternative forms of vehicle access. Wider lots with paired driveways and protected reversing areas in the parking lane may be used on streets with up to 7000 vehicles per day*."

There are no residential property access from the proposed LSP to the surrounding road network.

5.7 Pedestrian / Cycle Networks

The proposed network of shared paths for pedestrians and cyclists is described in section 4.3 of this report. This network of paths will provide an excellent level of accessibility and permeability for pedestrians and cyclists within the proposed LSP area.

5.8 Access to Public Transport

At this stage of the planning process the details of the bus route planning and the location of bus stops are not known. However, the potential future bus route

proposed along the main north-south spine road (continuation of Honeywood Avenue) would cover and service the proposed LSP area.

6.0 Conclusions

The subject of this TIA is the proposed Local Structure Plan for Lots 9011, 9012, 9013, 1199 & 3 Thomas Road, Casuarina. The proposed LSP is anticipated to entail large format retail land uses.

Transport modelling and analysis undertaken indicate that the proposed LSP would generate about 15,000vpd which will be distributed to Thomas Road and surrounding road network through the proposed roundabout intersection at Thomas Road/ main north-south spine road and the new proposed left in/ left out/ right in intersection at Thomas Road/ Road 1. This new proposed intersection improves permeability and accessibility and reduces traffic pressure on the proposed roundabout intersection to the east.

Transport modelling and analysis undertaken indicate that the proposed right turn movement from Thomas Road into Road 1 would attract about 1,400vpd which in turn results in removal of similar volume of right turns from the proposed roundabout at Thomas Road/ north-south spine road intersection which will improve traffic operations and reduce congestion, delay and queuing at this intersection.

The SIDRA analysis indicates that the proposed intersection of Thomas Road/Road 1 will operate satisfactorily and within the capacity.

The road network of the proposed LSP area has been planned based on WAPC Liveable Neighbourhoods guidelines to accommodate the future traffic flows that will be generated within this area.

Appendix A

INTERSECTION ANALYSIS

Giveway / Yield (Two-Way)

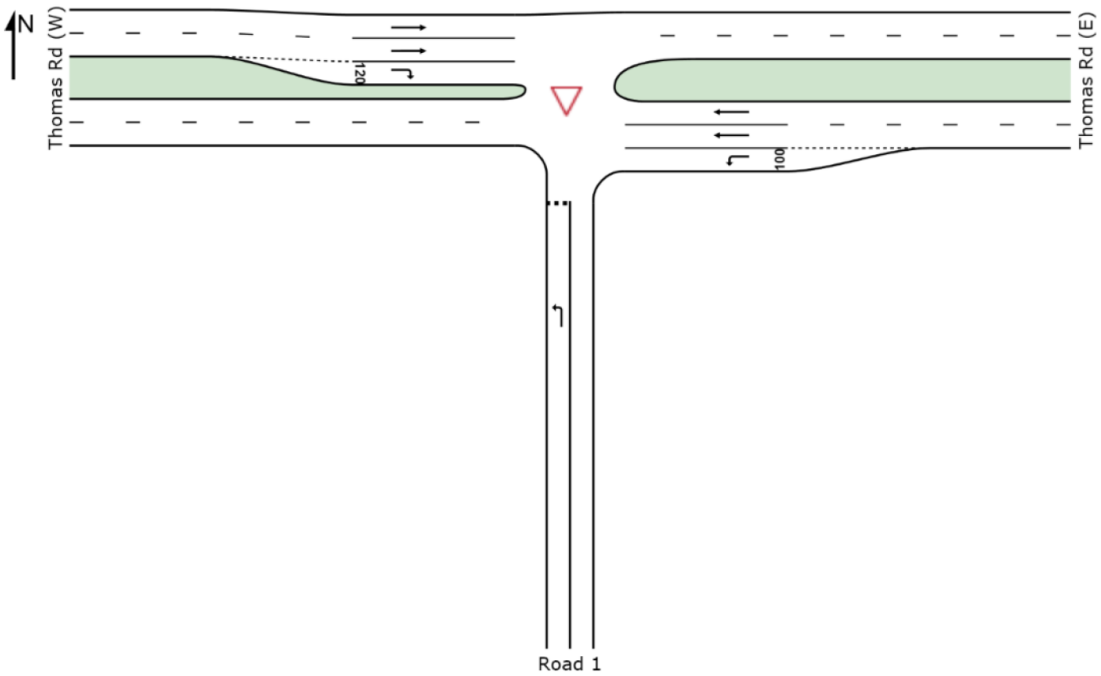


Figure D1: Proposed Thomas Road/ Road 1 intersection layout

Table D1: SIDRA results – Proposed Thomas Road / Road 1 intersection (2031)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Road 1											
1	L2	400	0.0	0.642	14.3	LOS B	4.4	31.1	0.76	1.10	47.5
Approach		400	0.0	0.642	14.3	LOS B	4.4	31.1	0.76	1.10	47.5
East: Thomas Rd (E)											
4	L2	50	0.0	0.027	5.5	LOS A	0.0	0.0	0.00	0.58	53.6
5	T1	1314	0.0	0.337	0.0	LOS A	0.0	0.0	0.00	0.00	59.9
Approach		1364	0.0	0.337	0.2	NA	0.0	0.0	0.00	0.02	59.7
West: Thomas Rd (W)											
11	T1	1032	0.0	0.265	0.0	LOS A	0.0	0.0	0.00	0.00	59.9
12	R2	140	0.0	0.756	45.3	LOS E	3.7	26.1	0.96	1.21	33.7
Approach		1172	0.0	0.756	5.4	NA	3.7	26.1	0.11	0.14	54.8
All Vehicles		2936	0.0	0.756	4.2	NA	4.4	31.1	0.15	0.22	55.8

Appendix F

Bushfire Management Plan

emerge ASSOCIATES
Integrated Science & Design

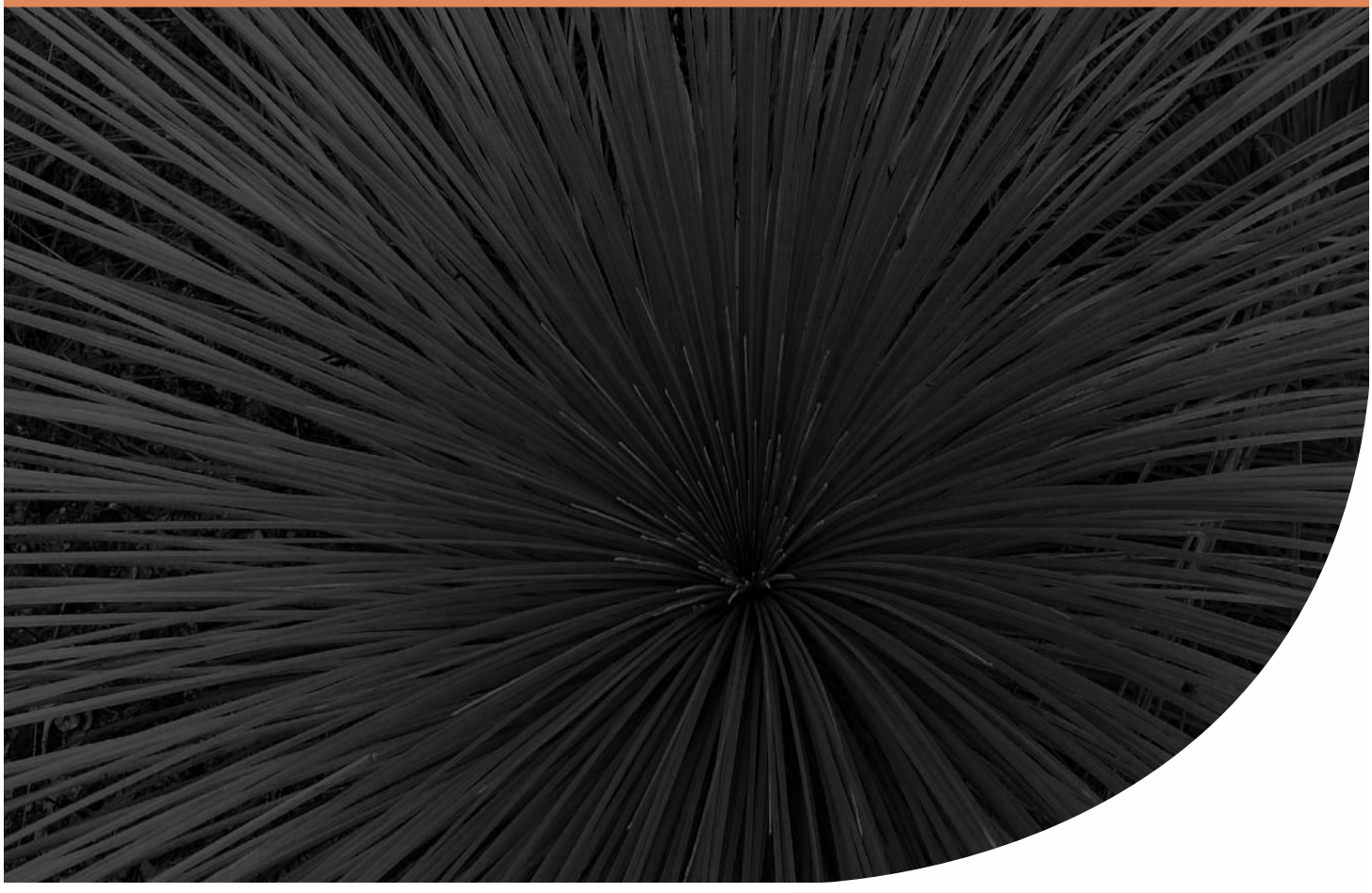
Bushfire Safety CONSULTING

Bushfire Management Plan

Lots 9011, 9012, 9013, 1199 & 3 Thomas Road, Casuarina

Project No: EP17-109(01)

Prepared for ARP No. 4
May 2018



Document Control

Doc name:	**Bushfire Management Plan Lots 9011, 9012, 9013, 1199 & 3 Thomas Road, Casuarina**				
Doc no.:	**EP17-109(01)—001a**				
Version	**Date**	**Author**		**Reviewer**	
1	November 2017	Andreas Biddiscombe	ADB	Kirsten Knox	KK
				Rohan Carboon	RC
	Report issued to client.				
A	May 2018	Kirsten Knox	KK	Kirsten Knox	KK
				Rohan Carboon	RC
	Figures updated based on minor amendment to revised structure plan				

Disclaimer:

This document has been prepared in good faith and is derived from information sources believed to be reliable and accurate at the time of publication. Nevertheless, it is distributed on the terms and understanding that the author is not liable for any error or omission in the information sources available or provided to us, or responsible for the outcomes of any actions taken based on the recommendations contained herein. It is also expected that our recommendations will be implemented in their entirety, and we cannot be held responsible for any consequences arising from partial or incorrect implementation of the recommendations provided.

This document has been prepared primarily to consider the layout of development and/or the appropriate building construction standards applicable to development, where relevant. The measures outlined are considered to be prudent minimum standards only based on the standards prescribed by the relevant authorities. The level of bushfire risk mitigation achieved will depend upon the actions of the landowner or occupiers of the land and is not the responsibility of the author. The relevant local government and fire authority (i.e. Department of Fire and Emergency Services or local bushfire brigade) should be approached for guidance on preparing for and responding to a bushfire.

Notwithstanding the precautions recommended in this document, it should always be remembered that bushfires burn under a wide range of conditions which can be unpredictable. An element of risk, no matter how small, will always remain. The objective of the Australian Standard AS 3959-2009 is to "prescribe particular construction details for buildings to reduce the risk of ignition from a bushfire while the front passes" (Standards Australia 2009). Building to the standards outlined in AS 3959 does not guarantee a building will survive a bushfire or that lives will not be lost.

Executive Summary

ARP No. 4 (the proponent) have prepared a structure plan (SP) for Lots 9011, 9012, 9013, 1199 & 3 Thomas Road, Casuarina (herein referred to as "the site"), which is provided in **Appendix A** and sets out the proposed spatial framework for future commercial development of the site. The site is 25.8 hectares in area and is located approximately 31 km south of the Perth Central Business District, within the City of Kwinana, as shown in **Figure 1**.

The site is currently identified as a "Bushfire Prone Area" under the state-wide *Map of Bush Fire Prone Areas* prepared by the Office of Bushfire Risk Management (OBRM 2017). The identification of Bushfire Prone Areas within any portion of the site requires further assessment of the bushfire hazard implications on proposed development to be undertaken in accordance with *State Planning Policy 3.7 Planning in Bushfire Prone Areas* (SPP 3.7) (WAPC 2015) and the *Guidelines for Planning in Bushfire Prone Areas Version 1.2* (the Guidelines) (WAPC and DFES 2017).

Existing bushfire hazards identified within the site and surrounding 150 m include areas of woodland (Class B), scrub (Class D) and grassland (Class G) vegetation. In the post-development scenario, it has been assumed that the majority of vegetation within the site will meet the definition of low threat vegetation (in accordance with Section 2.2.3.2 of *Australian Standard 3959-2009 Construction of buildings in bushfire prone areas* (AS 3959)), with the exception of the 'drainage' and 'living stream' areas within the high-voltage power line easement which will be landscaped to comprise a 'scrub' (Class D) vegetation classification, in accordance with the Landscape Masterplan (**Appendix A**).

A method 1 bushfire attack level (BAL) assessment has been undertaken as part of this BMP in accordance with AS 3959 to determine the maximum radiant heat flux to which future development (i.e. commercial buildings) within the site is likely to be exposed from the assumed post-development scenario. The results of are shown in the BAL contour map provided as **Figure 6**.

This BMP has been prepared consistent with Appendix Four of the Guidelines and demonstrates that as development progresses, an acceptable solution system of control can be adopted for the bushfire protection criteria outlined in the Guidelines, as summarised below:

- **Location:** the BAL assessment indicates that future commercial development (in accordance with the proposed SP) can be located in an area that can or will, on completion, be subject to moderate or low bushfire hazard and can achieve a BAL rating of BAL-29 or below.
- **Siting and Design:** increased construction standards pursuant to AS 3959 do not apply to the building classes typically associated with commercial development. Notwithstanding this, future commercial development can be suitably sited to ensure future commercial buildings are not located in an area that can or will, on completion, be subject to a BAL rating greater than BAL-29. This can be achieved through the provision of Asset Protection Zones, where required, as shown in **Figure 7**.
- **Vehicular Access:** the proposed structure plan provides two connections to the existing public road network to the north (Thomas Road, which connects to the road network to the east and west, including the Kwinana Freeway), allowing vehicles to move through the site easily and safely at all times.

- **Water:** the development will be serviced by a permanent and secure reticulated water supply, to be installed in accordance with the standard Water Corporation specifications (including fire hydrants as required).

Overall, this BMP demonstrates that while the site is identified as bushfire prone in the state *Map of Bush Fire Prone Areas* (OBRM 2017), the proposed SP design will allow for future commercial development to be implemented such that an appropriate level of bushfire threat will apply to future commercial land uses within the site.

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List of Abbreviations

Table A1: Abbreviations – General terms

General terms	
AHD	Australian Height Datum
APZ	Asset Protection Zone
AS	Australian Standard
BAL	Bushfire Attack Level
BMP	Bushfire Management Plan
BPAD	Bushfire Planning and Design
FZ	Flame Zone

Table A2: Abbreviations – Organisations

Organisations	
DBCA	Department of Biodiversity, Conservation and Attractions
DFES	Department of Fire and Emergency Services
DoW	Department of Water (now Department of Water and Environmental Regulation)
FPAA	Fire Protection Association of Australia
OBRM	Office of Bushfire Risk Management
WAPC	Western Australian Planning Commission

Table A3: Abbreviations – Legislation and policies

Legislation and policies	
AS 3959	*Australian Standard 3959-2009 Construction of buildings in bushfire prone areas*
BCA	*Building Code of Australia*
Guidelines	*Guidelines for Planning in Bushfire Prone Areas version 1.2*
SPP 3.7	*State Planning Policy 3.7 Planning in Bushfire Prone Areas*

Table A4: Abbreviations – Planning and building terms

Planning and building terms	
MRS	Metropolitan Region Scheme
LPS	Local Planning Scheme
SP	Structure Plan

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1 Introduction

1.1 Background

ARP No. 4 (the proponent) have prepared a structure plan (SP) for Lots 9011, 9012, 9013, 1199 & 3 Thomas Road, Casuarina (herein referred to as "the site"). The SP is provided in **Appendix A** and sets out the proposed spatial framework for future commercial development of the site. The site is 25.8 hectares (ha) in area and is located approximately 31 km south of the Perth Central Business District, within the City of Kwinana, as shown in **Figure 1**.

The site is currently identified as a "Bushfire Prone Area" under the state-wide *Map of Bush Fire Prone Areas* prepared by the Office of Bushfire Risk Management (OBRM 2017), as shown in **Plate 1** below. The identification of Bushfire Prone Areas within any portion of the site requires further assessment of the bushfire hazard implications on proposed development to be undertaken in accordance with *State Planning Policy 3.7 Planning in Bushfire Prone Areas* (WAPC 2015) and the *Guidelines for Planning in Bushfire Prone Areas Version 1.2* (the Guidelines) (WAPC and DFES 2017).

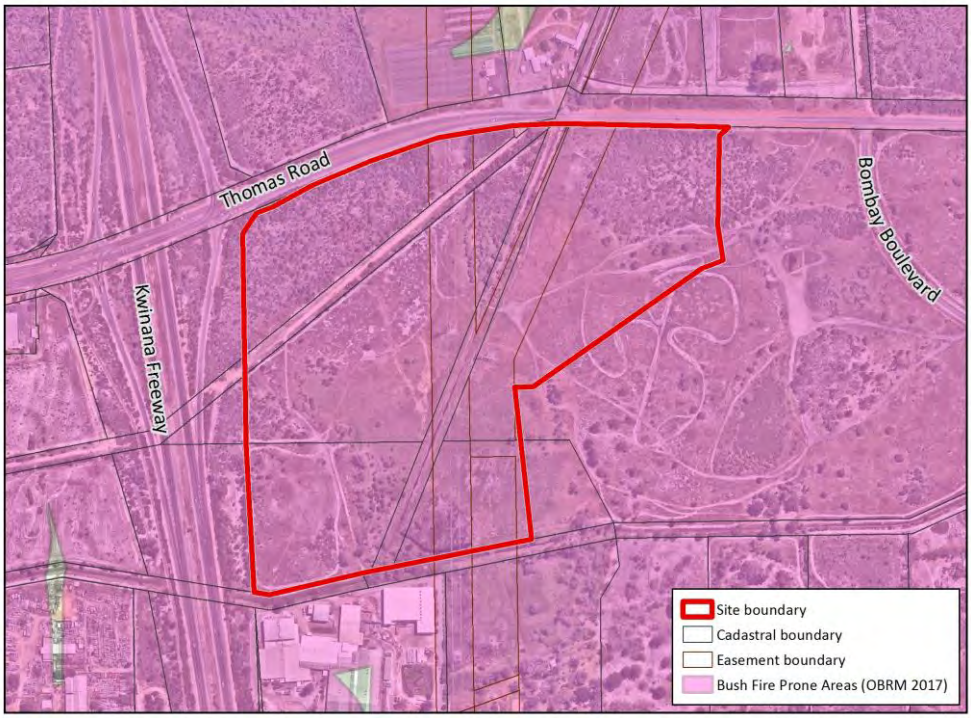

Plate 1: Areas within and surrounding the site identified as "Bushfire Prone Areas" (OBRM 2017)

1.2 Aim of this document

The objective of this BMP is to support the consideration of the proposed SP prepared for the site and to enable bushfire management issues (such as location, siting, vehicle access and water supply) to be addressed as part of the planning process.

This BMP addresses the requirements of SPP 3.7, the Guidelines and *Australian Standard 3959-2009 Construction of buildings in bushfire prone areas* (AS 3959) (Standards Australia 2009) and includes:

- An assessment of classified vegetation and associated bushfire hazard levels in the vicinity of the site (within 150 m).
- Identification of how the development will satisfy the bushfire protection criteria, as outlined in the Guidelines, by ensuring:
  - Development can be located, sited and designed to ensure that an appropriate level of bushfire threat applies to the site (i.e. BAL-29 is not exceeded), supported by a Bushfire Attack Level (BAL) assessment. Where applicable, this includes consideration of Asset Protection Zone requirements.
  - Vehicular access to and egress from the development is safe if a bushfire occurs.
  - Water is available to the development, so that life and property can be protected from bushfire.
- An outline of the roles and responsibilities associated with implementing this BMP.

1.3 Accreditation

This BMP has been prepared jointly by Emerge Associates and Bushfire Safety Consulting.

Bushfire Safety Consulting is a Corporate Bronze Member of the Fire Protection Association of Australia (FPAA) and Rohan Carboon is an accredited Level 3 Bushfire Planning and Design (BPAD) practitioner (accreditation number: BPAD 23160) under the FPAA's Western Australian accreditation scheme.

Emerge Associates has been working jointly with Bushfire Safety Consulting for more than five years to undertake detailed bushfire assessments to support the land use development industry. Emerge Associates' personnel, namely Kirsten Knox have undertaken BPAD Level 2 training and are in the process of seeking accreditation.

1.4 Statutory policy and framework

The following key legislation, policies and guidelines are relevant to the preparation of a BMP:

- *Fire and Emergency Services Act 1998*
- *Bush Fires Act 1954*
- Planning and Development (Local Planning Scheme Amendment) Regulations 2015
- Building Regulations 2012
- *State Planning Policy 3.7 Planning in Bushfire Prone Areas* (WAPC 2015)
- *Guidelines for Planning in Bushfire Prone Areas Version 1.2* (WAPC and DFES 2017)
- *Australian Standard AS 3959 – 2009 Construction of buildings in bushfire prone areas*

1.5 Description of site and adjacent land uses

The site is zoned 'Urban' under the Metropolitan Region Scheme (MRS), as shown in **Plate 2**, and 'Development' under the City of Kwinana Local Planning Scheme (LPS) no. 2. With the exception of an existing high-voltage powerline easement, the site is currently absent of any specific land use and is characterised by areas of cleared paddocks and remnant native vegetation. The site is bound by Thomas Road to the north, vacant land to the east, a drainage corridor and mushroom farm to the south and the Kwinana Freeway to the west.

Within the City of Kwinana *Draft Local Planning Strategy* (2015), the site (and areas to the south) is identified as 'future mixed business/light industry', while areas to the east and south-east are identified as 'future residential'. The proposed development of the site to support commercial land uses is therefore in accordance with the intended regional planning for the area.

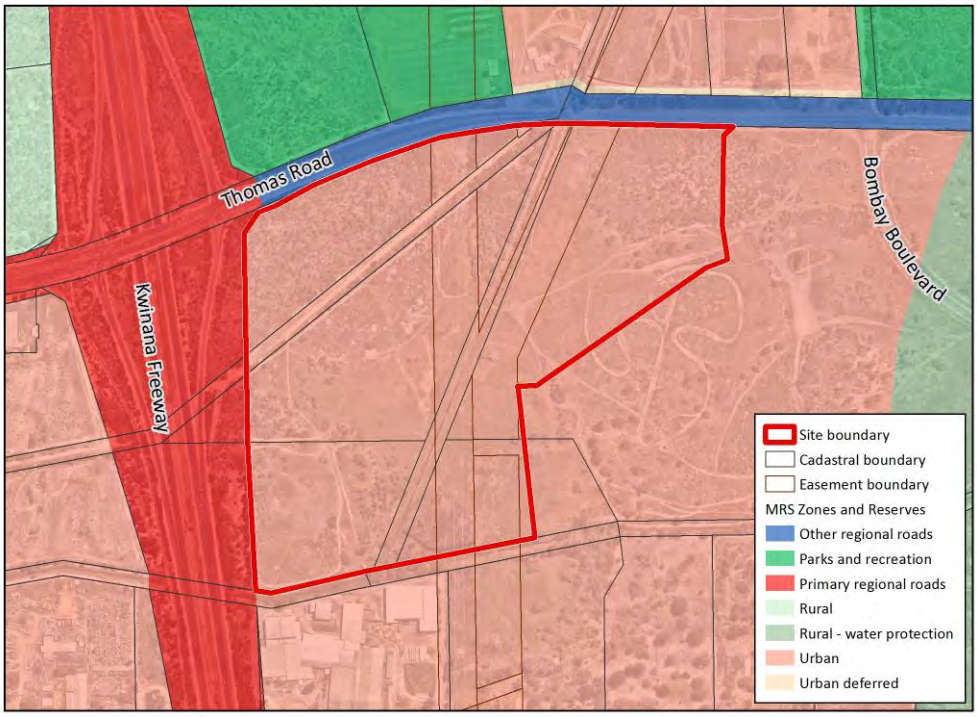

Plate 2: MRS land use zoning of the site and surrounding area

Natural topographical contours (DoW 2008) indicate that the site is generally flat, with a mounding high-point in the south-west. Adjacent areas to the north, east and south of the site are also generally flat. The Kwinana Freeway road reserve adjacent to the western boundary of the site is generally lower than the site, and experiences some sloping areas associated with roadside drainage swales/basins and grade-separated interchanges. Topographic contours over the site and surrounding area are shown in **Figure 1**.

2 Bushfire Context

2.1 Bushfire risk

The risk management process described in AS/NZS ISO 31000:2009 *Risk management – Principles and guidelines* is a systematic method for identifying, analysing, evaluating and treating emergency risks. Bushfire risk is determined by assessing:

- Bushfire hazard (i.e. bushfire prone vegetation)
- Threat level (i.e. proximity of the hazard to assets and people)
- Vulnerability of the asset
- Consequence rating (i.e. a rating for the potential outcome once the 'incident' has occurred)
- Likelihood rating (i.e. the chance of an event).

It is not necessary to undertake a standalone site specific bushfire risk assessment in accordance with AS/NZS ISO 31000:2009 as part of this BMP, as risk has been appropriately considered in the specific context of SPP 3.7, the Guidelines and AS 3959.

AS 3959 specifies the construction requirements for certain building types in Bushfire Prone Areas in order to improve their resistance to bushfire attack from embers, radiant heat, flame contact, and combinations of these attack forms. The construction standards outlined in AS 3959 are applicable to buildings identified as Class 1, Class 2, Class 3 or Class 10a under the Building Code of Australia (BCA) and are based on the six BAL ratings specified in AS 3959; BAL-LOW, BAL-12.5, BAL-19, BAL-29, BAL-40 and BAL-FZ, which relate to radiant heat flux exposure thresholds.

The proposed SP identifies the site for future mixed business/commercial development. Future commercial development within the site will likely ultimately involve construction of buildings identified as Class 5, Class 6, Class 7 and/or Class 8 under the BCA. Compliance with increased construction standards under AS 3959 are not required for these classes of buildings pursuant to the BCA.

Notwithstanding the above, there is a requirement under SPP 3.7 and the Guidelines for planning proposals (such as a SP) located within mapped bushfire prone areas (OBRM 2017) to ensure future development is not exposed to a BAL rating of BAL-29, regardless of the intended land use. As such, a method 1 BAL assessment has been completed as part of this BMP in accordance with the methodology set out in AS 3959 to determine the BAL ratings to which the site will be exposed to.

A method 1 BAL assessment, as outlined in Section 2 and Appendix A of AS 3959, provides a basic assessment of radiant heat flux levels at various distances from classified vegetation. This method assumes standard fuel loads for classified vegetation as outlined in Appendix B of AS 3959 and considers the effective slope beneath this vegetation. This method can be used to determine appropriate setbacks to buildings to achieve different levels of radiant heat exposure (i.e. BAL 12-5 to BAL-FZ).

Vegetation that does not trigger a BAL assessment (i.e. low threat) according to Section 2.2.3.2 of AS 3959 includes the following exclusions:

a) Vegetation of any type more than 100 m from the site.
b) Single areas of vegetation less than 1 ha in area and not within 100 m of other areas of vegetation being classified.
c) Multiple areas of vegetation less than 0.25 ha in area and not within 20 m of the site or each other.
d) Strips of vegetation less than 20 m wide (measured perpendicular to the elevation exposed to the strip of vegetation) regardless of length and not within 20 m of the site or each other, or other areas of vegetation being classified.
e) Non-vegetated areas, including waterways, roads, footpaths, buildings and rocky outcrops.
f) Low threat vegetation, including grassland managed in a minimal fuel condition, maintained lawns, golf courses, maintained public reserves and parklands, vineyards, orchards, cultivated gardens, commercial nurseries, nature strips and wind breaks.

The vulnerability of assets such as buildings is impacted by several factors. Some relate to the way a bushfire behaves at a site, others to the design and construction materials in the building and siting of surrounding elements. Infrastructure, utilities and human behavior are also factors. Leonard (2009) identified the following factors as relevant considerations:

- Terrain (slope)
- Vegetation (overall fuel load, steady state litter load, bark fuels, etc.)
- Weather (temperature, relative humidity and wind speed)
- Distance of building from unmanaged vegetation
- Individual elements surrounding the building that are either a shield or an additional fuel source
- Proximity to surrounding infrastructure
- Building design and maintenance
- Human behavior (ability to be present and capacity to fight the fire)
- Access to the building and how that influences human behavior
- Water supply for active and/or passive defence
- Power supply.

Where buildings are lost, this is likely to occur as a result of their vulnerability to the mechanisms of bushfire attack. Buildings constructed to increased standards under AS 3959 are more likely to survive a bushfire than buildings that do not conform to these construction standards, although building survival is not guaranteed.

2.2 Vegetation classification and bushfire hazard assessment

Assessing bushfire hazards takes into account the classes of vegetation within the site and surrounding area for a minimum of 150 m, in accordance with the Guidelines. The assignment of vegetation classifications is based on an assessment of vegetation structure, which includes consideration of the various fuel layers of different vegetation types. For example, fuel layers in a typical forest environment can be broken-down into five segments as illustrated in **Plate 3** below. These defined fuel layers are considered when determining the classification of vegetation and associated bushfire hazard levels.

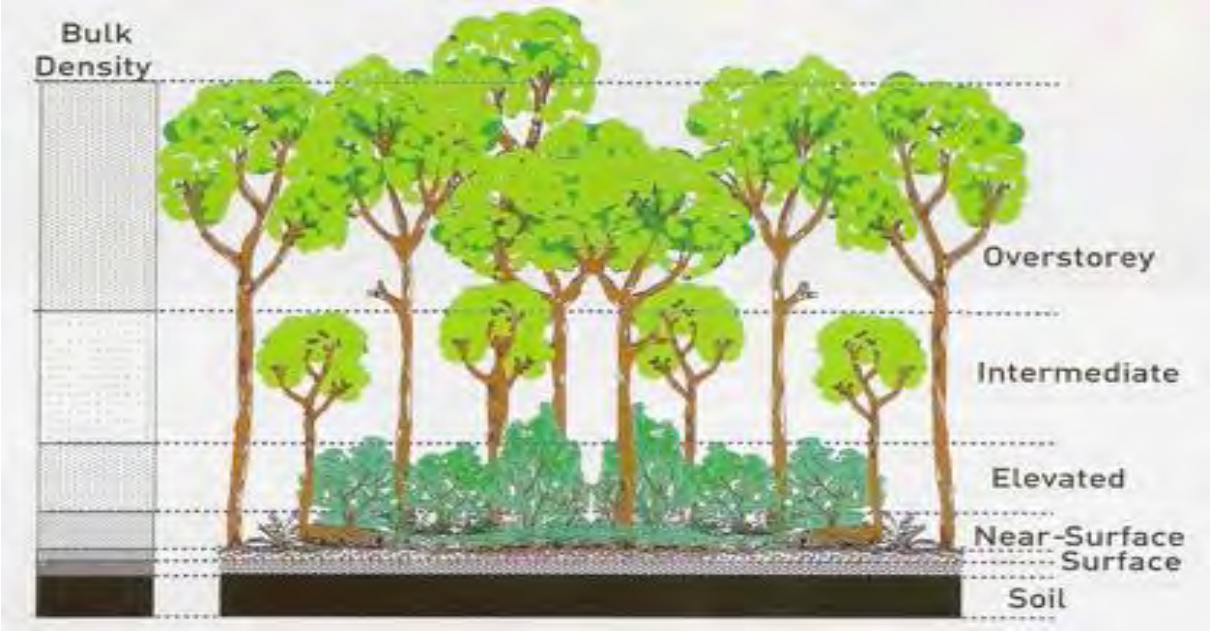

Plate 3: The five fuel layers in a forest environment that could be associated with fire behaviour (Gould et al. 2007)

An assessment of existing vegetation within the site and surrounding 150 m was undertaken in accordance with AS 3959 and the Guidelines on 13 November 2017.

Table 1 below outlines the type of vegetation observed within and surrounding the site, the classification of each area of vegetation in accordance with Section 2.2.3 and Table 2.3 of AS 3959, and its assumed post-development classification and ongoing management (where applicable). The associated bushfire hazard assessment levels outlined in **Table 1** (based on existing conditions) were determined using Appendix Two of the Guidelines.

As outlined in **Table 1** below:

- The pre-development AS 3959 vegetation classifications (and associated photo locations) are shown in **Figure 2**
- The pre-development bushfire hazard ratings are shown in **Figure 3**
- The post-development AS 3959 vegetation classifications are shown in **Figure 4**.

Table 1: AS 3959 Vegetation Classification

Pre-development			Post-development	
Plot no.	**AS 3959 classification and bushfire hazard rating**	**Site photo/s (location points shown in Figure 2)**	**Plot no.**	**Post-development AS 3959 classification and assumptions**
Plots 1 – 12	Various areas of woodland vegetation, with different species composition between patches. This includes areas of *Banksia* species over native understorey, in addition to areas of *Melaleuca* species and paddock trees over exotic grasses and weeds. **AS 3959 classification (Figure 2):** Woodland (Class B) **Bushfire hazard rating (Figure 3):** Extreme	 *Photo location 1: Woodland (Class B) vegetation*  *Photo location 2: Woodland (Class B) vegetation*  *Photo location 3: Woodland (Class B) vegetation within the site*  *Photo location 4: Woodland (Class B) vegetation within the site*	Plot 29	Existing vegetation in Plots 1-2, 6-7, 10 to be cleared and area to be developed for commercial land uses (such as buildings, carparks and public roads) in accordance with the proposed SP. **AS3959 classification (Figure 4):** 2.2.3.2(e) non-vegetated area
			Plots 3 – 5, 8 – 9, 11 – 12	Assumed to remain in existing state in the short-term, and therefore is classified woodland. However, in the longer-term, areas incorporating Plots 8-9 & 11-12 are proposed to be developed for future residential/commercial land uses in accordance with the City of Kwinana *Draft Local Planning Strategy* (2015) **AS3959 classification (Figure 4):** Woodland (Class B)

Table 1: AS 3959 Vegetation Classification (continued)

Pre-development			Post-development	
Plot no.	**AS 3959 classification and bushfire hazard rating**	**Site photo/s (location points shown in Figure 2)**	**Plot no.**	**Post-development AS 3959 classification and assumptions**
Plots 13 – 24	Various areas of open and closed scrub vegetation, with different species composition between patches. This includes areas of native scrub species over introduced grasses and weeds within the Kwinana Freeway reserve, in addition to various patches of native and exotic wetland-associated scrub species. **AS 3959 classification (Figure 2):** Scrub (Class D) **Bushfire hazard rating (Figure 3):** Extreme	 *Photo location 5: Scrub (Class C) vegetation within Kwinana Freeway reserve*  *Photo location 6: Scrub (Class C) vegetation within Kwinana Freeway reserve*  *Photo location 7: Scrub (Class D) vegetation within the site*  *Photo location 8: Scrub (Class D) vegetation within the site*	Plot 29	Existing vegetation in Plots 19 – 20 to be cleared and area to be developed for commercial land uses (such as buildings, carparks and public roads) in accordance with the proposed SP. **AS3959 classification (Figure 4):** 2.2.3.2(e) non-vegetated area
			Plots 13-18, 21-24	Assumed to remain in existing state in the short-term, and therefore is classified scrub. However, in the longer-term, areas incorporating Plots 21 – 24 are proposed to be developed for future residential/commercial land uses in accordance with the City of Kwinana *Draft Local Planning Strategy* (2015) **AS3959 classification (Figure 4):** Scrub (Class D)

Table 1: AS 3959 Vegetation Classification (continued)

Pre-development			Post-development	
Plot no.	**AS 3959 classification and bushfire hazard rating**	**Site photo/s (location points shown in Figure 2)**	**Plot no.**	**Post-development AS 3959 classification and assumptions**
Plots 25 – 28	Grassland of exotic grasses and weeds. No evidence of any fuel management activities (such as slashing) observed. **AS 3959 classification (Figure 2):** Grassland (Class G) **Bushfire hazard rating (Figure 3):** Moderate	 *Photo location 9: Grassland (Class G) vegetation*  *Photo location 10: Grassland (Class G) vegetation*	Plot 29	Part of the existing vegetation within the site (Plot 25) is to be cleared and area to be developed for commercial land uses (such as buildings, carparks and public roads) in accordance with the proposed SP. **AS3959 classification (Figure 4):** 2.2.3.2(e) non-vegetated area
			Plot 31	Part of the existing vegetation within the site (Plot 25) is to be cleared and then landscaped as drainage areas or a living stream (see **Appendix A**), and is likely to include minimal maintenance. Within the high voltage powerline easement, planting is typically restricted to a maximum height of three metres and as a result, vegetation in this area has been assumed to be equivalent to 'scrub' in order to assume a worse-case bushfire hazard scenario. As development progresses, it is possible that the area will be maintained to a higher standard and could be considered a lower hazard. **AS3959 classification (Figure 4):** Scrub (Class D)

Table 1: AS 3959 Vegetation Classification (continued)

Pre-development			Post-development	
Plot no.	**AS 3959 classification and bushfire hazard rating**	**Site photo/s (location points shown in Figure 2)**	**Plot no.**	**Post-development AS 3959 classification and assumptions**
	Continued from above.		Plots 26 – 28	Assumed to remain in existing state in the short-term, and therefore is classified grassland. However, in the longer-term, these areas are proposed to be developed for future residential/commercial land uses in accordance with the City of Kwinana *Draft Local Planning Strategy* (2015) **AS3959 classification (Figure 4):** Grassland (Class G)
Plot 30	Commercial nursey and areas of managed grass within the Thomas Road and Kwinana Freeway median strips, currently maintained to a low threat standard by City of Kwinana and Main Roads Western Australia respectively as part of the public road network. Evidence of recent maintenance (slashing) observed. **AS 3959 classification (Figure 2):** 2.2.3.2(f) low threat vegetation **Bushfire hazard rating (Figure 3):** Low, however where this plot occurs within 100 m of moderate or extreme hazards, a moderate hazard applies.	 *Photo location 11: low threat vegetation within Thomas Road reserve*  *Photo location 12: low threat vegetation associated with commercial nursery north of the site*	Plot 30	Assumed to remain in existing state. Existing management of median strip vegetation by City of Kwinana/Main Roads Western Australia assumed to continue in the future. **AS3959 classification (Figure 4):** 2.2.3.2(f) low threat vegetation

2.3 Effective slope

The effective slope for classified vegetation that may potentially affect the proposed commercial development within the site in the post-development scenario is shown in **Figure 5** and is summarised as follows:

- Downslope 0-5^{o} for Plots 3 and 15
- Downslope 10-15^{o} for Plots 17 and 18
- Flat/downslope for all other Plots.

3 Bushfire Mitigation Strategy

This BMP provides an outline of the mitigation strategies that will ensure that as future development of the site progresses in accordance with the proposed SP, an acceptable solution and/or performance-based system of control is adopted for each of the bushfire protection criteria outlined in Appendix Four of the Guidelines, which include:

- Element 1: Location of the development
- Element 2: Siting and design of the development
- Element 3: Vehicular access
- Element 4: Water supply

An 'acceptable solution' is proposed to address the intent of all four bushfire protection criteria outlined in the Guidelines. An associated compliance checklist is attached as **Appendix B** and the applicable responses are detailed below.

3.1 Element 1: Location

3.1.1 Intent

To ensure that strategic planning proposals, subdivisions and development applications are located in areas with the least possible risk of bushfire to facilitate the protection of people, property and infrastructure.

3.1.2 Acceptable solution A1.1: Development location

As shown in **Figure 3**, the site is primarily subject to existing moderate and extreme bushfire hazards posed by classified vegetation within and surrounding the site. Following completion of the development, the site will be within an area of low bushfire hazard, except for the areas within the high voltage powerline easement that are likely to be revegetated and considered an 'extreme' bushfire hazard.

The Guidelines state that for proposals to achieve an acceptable solution they should be "*located in an area that is or will, on completion, be subject to either a low or moderate bushfire hazard, or BAL-29 or below".* Given the developable portions of the site will be subject to low bushfire hazard, the proposal is able to achieve the acceptable solution. Mitigation of nearby areas of bushfire hazard have been considered further below.

3.2 Element 2: Siting and design of development

3.2.1 Intent

To ensure the siting and design of development minimises the level of bushfire impact.

3.2.2 Background

AS 3959 provides six BAL ratings: BAL-LOW, BAL-12.5, BAL-19, BAL-29, BAL-40 and BAL-FZ, which are based on heat flux exposure thresholds and are summarised in **Table 2**. The method for determining the BAL rating for any given site involves a specific assessment of vegetation and of topographic slopes. Each BAL rating is associated with appropriate construction standards that apply as a minimum for some classes of buildings in bushfire-prone areas (as per AS 3959).

Whilst compliance with the increased construction standards outlined in AS 3959 is unlikely to be required for future commercial development within the site, the BAL ratings are still useful for understanding potential radiant heat impacts and mechanisms of bushfire attack that may impact on future development.

Table 2: Summary of BAL ratings, heat flux thresholds and associated construction standards, as outlined within AS 3959

Bushfire Attack Level (BAL)	Classified vegetation within 100 m of the subject building and heat flux exposure thresholds	Description of the predicted bushfire attack and levels of exposure	Construction section (within AS 3959)
BAL-LOW	See Section 2.2.3.2 of AS 3959	There is insufficient risk to warrant specific construction requirements	4
BAL-12.5	≤ 12.5 kW/m^2	Ember attack	3 & 5
BAL-19	> 12.5 kW/m^2 to ≤ 19 kW/m^2	Increasing levels of ember attack and burning debris ignited by windborne embers blown together with increasing heat flux	3 & 6
BAL-29	> 19 kW/m^2 to ≤ 29 kW/m^2	Increasing levels of ember attack and burning debris ignited by windborne embers blown together with increasing heat flux	3 & 7
BAL-40	> 29 kW/m^2 to ≤ 40 kW/m^2	Increasing levels of ember attack and burning debris ignited by windborne embers blown together with the increased likelihood of exposure to flame	3 & 8
BAL-FZ	≤ 40 kW/m^2	Direct exposure to flames from fire front in addition to heat flux and ember attack	3 & 9

3.2.3 BAL assessment methodology and assumptions

A method 1 BAL assessment has been undertaken as part of this BMP in accordance with AS 3959 in order to understand potential radiant heat impacts on future development and to demonstrate that an appropriate level of bushfire threat applies to the site (i.e. BAL-29 is not exceeded). The BAL assessment criteria are outlined as follows:

- **Designated FDI:** 80
- **Flame temperature:** 1090
- **Vegetation classification:** woodland (Class B), scrub (Class D) and grassland (Class G) (**Figure 4**).
- **Effective slope:** flat/upslope, downslope 0-5°, downslope 10-15° (**Figure 5**)
- **Setback distances:** As per 2.4.3 in AS 3959 with the relevant distances used to inform the BAL contour plan summarised in **Table 3**.

In addition to the above, the following key assumptions have informed this assessment:

- Areas of existing AS 3959 exclusions surrounding the site will be managed to achieve low threat based on the current management regimes continuing to be applied (where applicable). These areas are shown in **Figure 4** and detailed in **Table 1**.
- All areas of the site which intersect the existing high-voltage powerline easement will be landscaped in accordance with the Landscape Masterplan (**Appendix A**). This includes areas of carpark and hardstand, as well as drainage areas, a living stream and an urban plaza/smart square, as shown in the proposed SP and Landscape Masterplan. A worst-case scenario has been assumed for the purposes of this assessment, whereby landscaping of the drainage and living stream areas will comprise a 'scrub' (Class D) vegetation classification and no management of vegetation within these areas proposed. This is based on landscape planting within these areas being limited to species which grow up to a maximum height of 3 m, due to height restrictions associated with the overhead high-voltage powerlines.
- All remaining portions of the site are assumed to be completely cleared of vegetation, or where vegetation is retained as part of future development, it will be maintained as low threat vegetation in accordance with Section 2.2.3.2 of AS 3959. This is based on standard public road and public open space maintenance requirements for commercial areas.

3.2.4 BAL assessment outcome

The results of BAL assessment are outlined in the BAL contour map shown in **Figure 6**. **Table 3** provides a summary of the setback distances necessary to achieve the indicated BAL ratings, with the BAL contour plan (**Figure 6**) being a visual representation of these distances. The setback distances are based on the determined post-development classified vegetation (**Figure 4**), the effective slope (**Figure 5**) and the associated distances specified within Table 2.4.3 of AS 3959.

Table 3: Results of method 1 BAL assessment

Plot	Vegetation classification	Effective slope	Distance to vegetation	BAL rating
Plots 4, 5, 8, 9, 11 and 12	Woodland (Class B)	Flat / upslope	< 10 m	BAL-FZ
			10 - < 14 m	BAL-40
			14 - < 20 m	BAL-29
			20 - < 29 m	BAL-19
			29 - < 100 m	BAL-12.5
			> 100 m	BAL-LOW
Plots 3	Woodland (Class B)	Downslope 0-5	< 13 m	BAL-FZ
			13 - < 17 m	BAL-40
			17 - < 25 m	BAL-29
			25 - < 35 m	BAL-19
			35 - < 100 m	BAL-12.5
			> 100 m	BAL-LOW
Plots 13, 14, 21, 22, 23, 24 and 31	Scrub (Class D)	Flat / upslope	< 10 m	BAL-FZ
			10 - < 13 m	BAL-40
			13 - < 19 m	BAL-29
			19 - < 27 m	BAL-19
			27 - < 100 m	BAL-12.5
			> 100 m	BAL-LOW
Plots 15 and 16	Scrub (Class D)	Downslope 0-5	< 11 m	BAL-FZ
			11 - < 15 m	BAL-40
			15 - < 22 m	BAL-29
			22 - < 31 m	BAL-19
			31 - < 100 m	BAL-12.5
			> 100 m	BAL-LOW
Plots 17 and 18	Scrub (Class D)	Downslope 10-15	< 14 m	BAL-FZ
			14 - < 19 m	BAL-40
			19 - < 28 m	BAL-29
			28 - < 39 m	BAL-19
			39 - < 100 m	BAL-12.5
			> 100 m	BAL-LOW

Table 3: Results of method 1 BAL assessment (continued)

Plot	Vegetation classification	Effective slope	Distance to vegetation	BAL rating
Plots 26, 27 and 28	Grassland (Class G)	Flat / upslope	< 6 m	BAL-FZ
			6 - < 8 m	BAL-40
			8 - < 12 m	BAL-29
			12 - < 17 m	BAL-19
			17 - < 50 m	BAL-12.5
			> 50 m	BAL-LOW

Based on the outcomes of the method 1 BAL assessment undertaken for the site, future commercial development can be sited to achieve appropriate separation from bushfire hazards to avoid buildings being exposed to a BAL rating greater than BAL-29. The minimum separation distances necessary to achieve a BAL rating of BAL-29 or less (as per the distances detailed in **Table 3**) will be able to be accommodated by future development through the location of public roads, public open space, internal access roads, maintained garden areas and carpark areas.

3.2.5 Acceptable solution A2.1: Asset Protection Zone

One of the most important bushfire protection measures influencing the safety of people and property is to create an Asset Protection Zone (APZ) around buildings. The APZ is a low fuel area immediately surrounding a building comprised of non-flammable features such as irrigated landscapes, gardens, driveways and roads.

Research into land management and house losses during the 'Black Saturday' Victorian bushfires concluded that the action of private landholders who managed fuel loads close to their houses was the single most important factor in determining house survival when compared with other land management practices, such as broad scale fuel reduction burning remote from residential areas (Gibbons *et al.* 2012).

Managing vegetation in the APZ has two main purposes:

- To reduce direct flame contact and radiant heat from igniting the building during the passage of a fire front.
- To reduce ember attack and provide a safer space for people to defend (if required) before, during and after a fire front passes.

Based on the proposed SP design, APZs within the site can be accommodated as part of future commercial development of the site through a combination of public road reserves, public open space and/or in-lot building setbacks (internal APZs). Where internal APZs are required, these may be comprised of hardstand/car parking, storage areas (provided no bulk flammable materials are stored), internal access roads/driveways or well-maintained gardens.

Further detail of the ultimate commercial development design within the site will be provided at the subdivision and/or development application stage, including the proposed layout of subdivided commercial lots and further detail on the proposed internal road network, which will allow APZ requirements to be confirmed.

The minimum APZ requirements which will be applicable to future commercial development within the site, based on the assumed post-development vegetation classifications, are shown in **Figure 7**. Where APZs are required as part of future development within the site, they may be established and maintained to the standards outlined in the Guidelines and/or the City of Kwinana *Firebreak Notice*, which include:

- **Fences:** within the APZ are constructed from non-combustible materials (e.g. iron, brick, limestone, metal post and wire). It is recommended that solid or slatted non-combustible perimeter fences are used.
- **Fine Fuel load:** combustible dead vegetation matter less than 6 mm in thickness reduced to and maintained at an average of two tonnes per hectare.
- **Trees (> 5 m height):** trunks at maturity should be a minimum distance of 6 m from all elevations of the building, branches at maturity should not touch or overhang the building, lower branches should be removed to a height of 2 m above the ground and or surface vegetation, canopy cover should be less than 15% with tree canopies at maturity well spread to at least 5 m apart as to not form a continuous canopy.
- **Shrubs (0.5 - 5 m height):** should not be located under trees or within 3 m of buildings, should not be planted in clumps greater than 5 m^2 in area, clumps of shrubs should be separated from each other and any exposed window or door by at least 10 m.
- **Ground covers (<0.5 m height):** can be planted under trees but must be properly maintained to remove dead plant material and any parts within 2 m of a structure, but 3 m from windows or doors if greater than 100 mm in height.
- **Grass:** should be managed to maintain a height of 100 mm or less.

3.3 Element 3: Vehicular access

3.3.1 Intent

To ensure vehicular access serving a development is available and safe during a bushfire event.

3.3.2 Acceptable solution A3.1: Two access routes

Future commercial development within the site will be provided with two primary access points to the existing public road network via internal public roads, which will connect to Thomas Road at two locations, as shown in **Appendix A**, enabling safe access and egress. Thomas Road provides a connection to roads to the east and west and in particular the Kwinana Freeway which is adjacent to the western boundary of the site. Progression of planning and development for future commercial and urban areas to the south and east of the site will further expand the local public road network, ultimately providing additional access and egress routes to and from the site once developed.

It is noted that a subdivision or development approval will be required before any commercial development of the site can commence. Further detail regarding the proposed public road network will be provided at this stage of the planning process, and will specifically consider the requirements for two access routes to the site outlined in the Guidelines, in the context of both the ultimate development scenario (for the entirety of the site) and for any staged development (if proposed). This may include the provision of temporary emergency access ways suitable for all vehicles until the ultimate road layout is fully constructed.

3.3.3 Acceptable solution A3.2: Public roads

Existing surrounding public roads, and the proposed internal public road to be constructed within the site, will comply with the minimum design requirements and standards outlined in Appendix Four of the Guidelines, achieving the acceptable solution. This includes a minimum 6 m wide trafficable surface (which can include cleared road shoulders), 6 m horizontal clearance and 4.5 m high vertical clearance.

3.3.4 Acceptable solution A3.3: Cul-de-sacs

Currently, the southern neighbourhood connector will form a cul-de-sac, however, is able to achieve the requirement of Appendix Four of the Guidelines, with the cul-de-sac no more than 85 m long, and connecting with two public roads. A suitable turn-around area is able to be accommodated as part of future development.

3.3.5 Acceptable solution A3.8: Firebreak width

The City of Kwinana *Firebreaks Notice*, prepared pursuant to the *Bush Fires Act 1954*, requires all landowners to install minimum 3 m wide bare-earth boundary firebreaks within all lots which have an area of 3001 m^2 or greater.

Future stages of subdivision will specify the proposed distribution and size of subdivided lots within the site. If future subdivided lots within the site are greater than 3001 m^2 in area, it will be the responsibility of future purchasers/end landowners to establish and maintain internal boundary firebreaks within future subdivided lots, in accordance with the City of Kwinana *Firebreak Notice*. Carparks and internal access roads will be able to satisfy this requirement.

3.4 Element 4: Water

3.4.1 Intent

To ensure water is available to the subdivision, development or land use to enable people, property and infrastructure to be defended from bushfire.

3.4.2 Acceptable solution A4.1: Reticulated water

The site is located within an Emergency Services Levy Category 3, which indicates that bushfire events are responded to by volunteer fire and rescue service brigades or bush fire brigades, with the availability of a network of career fire stations, and the State Emergency Services network. Fire response services require ready access to an adequate water supply during bushfire emergencies.

Future commercial development within the site will be connected to a reticulated water supply, which provides a permanent and secure water supply. Hydrants will be provided within the proposed internal road network, to meet the standard specifications and requirements of Water Corporation (Design Standard DS 63) and DFES, which is a typical requirement of development. On this basis, the acceptable solution is achieved.

3.5 Public education and preparedness

Future users of the site are able to access additional bushfire information via the City of Kwinana website, or through contacting the City of Kwinana or DFES directly. In the case of a bushfire in the broader area, advice would be provided to people by DFES, the City of Kwinana and/or Department of Biodiversity, Conservation and Attractions (DBCA) on any specific recommendations with regard to responding to potential bushfire threats, including evacuation if required. It is recommended that future users of the site should make themselves aware of their responsibilities with regard to responding to a potential bushfire.

4 Implementing the Bushfire Management Plan

Subject to approval of the proposed SP, future commercial development of the site will be implemented through subdivision and/or development approvals. Any future subdivision or development application will be accompanied by a separate BMP which will address the measures outlined within this document.

Table 4 outlines the future responsibilities of the developer regarding the future staged subdivision/development of the site, and the associated bushfire risk mitigation measures. These responsibilities will need to be considered as part of the subsequent planning process. Additional bushfire mitigation responsibilities will be outlined as part of future BMP/s prepared to support each stage of future subdivision and/or development application, including responsibilities for future owners/occupiers of lots within the site, as well as the City of Kwinana.

Table 4: Responsibilities for the implementation of the BMP at future subdivision and/or development applications

Management action	Timing
Developer	
Prepare a new BMP in accordance with SPP 3.7, the Guidelines and AS 3959 to support a subdivision and/or development application, based on the proposed layout and bushfire hazards existing or proposed.	To support each future subdivision/development application
Undertake a BAL assessment for any proposed subdivision/development area that is designated as a bushfire prone area within the *Map of Bush Fire Prone Areas*, with assessment results to be included within the updated BMP.	To support each future subdivision/development application
Where required, and based on the outcomes of the BAL assessment, make spatial provision within the subdivision/development layout to accommodate APZs. This may include ensuring lots are of an adequate depth or width to accommodate the relevant setback distance for future buildings to achieve BAL-29 or less, or through the provision of public roads and/or managed public open space.	To support each future subdivision/development application
Make spatial provision for public roads to be installed to the standards outlined in **Section 3.3.3** and ensure two access ways (either formal road or temporary emergency access ways) are provided at all times for each subdivision/development stage.	To support each future subdivision/development application
Make spatial provision to ensure an adequate water supply can be provided to the site, as outlined in **Section 3.4.2.**	To support each future subdivision/development application
Comply with the City of Kwinana *Fire Notice* as published.	Ongoing, where applicable.

5 Summary of Bushfire Management

The site is identified as a bushfire prone area within the state *Map of Bush Fire Prone Areas* (OBRM 2017). This BMP has been prepared consistent with Appendix Four of the Guidelines and demonstrates that as development progresses, an acceptable solution system of control can be adopted for the bushfire protection criteria outlined in the Guidelines, as summarised below:

- **Location:** the BAL assessment indicates that future commercial development (in accordance with the proposed SP) can be located in an area that can or will, on completion, be subject to moderate or low bushfire hazard and can achieve a BAL rating of BAL-29 or below.
- **Siting and Design:** increased construction standards pursuant to AS 3959 do not apply to the building classes typically associated with commercial development. Notwithstanding this, future commercial development can be suitably sited to ensure future commercial buildings are not located in an area that can or will, on completion, be subject to a BAL rating greater than BAL-29. This can be achieved through the provision of Asset Protection Zones, where required, as shown in **Figure 7**.
- **Vehicular Access:** the proposed structure plan provides two connections to the existing public road network to the north (Thomas Road, which connects to the road network to the east and west, including the Kwinana Freeway), allowing vehicles to move through the site easily and safely at all times.
- **Water:** the development will be serviced by a permanent and secure reticulated water supply, to be installed in accordance with the standard Water Corporation specifications (including fire hydrants as required).

Overall, this BMP demonstrates that while the site is identified as bushfire prone in the state *Map of Bush Fire Prone Areas* (OBRM 2017), the proposed SP design will allow for future commercial development to be implemented such that an appropriate level of bushfire threat will apply to future commercial land uses within the site.

6 Applicant Declaration

I declare that the information provided is true and correct to the best of my knowledge.

Signature:

Name: Kirsten Knox

Company: Emerge Associates

Date: 31 May 2018

Signature:

Name: Rohan Carboon

Company: Bushfire Safety Consulting

Date: 31 May 2018

7 References

7.1 General references

Gibbons, P., van Bommel, L., Gill, A., Cary, GJ, Driscoll, D., Bradstock, R., Knight, E., Moritz, M., Stephens, S. and Lindenmayer, D. 2012, Land Management Practices Associated with House Loss in Wildfires, PLoS One, 7(1).

Leonard, J. 2009, Report to the 2009 Victorian Royal Commission Building Performance in Bushfires.

Standards Australia 2009, AS 3959-2009 Construction of buildings in bushfire-prone areas, Sydney.

Western Australian Planning Commission (WAPC) 2015, State Planning Policy 3.7 Planning in Bushfire Prone Areas, Western Australian Planning Commission, Perth, Perth.

Western Australian Planning Commission and Department of Fire and Emergency Services (WAPC and DFES) 2017, Guidelines for Planning in Bushfire Prone Areas Version 1.2, Western Australia.

7.2 Online references

Office of Bushfire Risk management (OBRM) 2017, Map of Bush Fire Prone Areas, viewed November 2017, <https://maps.slip.wa.gov.au/landgate/bushfireprone/>

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Figures

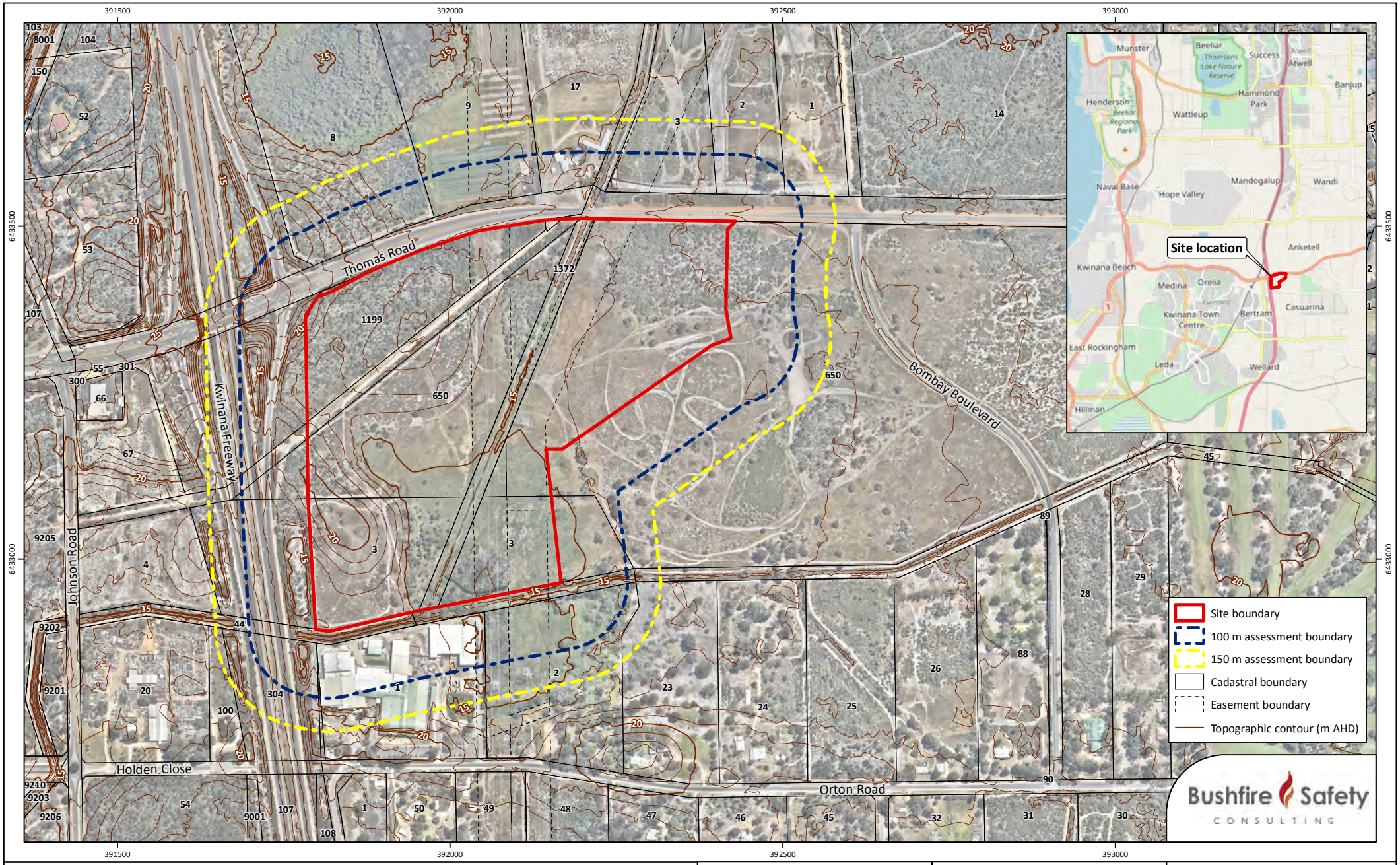

Figure 1: Site and Assessment Area

Project:	Bushfire Management Plan Lots 9011, 9012, 9013, 1199 & 3 Thomas Road, Casuarina
Client:	ARP No.4

Plan Number:
EP17-109(01)--F02a

Drawn:	KNM
Date:	30/05/2018
Checked:	ADB
Approved:	KK
Date:	30/05/2018

N

0 50 100 150 200
Metres

Scale: 1:7,500@A4

GDA 1994 MGA Zone 50

emerge ASSOCIATES

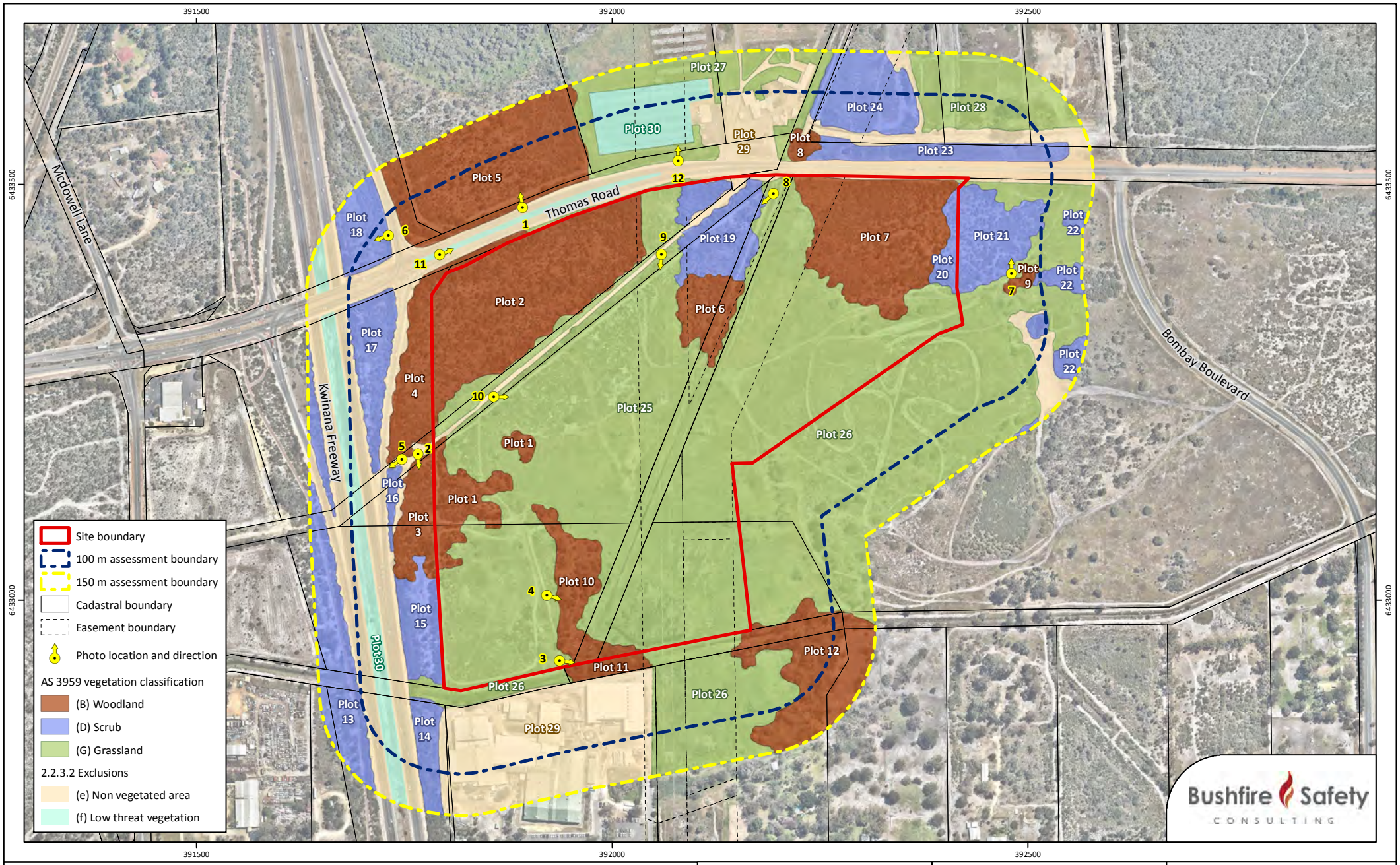

Figure 2: **Existing Site Conditions – AS 3959 Vegetation Classification**

Project: Bushfire Management Plan
Lots 9011, 9012, 9013, 1199 & 3 Thomas Road, Casuarina

Client: ARP No.4

Plan Number:
EP17-109(01)--F03a

Drawn:	KNM
Date:	30/05/2018
Checked:	ADB
Approved:	KK
Date:	30/05/2018

N

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Metres

Scale: 1:6,000@A4

GDA 1994 MGA Zone 50

emerge ASSOCIATES

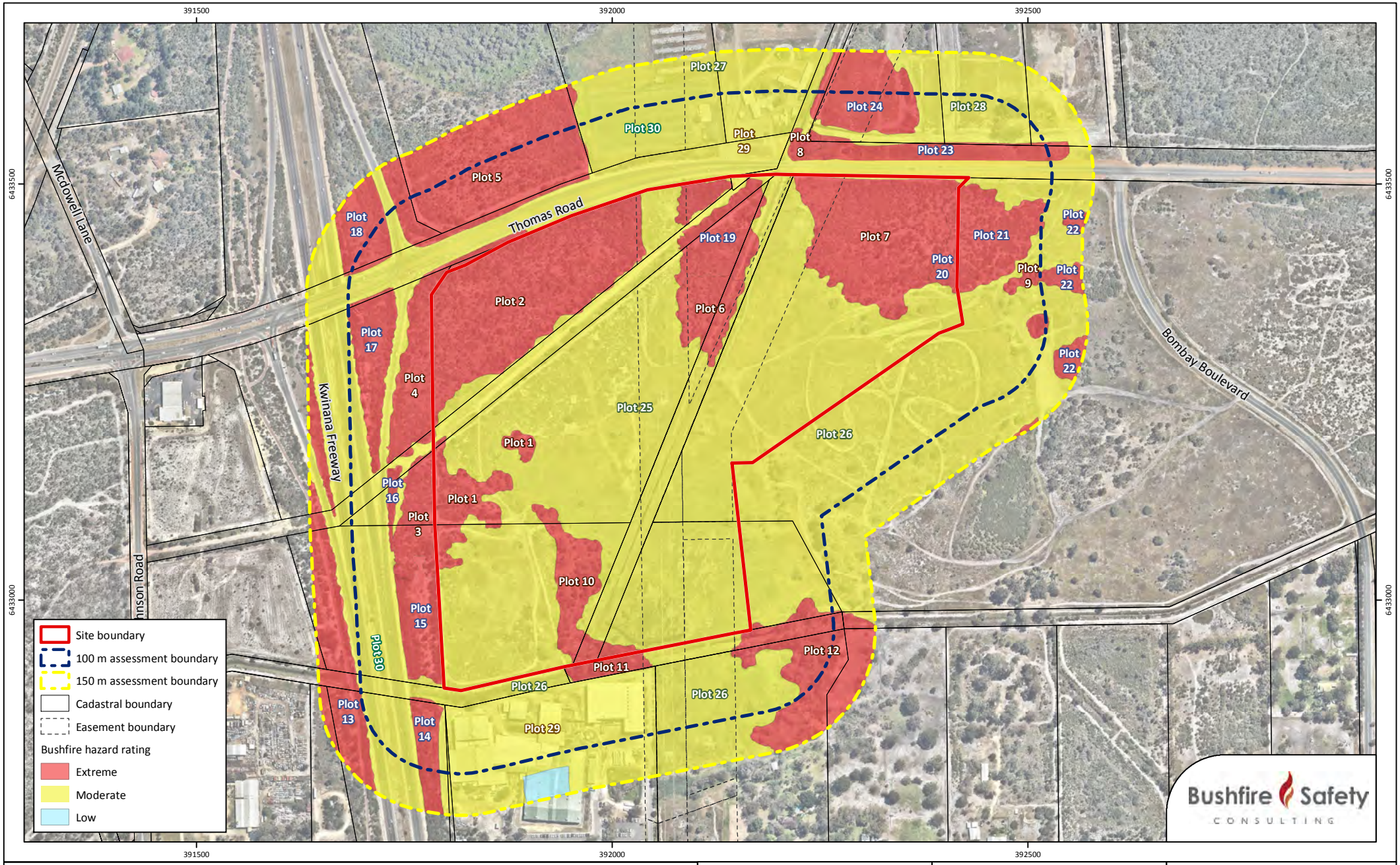

Figure 3: Existing Site Conditions – Bushfire Hazard Rating

Project: Bushfire Management Plan
Lots 9011, 9012, 9013, 1199 & 3 Thomas Road, Casuarina
Client: ARP No.4

Plan Number:
EP17-109(01)--F04a
Drawn: KNM
Date: 30/05/2018
Checked: ADB
Approved: KK
Date: 30/05/2018

N

0 50 100 150 200
Metres
Scale: 1:6,000@A4
GDA 1994 MGA Zone 50

emerge ASSOCIATES

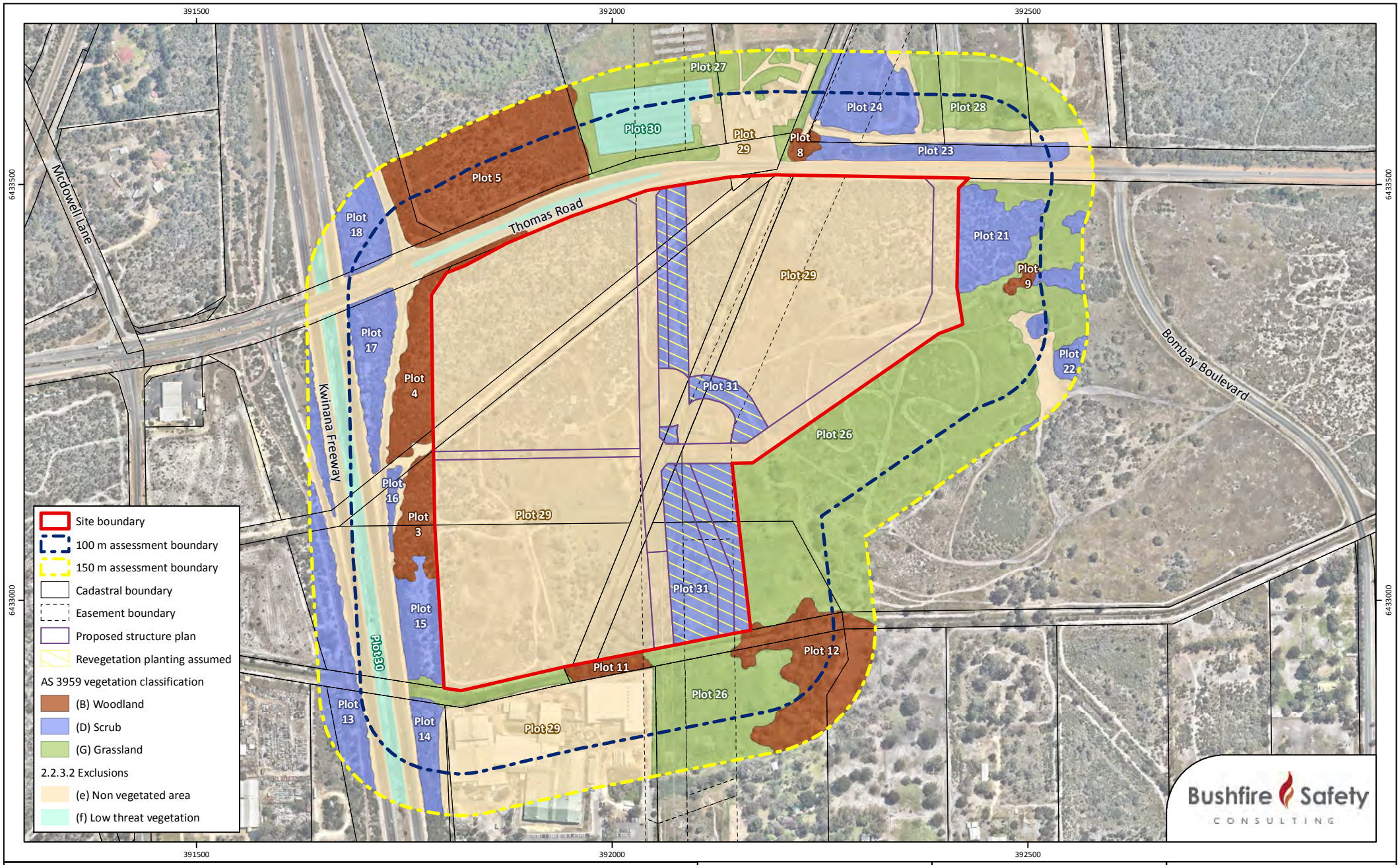

Figure 4: **Post-Development Site Conditions – AS 3959 Vegetation Classification**

Project: Bushfire Management Plan
Lots 9011, 9012, 9013, 1199 & 3 Thomas Road, Casuarina
Client: ARP No.4

Plan Number:
EP17-109(01)--F05a
Drawn: KNM
Date: 30/05/2018
Checked: ADB
Approved: KK
Date: 30/05/2018

N

0 50 100 150 200
Metres
Scale: 1:6,000@A4
GDA 1994 MGA Zone 50

emerge ASSOCIATES

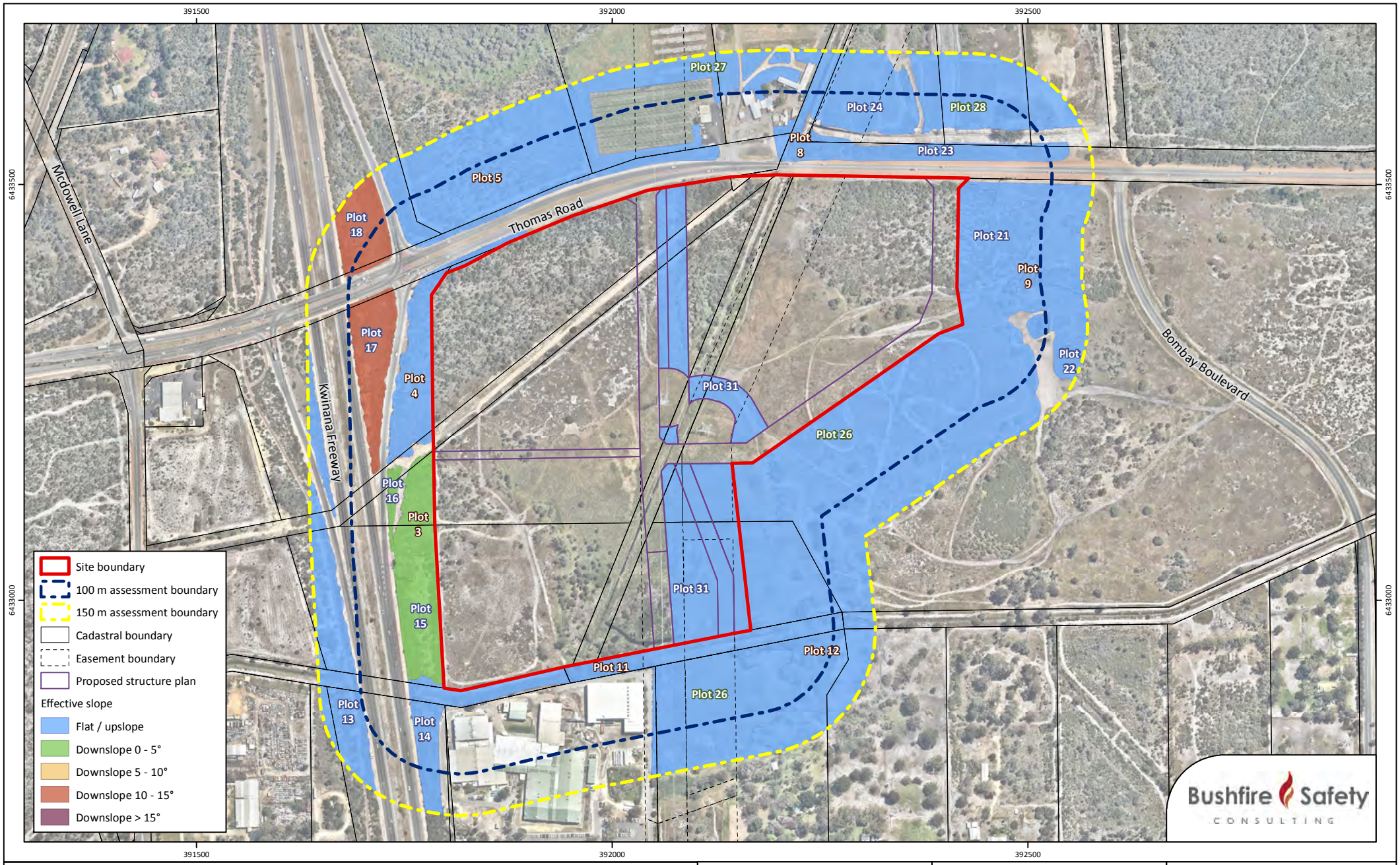

Figure 5: Effective Slope

Project: Bushfire Management Plan
Lots 9011, 9012, 9013, 1199 & 3 Thomas Road, Casuarina

Client: ARP No.4

Plan Number:
EP17-109(01)--F06a

Drawn:	KNM
Date:	30/05/2018
Checked:	ADB
Approved:	KK
Date:	30/05/2018

N

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Metres

Scale: 1:6,000@A4

GDA 1994 MGA Zone 50

emerge ASSOCIATES

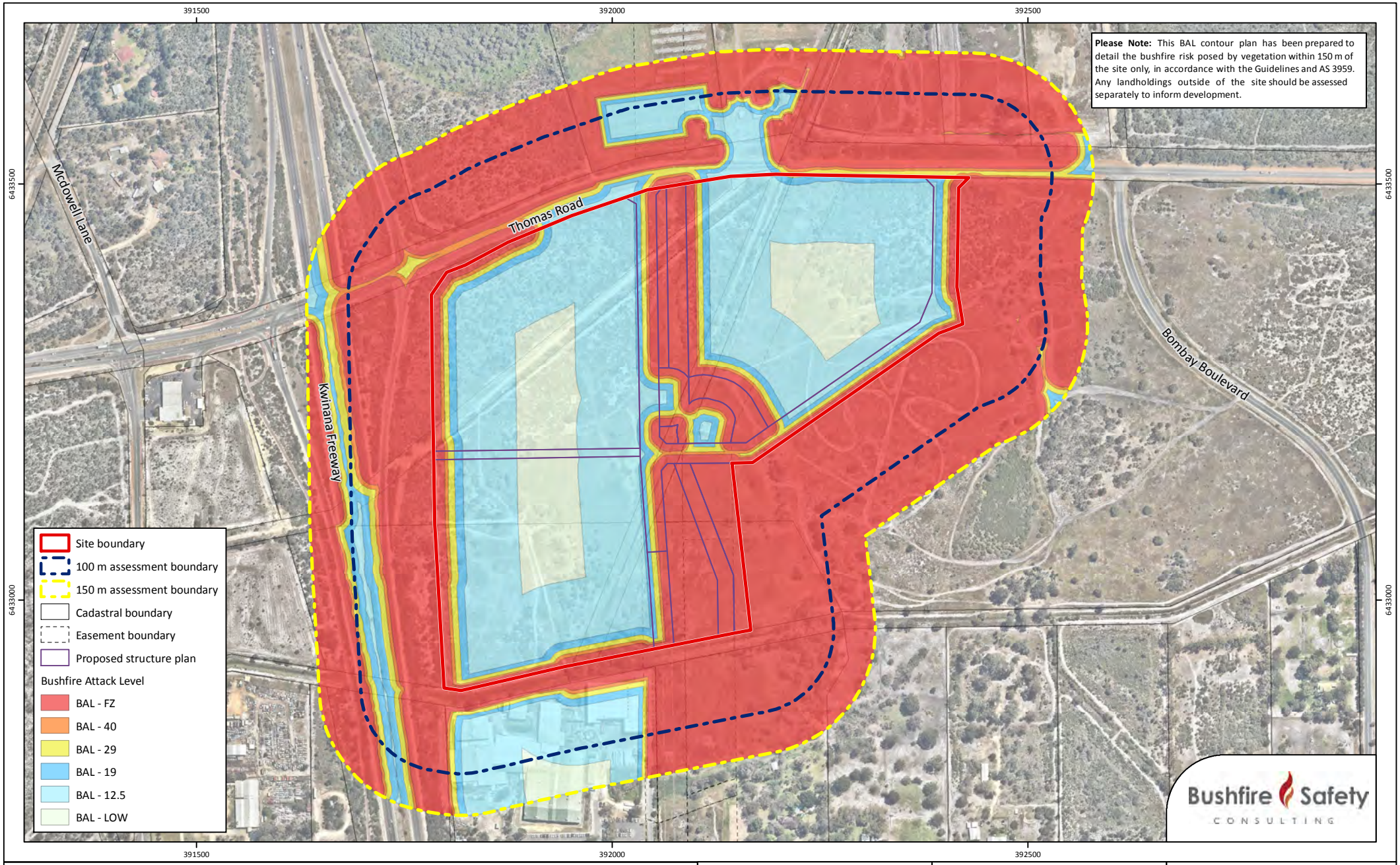

Figure 6: Bushfire Attack Level Contour Plan

Project: Bushfire Management Plan
Lots 9011, 9012, 9013, 1199 & 3 Thomas Road, Casuarina
Client: ARP No.4

Plan Number:
EP17-109(01)--F07a
Drawn: KNM
Date: 30/05/2018
Checked: ADB
Approved: KK
Date: 30/05/2018

N

0 50 100 150 200
Metres
Scale: 1:6,000@A4
GDA 1994 MGA Zone 50

emerge ASSOCIATES

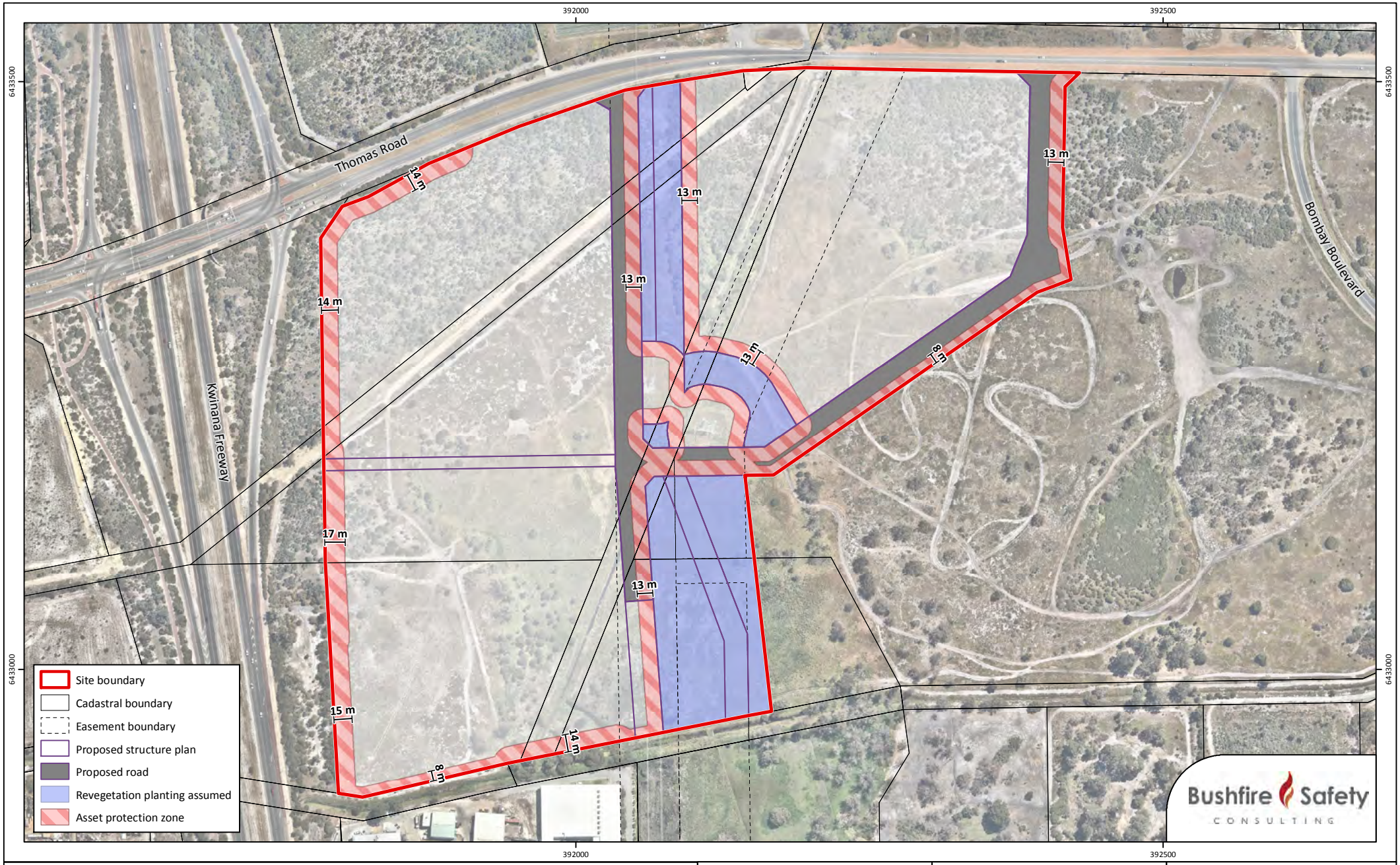

Figure 7: Asset Protection Zone Requirements

Project: Bushfire Management Plan
Lots 9011, 9012, 9013, 1199 & 3 Thomas Road, Casuarina
Client: ARP No.4

Plan Number:
EP17-109(01)--F08a
Drawn: KNM
Date: 30/05/2018
Checked: ADB
Approved: KK
Date: 30/05/2018

N

0 50 100 150
Metres
Scale: 1:4,250@A4
GDA 1994 MGA Zone 50

emerge ASSOCIATES

Plan 1: Local Structure Plan

Lots 9011, 9012, 9013, 1199 & 3 Thomas Road, Casuarina

0 50 100m

Project Manager: MC
Drawn: OP
Checked: MC
Date: 14 Aug 2018
Scale: 1:5,000 @ A3
Drawing No. 17-769 ST-1 A

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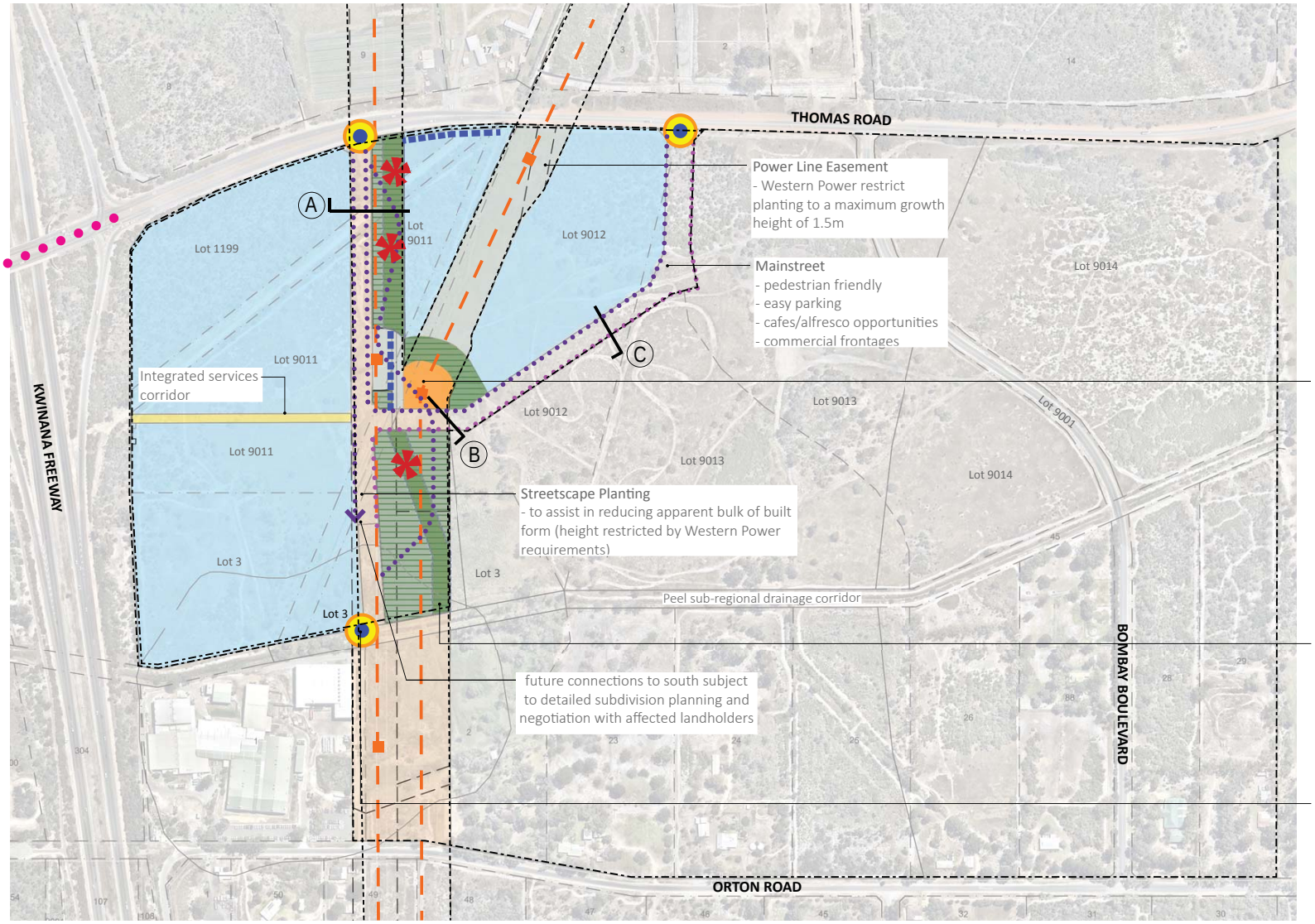
the art and science of place

Level 18, 191 St Georges Terrace
Perth Western Australia 6000
Telephone +61 08 9289 8300
Facsimile +61 08 9321 4786
www.elementwa.com.au



LEGEND

- Site Boundary
- Existing Power Lines
- Mixed Business
- Living Stream
- Drainage Area
- 'Smart' Square
- Entry Node
- Public Art Location
- Underground Piped Drainage
- Pedestrian Links
- Cycle Links
- A — Road Cross Section

'Smart' Square
- small node/hub for workers and visitors to recreate and relax in.
- 50 % turf and planting / 50% hardstand
- range of public amenities
- 'steora' smart benches. These temperature controlled benches have built in mobile device charging and mobile internet, powered by green solar energy.
- physical fitness activities providing a social function- table tennis/badminton/basketball
- BBQ's
- aesthetic that relates to living streams and main street

Living Stream
- functions through drainage overflow area
- encourage usage through pedestrian and cycle ways, passive area for retreat, occassional seating viewpoints/ nodes, interpretive signage
- encourage wildlife

Entry Nodes
- signage/branding with supportive landscape
- provides a sense of arrival and assists with legibility of the site
- may incorporate artwork, lighting and materials suitable for an industrial site as well as providing information and a reference point.

CASUARINA
LANDSCAPE MASTERPLAN

AIGLE ROYAL GROUP

DWG CLS-SK-00
REV E
DATE 22.05.18
SCALE 1:5000 @ A3

emerge ASSOCIATES

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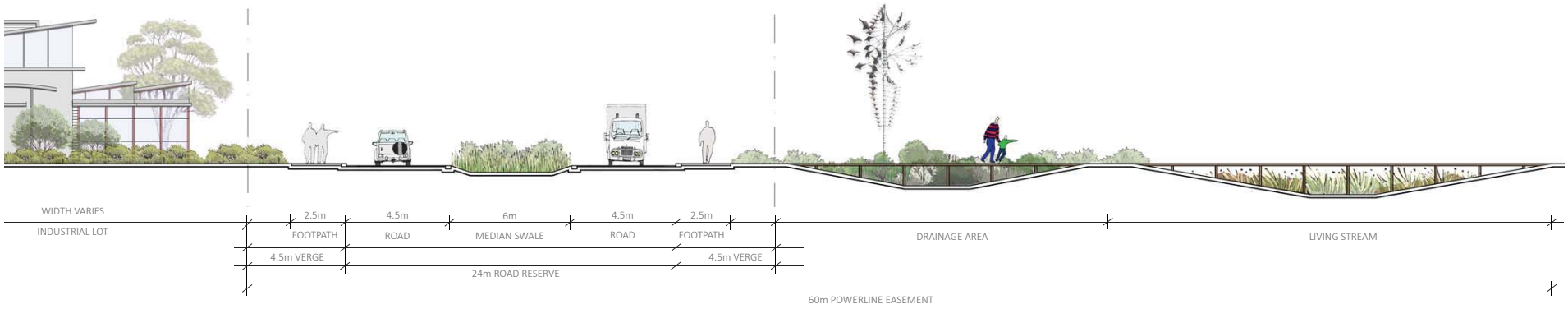
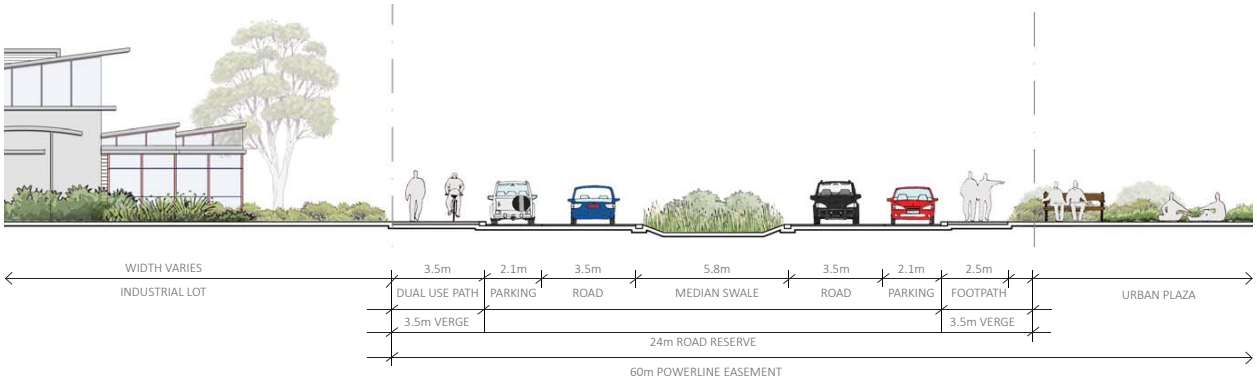
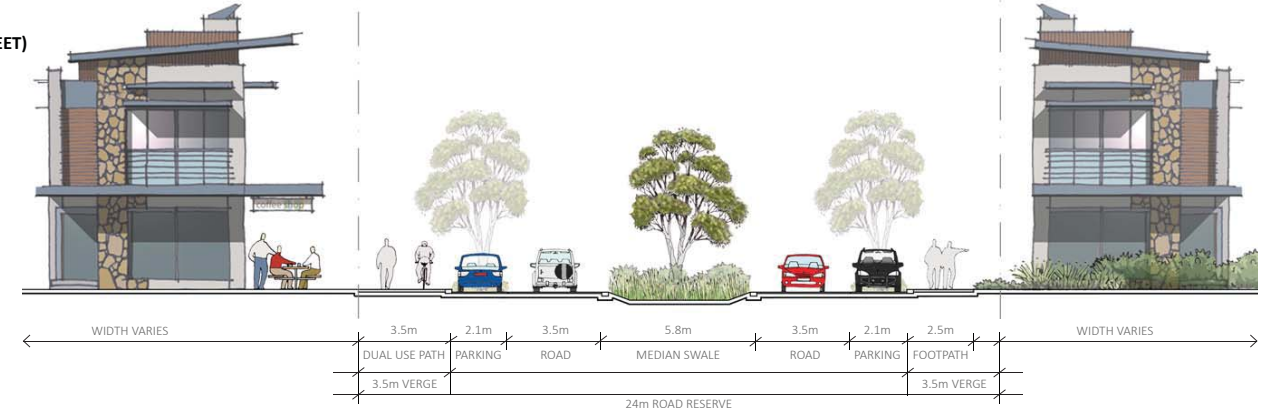
SECTION A
NEIGHBOURHOOD CONNECTOR



SECTION B
NEIGHBOURHOOD CONNECTOR



SECTION C
NEIGHBOURHOOD CONNECTOR (MAINSTREET)



CASUARINA
LANDSCAPE SECTIONS

AIGLE ROYAL GROUP

DWG CLS-SK-00
REV E
DATE 22.05.18

emerge ASSOCIATES

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PLANT SPECIES

The following indicative plant species schedule is to be applied to proposed landscape works within the Casuarina development.

The plant schedule that has been provided as part of the Landscape Strategy, has been compiled for the landscape areas to provide an overall legibility and visual aesthetic to the site, in response to the former vegetation that once would have existed onsite, the local character of the area and the planning intent of the development.

Trees
Agonis flexuosa
Casuarina cunninghamiana
Casuarina equisetifolia
Callistemon 'Kings Park Special'
Eucalyptus gomphocephala
Eucalyptus ficifolia
Eucalyptus rudis
Melaleuca lanceolata

Shrubs
Acacia truncata
Alyogyne huegelii
Banksia littoralis
Banksia nivea (syn Dryandra nivea)
Beaufortia aestiva 'Summer Flame'
Callistemon 'Endeavor'
Callistemon 'Great balls of Fire'
Calothamnus quadrifidus
Dryandra sessilis
Gahnia trifida
Hakea prostrata
Hakea varia
Leucopogon parviflorus
Leucopogon australis
Logania vaginalis
Melaleuca 'Little penta'
Melaleuca huegelii
Melaleuca nesophila
Melaleuca lateritia
Melaleuca teretifolia
Melaleuca viminea
Olearia axillaris
Spyridium globulosum
Templetonia retusa

Power line easement - maximum 1.5m height

Shrubs and Groundcovers
Acacia huegelii
Acacia lasiocarpa
Adenanthos cuneatus
Banksia nivea (syn Dryandra nivea)
Callistemon 'Little John'
Carpobrotus virescens
Conostylis aculeata
Conostylis candicans
Dianella caerulea
Dianella revoluta
Eremophila glabra 'Kalbarri Carpet'
Eremophila nivea
Grevillea crithmifolia
Grevillea preissii
Grevillea 'Gin Gin Gem'
Gompholobium tomentosum
Hemiandra pungens
Hibbertia hypericoides
Hibbertia racemosa
Jacksonia sericea
Kennedia prostrata
Leucophyta brownii
Lomandra 'Tanika'
Patersonia occidentalis
Melaleuca incana 'Nana'
Melaleuca conothamnoides
Olearia axillaris 'Little Smokie'
Orthrosanthus laxus
Scaevola crassifolia 'Flat Fred'
Scaevola aemula 'Purple Fanfare'
Westringia fruticosa

Sedges
Baumea juncea
Gahnia trifida
Carex appressa
Ficinia nodosa
Lepidosperma angustatum
Lepidosperma gladiatum


AGONIS FLEXUOSA
W.A Peppermint


CORYMBIA ficifolia
Red Flowering Gum


ACACIA LASIOCARPA
Lime Sand Wattle


CAREX APPRESSA
Tall Sedge


CALOTHAMNUS QUADRIFIDUS
One-sided Bottlebrush


EREMOPHILA GLABRA
Tar Bush


FICINIA NODOSA
Knotted Club Rush


GREVILLEA CRITHMIFOLIA
Green Carpet


HIBBERTIA HYPERICOIDES
Buttercups


JACKSONIA SERICEA
Waldjumi


KENNEDIA PROSTRATA
Running Postman


LOMANDRA 'TANIKA'


MELALEUCA HUEGELII
Chenille Honeymyrtle


OLEARIA AXILLARIS
Coastal Daisy Bush


ORTHROSANTHUS LAXUS
Morning Iris


WESTRINGIA FRUTICOSA
Native Rosemary

CASUARINA
PLANTING PALETTE

AIGLE ROYAL GROUP

DWG CLS-SK-00
REV E
DATE 22.05.18

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U:\CURRENT PROJECTS\Casuarina\(XX-01) Photos Drawings & Scans\(XX-01) 02_Concept Plans, Scans & Graphics\02_LIVE Dwgs\01_Overall Project Plans\Casuarina Landscape Masterplan Strategy.indd



industrial imagery



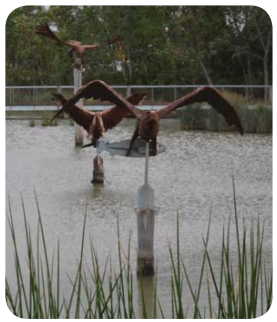
urban plaza


'Steora' smart bench

- mobile device charging
- mobile internet
- temperature controlled seating
- resistant to vandalism







public art/entry statements

- artwork to be approved by Western Power for placement within easement
- kinetic
- showcase technology
- wind turbines to power POS items and street lights






living streams

CASUARINA
PRECEDENT IMAGES

AIGLE ROYAL GROUP

DWG CLS-SK-00
REV E
DATE 22.05.18

emerge ASSOCIATES

Appendix B

Compliance Checklist

Appendix B: Compliance Checklist

Element/Question	Response
1: Location	
Does the proposal comply with the performance criteria by applying acceptable solution A1.1 (development location)?	Yes, future commercial development can be located in an area that can or will, on completion, be subject to moderate or low bushfire hazard and/or can achieve a BAL rating of BAL-29 or below. This is discussed in **Section 3.1.2** of the BMP.
2: Siting and design of the Development	
Does the proposal comply with the performance criteria by applying acceptable solution A2.1 (asset protection zone)?	Yes, future commercial development can be sited such that it can, on completion, achieve a BAL rating of BAL-29 or below through the accommodation of APZs. This is discussed in **Section 3.2.5** of the BMP.
3: Vehicular access	
Does the proposal comply with the performance criteria by applying acceptable solution A3.1 (two access routes)?	Yes, the proposed SP for the site provides for two connections to the existing public road network. This is discussed in **Section 3.3.2** of the BMP.
Does the proposal comply with the performance criteria by applying acceptable solution A3.2 (public road)?	Yes, future public roads within the site can meet the minimum requirements of the Guidelines. This is discussed in **Section 3.3.3** of the BMP.
Does the proposal comply with the performance criteria by applying acceptable solution A3.3 (cul-de-sac)?	Yes, a cul-de-sac is proposed within the site pending extension of a primary internal road, and can meet the minimum requirements of the Guidelines. This is discussed in **Section 3.3.4** of the BMP.
Does the proposal comply with the performance criteria by applying acceptable solution A3.4 (battle axe)?	Not applicable.
Does the proposal comply with the performance criteria by applying acceptable solution A3.5 (private driveways longer than 50 m)?	Not applicable.
Does the proposal comply with the performance criteria by applying acceptable solution A3.6 (emergency access way)?	Not applicable.
Does the proposal comply with the performance criteria by applying acceptable solution A3.7 (fire services access route)?	Not applicable.
Does the proposal comply with the performance criteria by applying acceptable solution A3.8 (firebreak width)?	Yes, future commercial development will comply with the minimum firebreak requirements outlined in the City of Kwinana *Firebreak Notice* (where applicable). This is discussed in **Section 3.3.5** of the BMP.
4: Water	
Does the proposal comply with the performance criteria by applying acceptable solution A4.1 (reticulated areas)?	Yes, future commercial development within the site will be connected to the existing reticulated water supply. This is discussed in **Section 3.4.2** of the BMP.
Does the proposal comply with the performance criteria by applying acceptable solution A4.2 (non-reticulated areas)?	Not applicable.

Appendix B: Compliance Checklist (continued)

Element/Question	Response
4: Water (continued)	
Does the proposal comply with the performance criteria by applying acceptable solution A4.3 (individual lots within non-reticulated areas)?	Not applicable.

Bushfire management plan/Statement addressing the Bushfire Protection Criteria coversheet

Site address: Lot 9011, 9012, 9013, 1199 & 3 Thomas Road, Casuarina

Site visit: Yes ☑ No ☐

Date of site visit (if applicable): Day 13 Month November Year 2017

Report author or reviewer: Kirsten Knox (Emerge Associates) and Rohan Carboon (Bushfire Safety Consulting)

WA BPAD accreditation level (please circle):

Not accredited ☐ Level 1 BAL assessor ☐ Level 2 practitioner ☐ Level 3 practitioner ☑

If accredited please provide the following.

BPAD accreditation number: 23160 Accreditation expiry: Month January Year 2019

Bushfire management plan version number: EP17-109(01)--001a

Bushfire management plan date: Day 31 Month May Year 2018

Client/business name: ARP No. 4

	Yes	No
Has the BAL been calculated by a method other than method 1 as outlined in AS3959 (tick no if AS3959 method 1 has been used to calculate the BAL)?		✓
Have any of the bushfire protection criteria elements been addressed through the use of a performance principle (tick no if only acceptable solutions have been used to address all of the bushfire protection criteria elements)?		✓

Is the proposal any of the following (see SPP 3.7 for definitions)?	Yes	No
Unavoidable development (in BAL-40 or BAL-FZ)		✓
Strategic planning proposal (including rezoning applications)		✓
High risk land-use		✓
Vulnerable land-use		✓

None of the above ☑

Note: Only if one (or more) of the above answers in the tables is yes should the decision maker (e.g. local government or the WAPC) refer the proposal to DFES for comment.

Why has it been given one of the above listed classifications (E.g. Considered vulnerable land-use as the development is for accommodation of the elderly, etc.)?

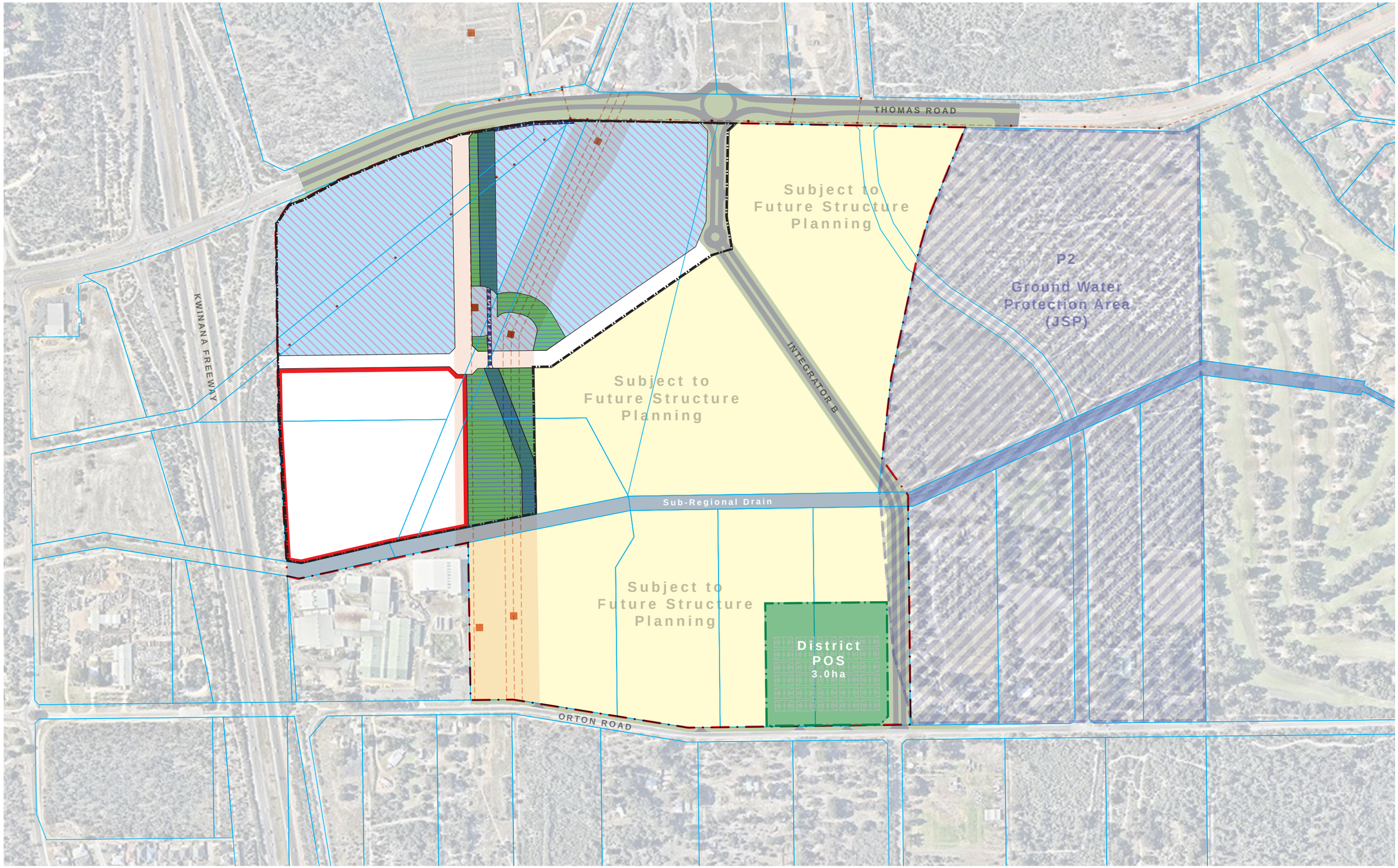
The information provided within this bushfire management plan to the best of my knowledge is true and correct:

Signature of report author or reviewer (Kirsten Knox)

Date 31 May 2018

Appendix G

Concept Plan



Concept Plan

Lots 9011, 9012, 9013, 1199 & 3 Thomas Road, Casuarina

0 50 100m

Project Manager: MC Date: 21 Aug 2018

Drawn: OP Scale: 1:5,000 @ A3

Checked: MC Drawing No. 17-769 ST-3 A

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Appendix H

Significant Tree Survey

PRECINCTS 1 & 2 THOMAS ROAD, CASUARINA

SIGNIFICANT TREE SURVEY

Prepared for:	Aigle Royal Developments
Report Date:	7 March 2018
Version:	1
Report No.	2017-369

pgv ENVIRONMENTAL

CONTENTS

LIST OF ATTACHMENTS

Tables

Plates

Figures

Appendices

1 INTRODUCTION

1.1 Site Location

Aigle Royal Developments is preparing a Local Structure Plan for Precincts 1 and 2 of Lots 3, 1199, 9011, 9012 and 9013 Thomas Road, Casuarina (the site). The site is located 30km to the south of the Perth Central Business District (Figure 1). The site is bounded by Thomas Road to the north, Kwinana Freeway to the west, 'Special Rural' lots to the south and the remainder of Lot 9013, which is undeveloped to the east (Figure 2).

1.2 Local Structure Plan

The Local Structure Plan for the site seeks to provide a Mixed Business land use on the site as well as land for drainage (Appendix 1). Two High Voltage Power Easements run north to south through the area.

1.3 Purpose and Scope

The Significant Tree Survey has been undertaken upon request of the City of Kwinana in accordance with Local Planning Policy No. 1 *Landscape Feature and Tree Retention* (City of Kwinana, 2016). The objectives of the policy are as follows:

To ensure that:

a) an appropriate level of information concerning significant trees and landscape features is provided at each stage of the planning framework;

b) retention of significant trees and landscape features are optimised through the strategic and statutory planning framework to retain the character of the area.

2 METHODOLOGY

Each tree on the site with a diameter greater than 500mm at breast height was assessed by Dr Paul van der Moezel and Jackie Cabot from PGV Environmental on 2 February 2018. The measurement of trunk diameter followed the method shown in Appendix A of Australian Standard 4970 *Protection of Trees on Development Sites.* According to AS 4970 trees can have single trunk diameter measured at breast height or, for trees with multiple trunks, each trunk can be measured and the appropriate formula applied to achieve the minimum 500mm measurement.

Each tree was assessed according to:

- Location;
- Species;
- Size;
- Structural health;
- habitat value; and
- landscape amenity value.

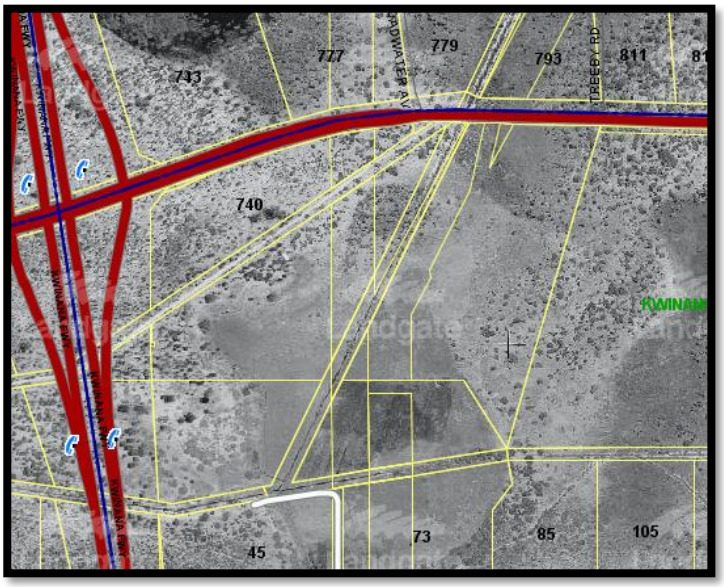
In addition, the location of each tree was recorded using a hand-held GPS.

3 SITE DESCRIPTION

3.1 Land Use

In earliest available aerial photography in 1953 half of the site has been completely cleared and the other half contains scattered trees that appear in a range of condition from parkland cleared to an area in the north-west that is likely to have an intact understorey (Plate 1).

Plate 1: Historical aerial photograph from 1953 (Landgate, 2017)



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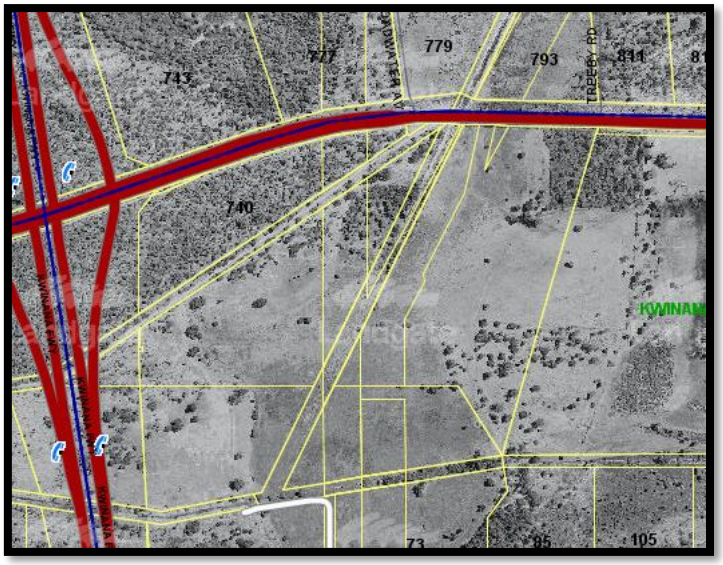
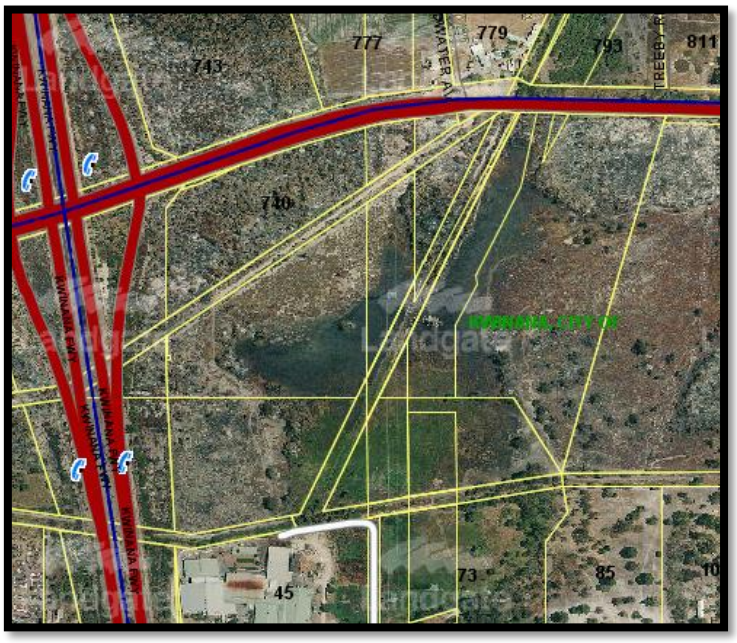
Aerial photography from 1965 shows further clearing of the site in the south-west corner (Plate 2). The vegetation in the north-western area remains as intact remnant vegetation.

Plate 2: Historical aerial photograph from 1965 (Landgate, 2017)



The January 2008 aerial photography shows most of the site was burnt just prior to the photo being taken (Plate 3). A recent fire occurred in the vegetation in the north-west corner of the site in the summer of 2017/18.

Plate 3: Aerial photography from January 2008 (Landgate, 2017).



3.2 Topography

The site is predominantly flat and low lying with two small rises in the north-west and south-west parts of the site. The elevation of the site varies between approximately 18 and 20m Australian Height Datum (AHD) (Figure 2).

3.3 Geology and Soils

3.3.1 Geology

The site is mapped as part of the Bassendean System and consists of very low relief, leached, grey siliceous Pleistocene sand dunes, intervening sandy and clayey swamps and gently undulating plains (Bolland, 1998). These soils are very leached, infertile and mildly acidic (DAFWA, 2017).

3.3.2 Soils

The soils on the site have been described by the Department of Agriculture and Food Western Australia (DAFWA) (2017) as:

- Bassendean B1 Phase (212Bs_B1) which are described as deep bleached grey sands sometimes with a pale yellow B horizon or a weak iron-organic hardpan at depths generally greater than 2m. These soils occur on extremely low to very low relief dunes, undulating sandplain and discrete sand rises; and
- Bassendean B3 Phase (212Bs_B3) are soils on closed depressions and poorly defined stream channels. These soils are moderately deep, bleached sands with an iron-organic pan, or clay subsoil. Surfaces are dark grey sand or sandy loam.

The B1 phase is located on the western part of the site and the B3 on the eastern. The B3 soils are associated with the lower lying areas on the site (Figure 3).

3.4 Hydrology

3.4.1 Groundwater

The Perth Groundwater Map shows the top of the groundwater table at 11m to 13mAHD and is approximately 3 to 5m below the ground surface. Groundwater is generally flowing to the west (DWER, 2017). The groundwater around the wetland has geological formations that have been grouped into three distinct aquifers:

- Superficial Swan Aquifer;
- Leederville Aquifer; and
- Yarragadee North (DWER, 2017)

3.4.2 Surface Water

Surface water flow will be limited due to the permeable nature of the sandy B1 phase soils. Any overland flow is likely to drain to the eastern lower lying areas and the Drainage Line to the south of the site.

3.4.3 Wetlands

The site contains part of 'Sandy Lake' which is classified as Multiple Use Wetland with the Unique Feature Identifier (UFI) 6669 as mapped in the DPaW's *Geomorphic Wetlands of the Swan Coastal Plain* dataset (National Map, 2017). Wetland UFI 6669 is a Sumpland which is defined as a seasonally inundated basin (Hill *et al.,* 1996).

3.5 Flora and Vegetation

3.5.1 Flora

Two vegetation and flora surveys have been undertaken over the whole Aigle Royal landholding including the balance of lots to the east of the structure plan area (GHD, 2012; Bennett Environmental, 2010). The GHD Survey was conducted in May 2012 and a follow-up spring survey of the area was conducted in October 2012 by Bennett Environmental. A total of 133 species have been recorded on the whole site, of which 79 were native species and 54 introduced. None of the species are Threatened or Priority flora.

3.5.2 Vegetation

A total of five vegetation types occur in the structure plan area. These are:

- Banksia Woodland
- Eucalyptus and Melaleuca Open Woodland to Woodland
- Mixed Myrtaceous Closed Shrubland
- Sedgeland
- Cleared Paddocks

The pockets of native vegetation are rated as Very Good to Degraded and the remainder of the site is Completely Degraded.

4 RESULTS AND DISCUSSION

4.1 Trees Recorded on the Site

The significant tree survey recorded 38 trees in Precincts 1 and 2 that had a diameter at breast height greater than 500mm using the AS 4970 methodology (Figure 2). The trees consisted of six species, of which Paperbark (*Melaleuca rhaphiophylla*) was the most abundant (Table 2). All of the species are native and endemic to the area (Table 1).

Table 1: Tree Species on the Site

Species	Common Name	Native/Introduced	Number
Allocasuarina fraseriana	Sheoak	Native	1
Banksia attenuata	Slender Banksia	Native	2
Eucalyptus marginata	Jarrah	Native	1
Eucalyptus rudis	Flooded Gum	Native	13
Melaleuca preissiana	Paperbark	Native	4
Melaleuca rhaphiophylla	Paperbark	Native	17
Total			**38**

4.2 Tree Characteristics

4.2.1 Condition

There were no trees recorded in Excellent condition. Eight of the trees were classified as being in Good condition, however have evidence of fire damage (Plate 4).

Plate 4: Tree 23 and 24 in Good condition but impacted by fire

The remaining trees were in Fair or Poor condition with dead or burnt branches and/or burnt out trunks.

4.2.2 Height

Three of the trees were considered small (6m and below in height). Nineteen trees were between 6 and 10 metres in height and the remaining sixteen trees were greater than 10m in height.

4.2.3 Diameter

There were twelve trees with single trunks with a DBH of 500mm or greater and 26 trees with multiple trunks with a DBH of 500mm or greater using the AS 4970 method. Thirteen trees had a diameter greater than 750mm, the remaining trees had a diameter between 500-700mm using the AS 4970 method.

4.2.4 Habitat Values

All the trees would provide some habitat for birds. There were very few trees with hollows and no hollows were large enough to be considered suitable for Black Cockatoo nesting.

The Jarrah, Banksia and Sheoak may provide foraging value to Carnaby's Black Cockatoo and Baudin's Cockatoo and to a limited extent for Forest Red-tail Black Cockatoos. There was no foraging observed at the time of the survey with most of the foraging habitat in the north-west corner of the site recently being burnt.

4.2.5 Retention Potential

The site contained 16 significant trees in Fair condition, eight in Good condition and the remaining fourteen trees are in Poor condition, largely due to the impacts of regular fires. The eight trees in Good condition still showed the impacts of fire.

None of the 38 trees had any particular feature that would recommend them for retention in a future development.

5 CONCLUSIONS AND RECOMMENDATIONS

A total of 38 trees with a DBH of 500mm or greater, measure using the AS4970 method were recorded in Precincts 1 and 2 of the proposed mixed use development on Thomas Road, Casuarina.

Sixteen of the trees were rated in Fair condition, eight in Good condition and fourteen in Poor condition. The overall low rating of the trees was largely due to the impacts of regular fires.

None of the 38 trees had any particular feature that would recommend them for retention in a future development.

Most of the trees would not be able to be retained due to safety issues over the tree's structural integrity.

6 REFERENCES

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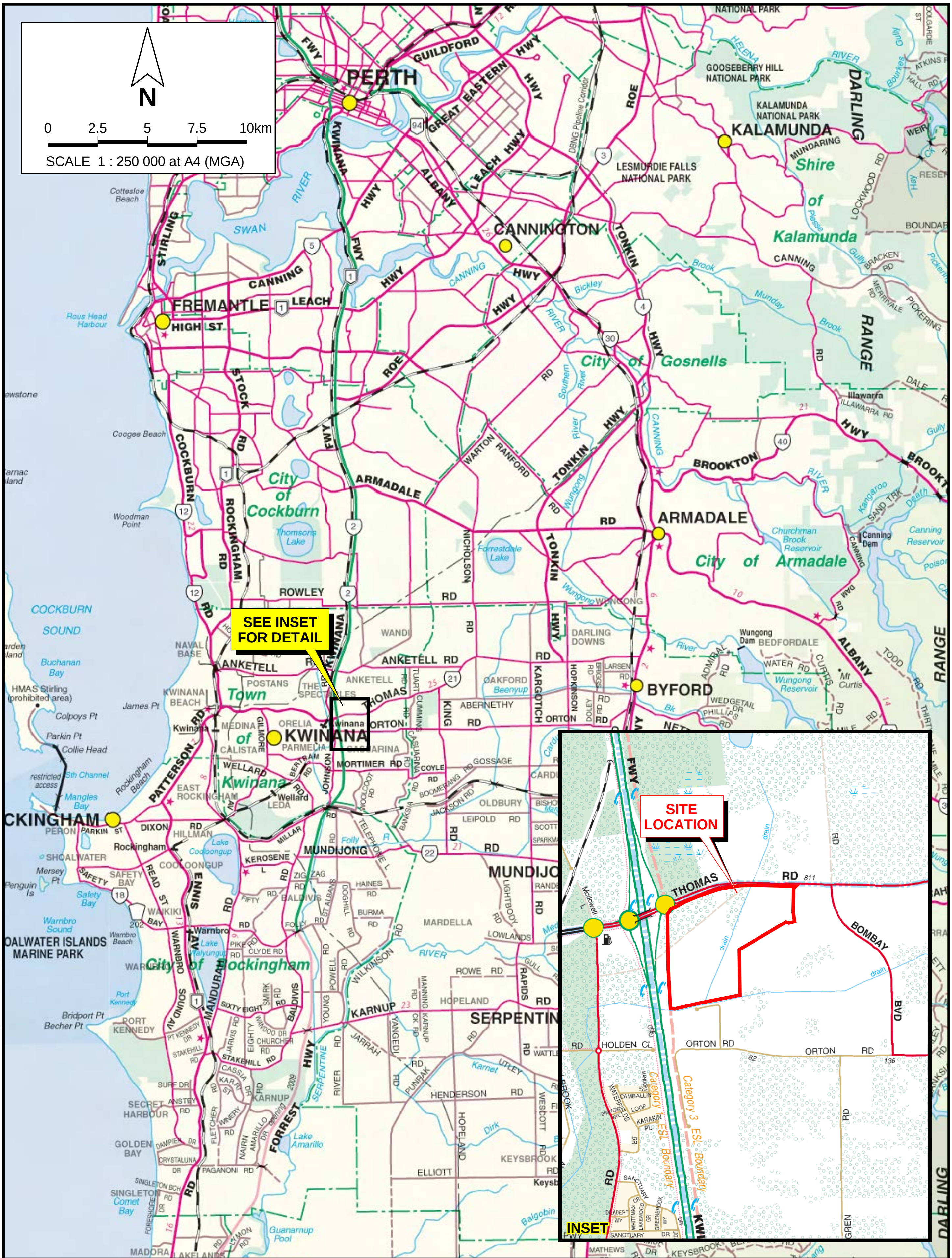
FIGURES



Aigle Royal
SIGNIFICANT TREE SURVEY
PRECINCTS 1-2 THOMAS ROAD, CASUARINA

pgv ENVIRONMENTAL

Drawn: J. Cabot | Date: 3 Mar 2018
Job: 10247 Rpt: 2017-369 | Revision: A

SITE LOCATION

Figure 1

PINPOINT CARTOGRAPHICS (08) 9562 7136 2017-369-f01.dgn

N

0 25 50 75 100m

SCALE 1 : 2 500 at A3 (MGA)

Legend

- Structure Plan Boundary
- Precinct Boundary
- Cadastral Boundary
- Easement Boundary

Significant Trees

- Candlestick Banksia (*Banksia attenuata*)
- Flooded Gum (*Eucalytpus rudis*)
- Jarrah (*Eucaluptus marginata*)
- Paperbark (*Melaleuca priessiana*)
- Paperbark (*Melaleuca rhaphiophylla*)
- Sheoak (*Allocasuarina fraseriana*)

392 000mE

392 250mE

ROAD

THOMAS

KWINANA FREEWAY

PRECINCT 1

PRECINCT 2

6 433 250mN

6 433 000mN

1199

9011

9012

9013

1372
R 42211

44
R 42211

3

1

2

23

24

25

CADASTRAL SOURCE: Landgate, October 2017.
CONTOURS SOURCE: Dept. of Agriculture, 2000.
AERIAL PHOTOGRAPH SOURCE: NearMap, flown August 2017.
STRUCTURE PLAN SOURCE: TPG, Dwg No. 17-769 ST-1 Rev A, 30/10/17.

pgv ENVIRONMENTAL

Aigle Royal
SIGNIFICANT TREE SURVEY
PRECINCTS 1-2 THOMAS ROAD, CASUARINA

Drawn: J. Cabot | Date: 3 Mar 2018

Job: 10247 Rpt: 2017-369 | Revision: A

SIGNIFICANT TREE LOCATIONS

Figure 2

2017-369-f02.dgn

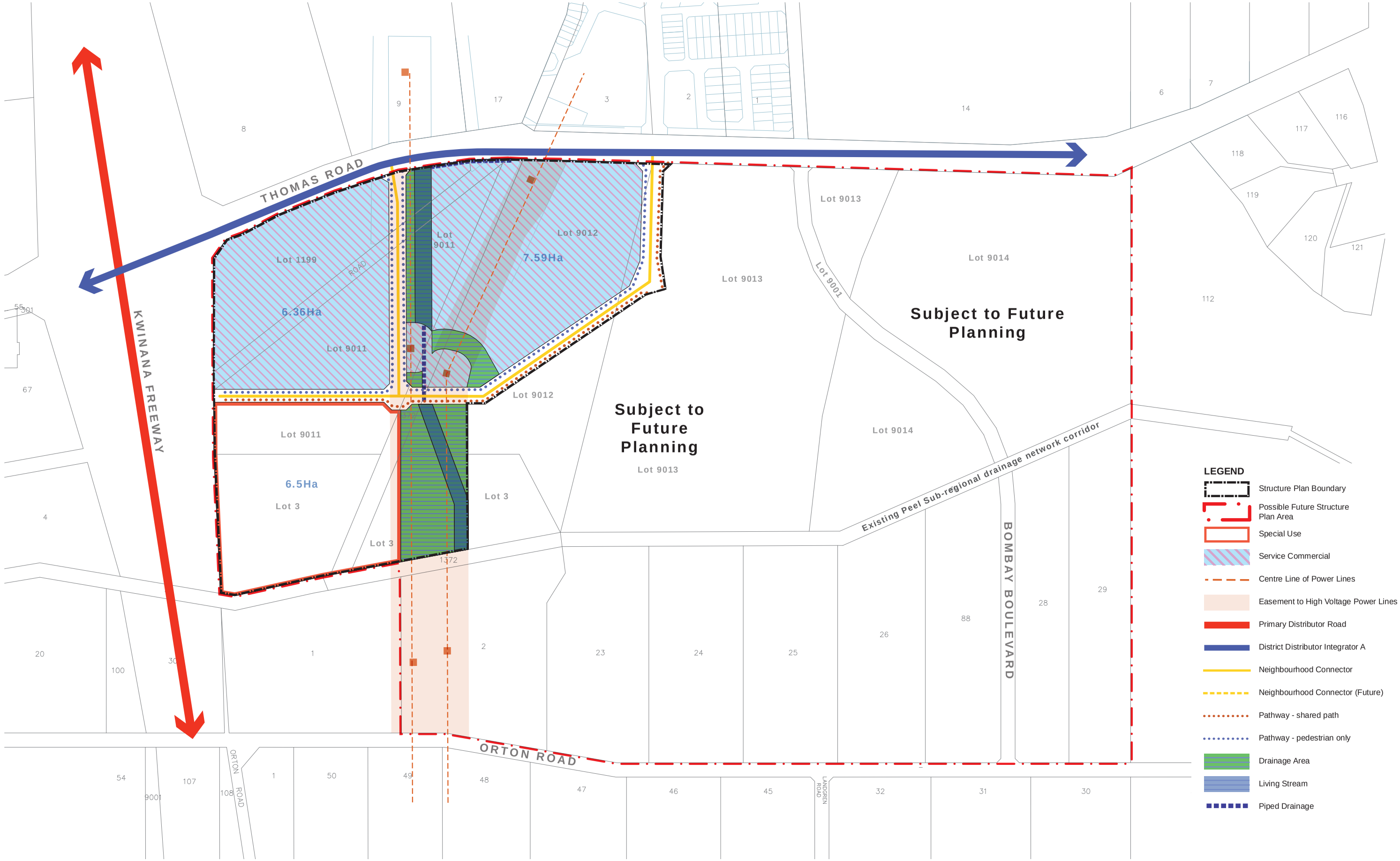
PINPOINT CARTOGRAPHICS (08) 9562 7136

APPENDIX 1

Local Structure Plan

Plan 1: Local Structure Plan

Lots 9011, 9012, 9013, 1199 & 3 Thomas Road, Casuarina



0 50 100m

Project Manager: MC Date: 14 Aug 2018

Drawn: OP Scale: 1:5,000 @ A3

Checked: MC Drawing No. 17-769 ST-1 A

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APPENDIX 2

Tree Survey Results

Tree	Easting	Northing	Species	Height	DBH1	DBH2	DBH3	DBH4	Calculated DBH	Notes
1	392375	6433350	Paperbark (Melaleuca preissiana)	8	80				80	Fair condition, sprouting after fire damage
2	392352	6433350	Flooded Gum (Eucalytpus rudis)	6	40	30			50	Fair condition, sprouting after fire damage
3	392350	6433348	Flooded Gum (Eucalytpus rudis)	7	65	35	35		82	Fair condition, sprouting after fire damage
4	392309	6433330	Flooded Gum (Eucalytpus rudis)	9	70	30			76	Poor condition, dead parts and fire damage
5	392318	6433362	Flooded Gum (Eucalytpus rudis)	12	110				110	Poor condition, dead parts and fire damage
6	392301	6433369	Flooded Gum (Eucalytpus rudis)	10	66				66	Fair condition, sprouting after fire damage
7	392270	6433387	Flooded Gum (Eucalytpus rudis)	9	40	30	29		58	Poor condition, white ants present
8	392266	6433397	Flooded Gum (Eucalytpus rudis)	11	42	39			57	Fair condition, sprouting after fire damage
9	392260	6433401	Flooded Gum (Eucalytpus rudis)	11	40	32	32	21	64	Fair condition, sprouting after fire damage
10	392168	6433460	Paperbark (Melaleuca preissiana)	6	41	28	50		70	Fair condition, sprouting after fire damage
11	392162	6433463	Paperbark (Melaleuca preissiana)	6	70				70	Fair condition, burnt
12	392093	6433332	Paperbark (Melaleuca preissiana)	8	70	34			78	Fair condition, burnt
13	392097	6433333	Paperbark (Melaleuca rhaphiophylla)	8	40	39	38		68	Fair condition, burnt
14	392094	6433336	Paperbark (Melaleuca rhaphiophylla)	8	65	26			70	Poor, burnt large dead portions
15	392106	6433344	Paperbark (Melaleuca rhaphiophylla)	8	40	40			57	Poor, burnt large dead portions
16	392111	6433351	Paperbark (Melaleuca rhaphiophylla)	9	55				55	Poor, burnt large dead portions
17	392011	6433356	Paperbark (Melaleuca rhaphiophylla)	11	89				89	Poor, burnt large dead portions
18	392124	6433337	Paperbark (Melaleuca rhaphiophylla)	9	38	43			57	Poor, burnt large dead portions
19	392128	6433335	Paperbark (Melaleuca rhaphiophylla)	9	70				70	Fair condition, burnt
20	392134	6433358	Paperbark (Melaleuca rhaphiophylla)	11	54	46			71	Good condition, minor fire damage
21	392147	6433356	Paperbark (Melaleuca rhaphiophylla)	9	65				65	Fair condition, burnt
22	392115	6433305	Paperbark (Melaleuca rhaphiophylla)	11	70	85			110	Good condition, Large specimen, minor fire damage
23	392146	6433094	Paperbark (Melaleuca rhaphiophylla)	10	65	40	40		86	Good condition, minor fire damage
24	391919	6433109	Paperbark (Melaleuca rhaphiophylla)	8	47	49	35		76	Good condition, minor fire damage
25	391912	6433106	Paperbark (Melaleuca rhaphiophylla)	9	70				70	Good condition, minor fire damage
26	391931	6433087	Flooded Gum (Eucalytpus rudis)	8	74	50			89	Good condition, minor fire damage
27	391941	6433070	Flooded Gum (Eucalytpus rudis)	12	100				100	Good condition, large specimen
28	391945	6433063	Paperbark (Melaleuca rhaphiophylla)	10	53				53	Fair condition, impacted by fire
29	391946	6433063	Paperbark (Melaleuca rhaphiophylla)	10	65	30			72	Fair condition, impacted by fire
30	391941	6433023	Paperbark (Melaleuca rhaphiophylla)	8	58	44			73	Fair condition, impacted by fire
31	391939	6433018	Paperbark (Melaleuca rhaphiophylla)	7	43	36	38	39	78	Fair condition, impacted by fire
32	391940	6432948	Flooded Gum (Eucalytpus rudis)	10	61	45			76	Good condition, Large specimen, minor fire damage
33	391921	6432936	Flooded Gum (Eucalytpus rudis)	12	70				70	Poor condition, fire damage
34	391920	6432939	Flooded Gum (Eucalytpus rudis)	12	73				73	Poor condition, fire damage
35	391841	6433068	Sheoak (Allocasuarina fraseriana)	9	63				63	Poor condition, fire damage
36	392005	6433403	Candlestick Banksia (Banksia attenuata)	9	37	38			53	Poor condition recently burnt and fire damage
37	391956	6433385	Jarrah (Eucaluptus marginata)	11	43	29			52	Poor condition recently burnt and fire damage
38	391935	6433429	Candlestick Banksia (Banksia attenuata)	10	40	32			51	Poor condition recently burnt and fire damage

APPENDIX 3

Tree Photos

Thomas Road Casaurina

Trees 1-4

Trees 5 and 6

Trees 7 and 8

Tree 9

Trees 10 and 11

Trees 12, 13 and 14

Thomas Road Casaurina

Tree 15

Trees 16 and 17

Trees 18 and 19

Tree 20

Tree 21

Tree 22

Thomas Road Casaurina

Tree 23

Trees 24 and 25

Tree 26

Tree 27

Trees 28 and 29

Trees 30 and 31

Thomas Road Casaurina

Tree 32

Trees 33 and 34

Tree 35

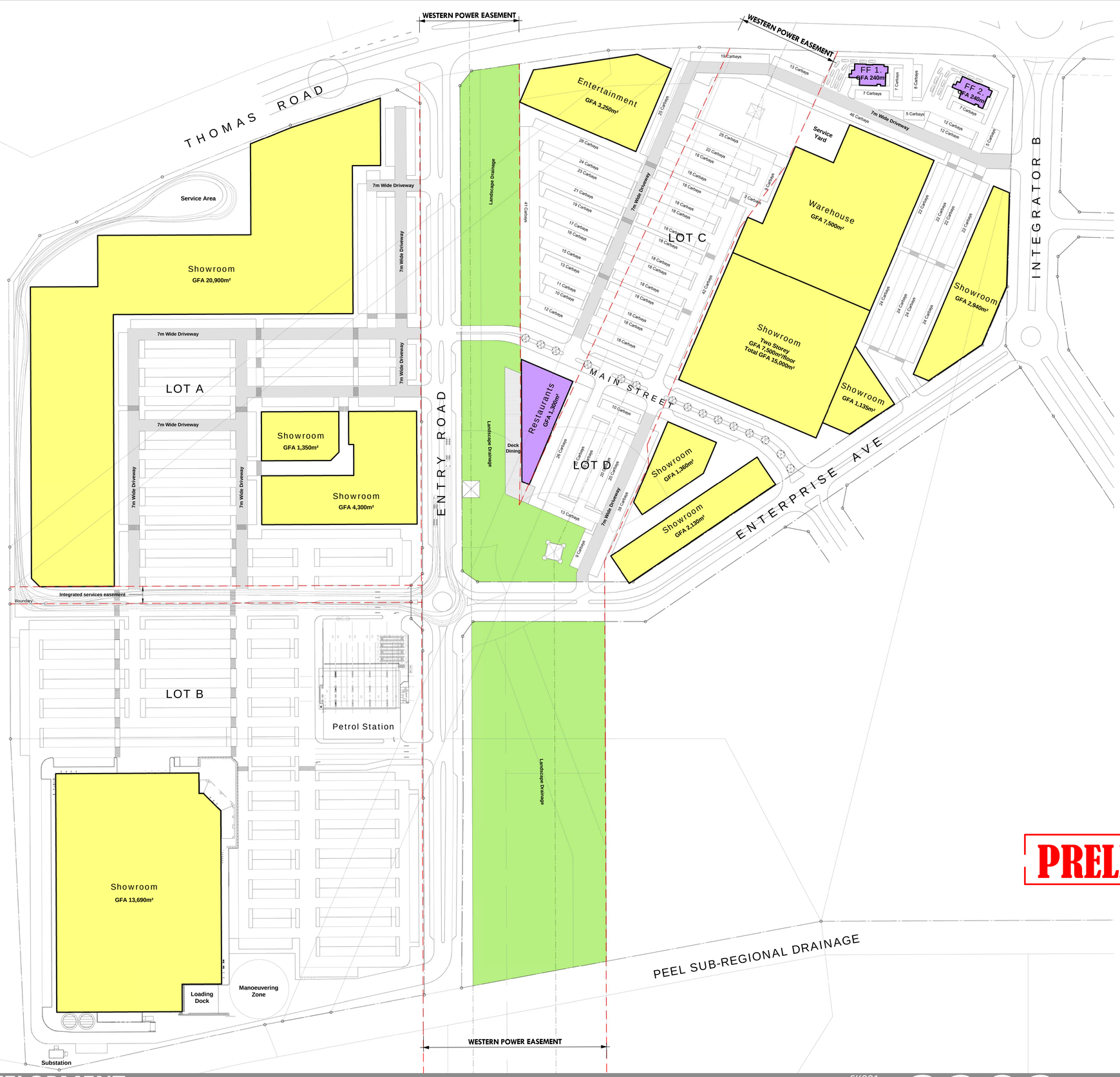
Tree 36

Tree 37

Tree 38

Appendix I

Potential Scale and Character of Service Commercial Area



LOT A

SITE CRITERIA

1. Site Area		**66,018.8m²**
2. Landscape		
a. Landscape required 8% of Site		5,281.5m²
b. Landscape provided		7,112.4m² or 10.77% of Site
3. Floor Area		
a. Showroom		26,550m² (40.2% of Site)
4. Carparking		
a. Carparking required	4 first 200m²	50 Car bays
	+ 1/100m² thereafter	257 Car bays
		307 Car bays
b. Carparking provided		838 Car bays
c. Ideal Parking	1/40m²	647 Car bays

Note: All car bays sized at 5.5m x 2.7m

LOT B

SITE CRITERIA

1. Site Area		**63,906.2m²**
2. Landscape		
a. Landscape required 8% of Site		5,112.4m²
b. Landscape provided		10,522.3m² or 16.46% of Site
3. Floor Area		
a. Showroom		13,690m²
4. Carparking		
a. Carparking required		143 Car bays
b. Carparking provided		922 Car bays

Note: All car bays sized at 5.5m x 2.7m

LOT C

SITE CRITERIA

1. Site Area		**63,915m²**
2. Landscape		
a. Landscape required 8% of Site		5,113m²
b. Landscape provided		5,457m² or 8.5% of Site
3. Floor Area		
a. Showrooms		19,075m²
b. Warehouse		7,500m²
c. Fast Food 1&2		480m²
Total		**20,305m²**
4. Carparking		
a. Carparking required		- Car bays
b. Carparking provided		911 Car bays

Note: All car bays sized at 5.5m x 2.5m

LOT D

SITE CRITERIA

1. Site Area		**17,891m²**
2. Landscape		
a. Landscape required 8% of Site		1,431m²
b. Landscape provided		3,500m² or 19.5% of Site
3. Floor Area		
a. Showrooms		3,060m²
b. Restaurants		530m²
Total		**3,590m²**
4. Carparking		
a. Carparking required		- Car bays
b. Carparking provided		163 Car bays

Note: All car bays sized at 5.5m x 2.5m

N

SITE PLAN
SCALE: 1 : 1000

PRELIMINARY

PROPOSED COMMERCIAL DEVELOPMENT
LOCATION:LOTS 9011, 9012, 9013, 1199 & 3 THOMAS ROAD, CASUARINA
FOR:AIGLE ROYAL

SK001
MAY 2018
1
As indicated @ B1

8303

10 20 30 40 50 100

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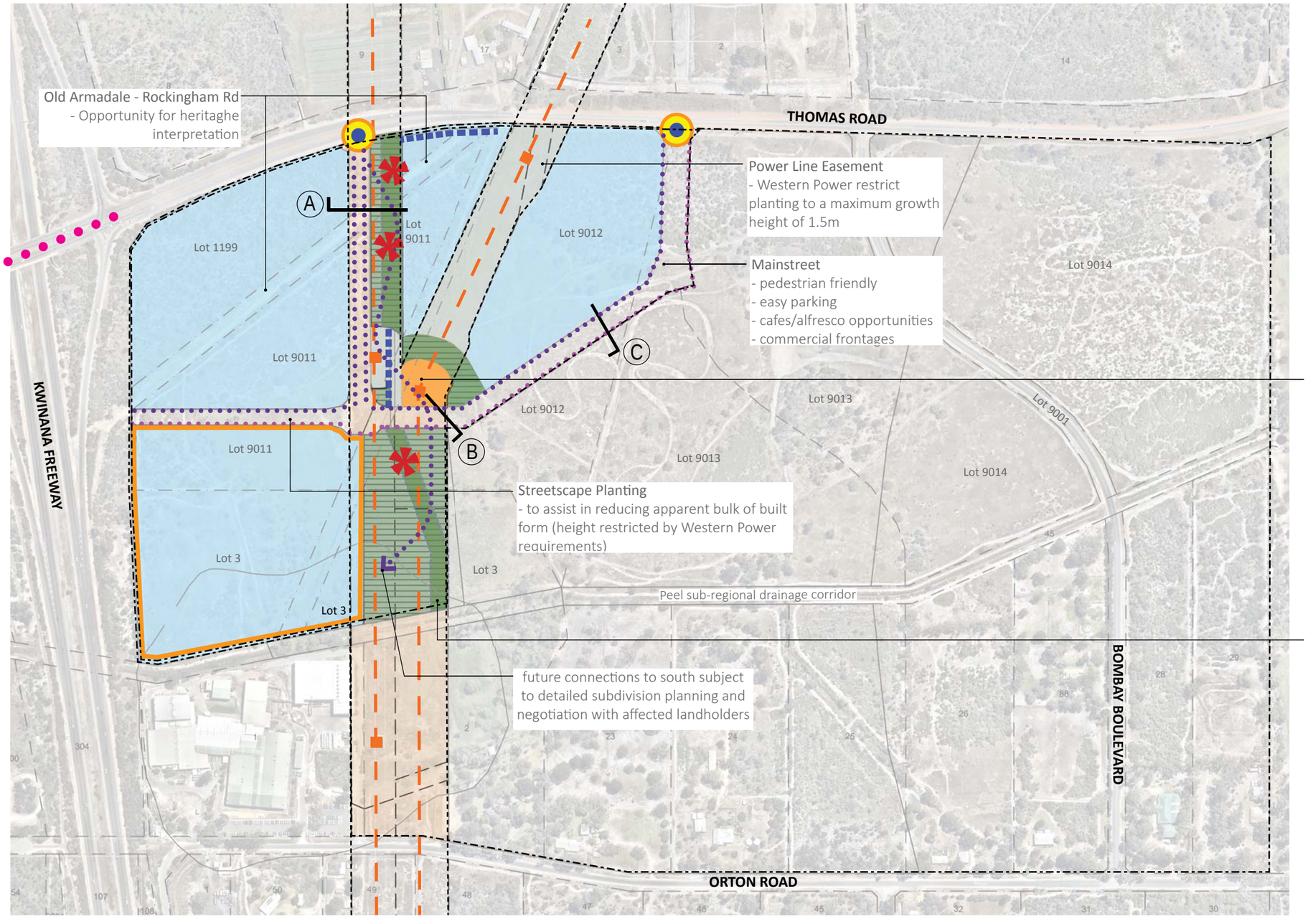
Appendix J

Landscape Masterplan



LEGEND

- Site Boundary
- Existing Power Lines
- Service Commercial
- Special Use
- Living Stream
- Drainage Area
- 'Smart' Square
- Entry Node
- Public Art Location
- Underground Piped Drainage
- Pedestrian Links
- Cycle Links
- A — Road Cross Section

'Smart' Square
- small node/hub for workers and visitors to recreate and relax in.
- 50 % turf and planting / 50% hardstand
- range of public amenities
- 'steora' smart benches. These temperature controlled benches have built in mobile device charging and mobile internet, powered by green solar energy.
- physical fitness activities providing a social function- table tennis/badminton/basketball
- BBQ's
- aesthetic that relates to living streams and main street

Living Stream
- functions through drainage overflow area
- encourage usage through pedestrian and cycle ways, passive area for retreat, occassional seating viewpoints/ nodes, interpretive signage
- encourage wildlife

Entry Nodes
- signage/branding with supportive landscape
- provides a sense of arrival and assists with legibility of the site
- may incorporate artwork, lighting and materials suitable for an industrial site as well as providing information and a reference point.

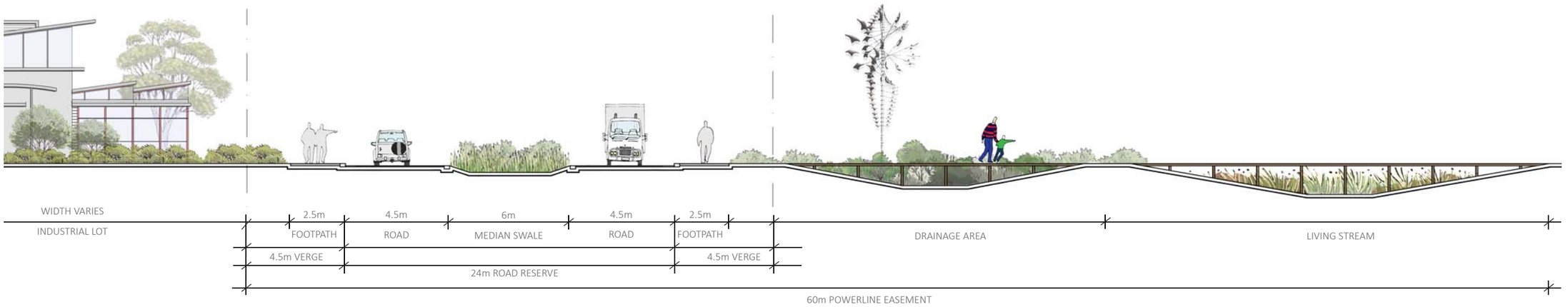
CASUARINA
LANDSCAPE MASTERPLAN

AIGLE ROYAL GROUP

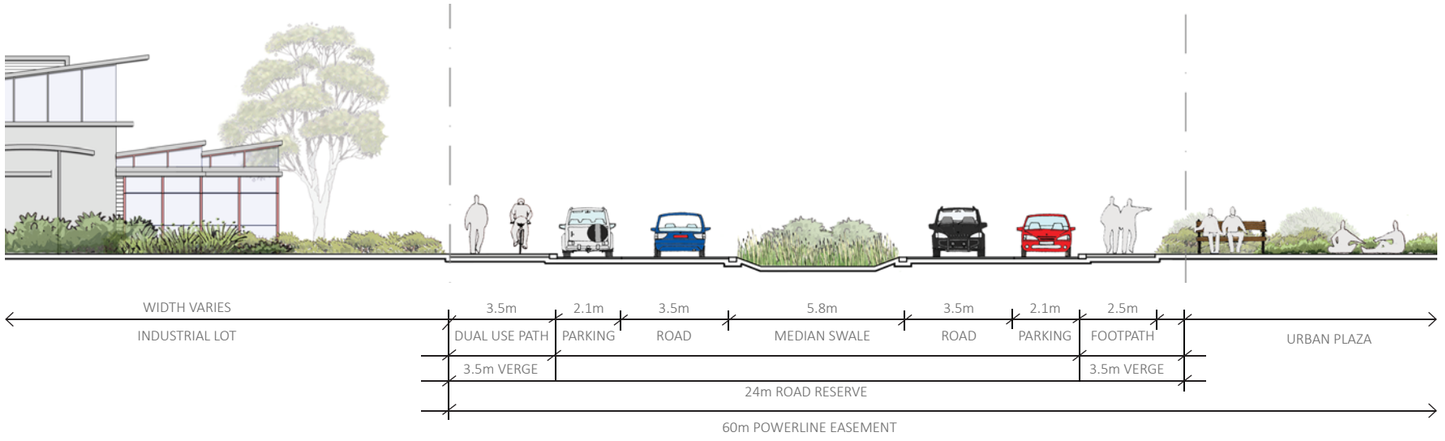
DWG CLS-SK-00
REV F
DATE 29.08.18
SCALE 1 : 5000 @ A3

emerge ASSOCIATES

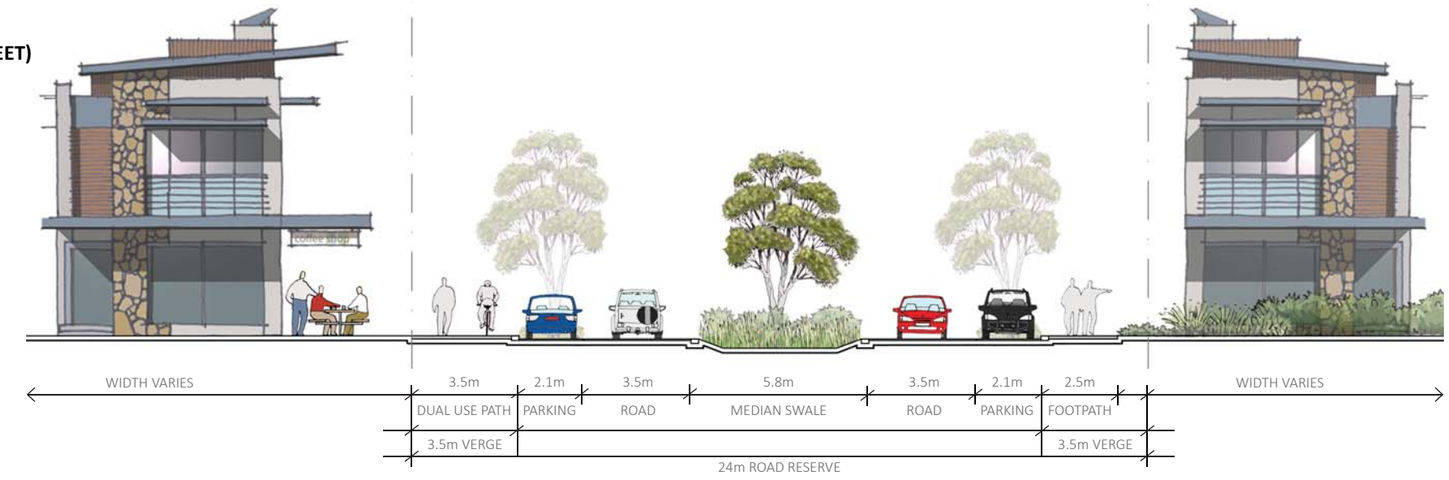
SECTION A
NEIGHBOURHOOD CONNECTOR



SECTION B
NEIGHBOURHOOD CONNECTOR



SECTION C
NEIGHBOURHOOD CONNECTOR (MAINSTREET)



CASUARINA
LANDSCAPE SECTIONS

AIGLE ROYAL GROUP

DWG CLS-SK-00
REV F
DATE 29.08.18

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PLANT SPECIES

The following indicative plant species schedule is to be applied to proposed landscape works within the Casuarina development.

The plant schedule that has been provided as part of the Landscape Strategy, has been compiled for the landscape areas to provide an overall legibility and visual aesthetic to the site, in response to the former vegetation that once would have existed onsite, the local character of the area and the planning intent of the development.

Trees
Agonis flexuosa
Casuarina cunninghamiana
Casuarina equisetifolia
Callistemon 'Kings Park Special'
Eucalyptus gomphocephala
Eucalyptus ficifolia
Eucalyptus rudis
Melaleuca lanceolata

Shrubs
Acacia truncata
Alyogyne huegelii
Banksia littoralis
Banksia nivea (syn Dryandra nivea)
Beaufortia aestiva 'Summer Flame'
Callistemon 'Endeavor'
Callistemon 'Great balls of Fire'
Calothamnus quadrifidus
Dryandra sessilis
Gahnia trifida
Hakea prostrata
Hakea varia
Leucopogon parviflorus
Leucopogon australis
Logania vaginalis
Melaleuca 'Little penta'
Melaleuca huegelii
Melaleuca nesophila
Melaleuca lateritia
Melaleuca teretifolia
Melaleuca viminea
Olearia axillaris
Spyridium globulosum
Templetonia retusa

Power line easement - maximum 1.5m height

Shrubs and Groundcovers
Acacia huegelii
Acacia lasiocarpa
Adenanthos cuneatus
Banksia nivea (syn Dryandra nivea)
Callistemon 'Little John'
Carpobrotus virescens
Conostylis aculeata
Conostylis candicans
Dianella caerulea
Dianella revoluta
Eremophila glabra 'Kalbarri Carpet'
Eremophila nivea
Grevillea crithmifolia
Grevillea preissii
Grevillea 'Gin Gin Gem'
Gompholobium tomentosum
Hemiandra pungens
Hibbertia hypericoides
Hibbertia racemosa
Jacksonia sericea
Kennedia prostrata
Leucophyta brownii
Lomandra 'Tanika'
Patersonia occidentalis
Melaleuca incana 'Nana'
Melaleuca conothamnoides
Olearia axillaris 'Little Smokie'
Orthrosanthus laxus
Scaevola crassifolia 'Flat Fred'
Scaevola aemula 'Purple Fanfare'
Westringia fruticosa

Sedges
Baumea juncea
Gahnia trifida
Carex appressa
Ficinia nodosa
Lepidosperma angustatum
Lepidosperma gladiatum


AGONIS FLEXUOSA
W.A Peppermint


CORYMBIA ficifolia
Red Flowering Gum


ACACIA LASIOCARPA
Lime Sand Wattle


CAREX APPRESSA
Tall Sedge


CALOTHAMNUS QUADRIFIDUS
One-sided Bottlebrush


EREMOPHILA GLABRA
Tar Bush


FICINIA NODOSA
Knotted Club Rush


GREVILLEA CRITHMIFOLIA
Green Carpet


HIBBERTIA HYPERICOIDES
Buttercups


JACKSONIA SERICEA
Waldjumi


KENNEDIA PROSTRATA
Running Postman


LOMANDRA 'TANIKA'


MELALEUCA HUEGELII
Chenille Honeymyrtle


OLEARIA AXILLARIS
Coastal Daisy Bush


ORTHROSANTHUS LAXUS
Morning Iris


WESTRINGIA FRUTICOSA
Native Rosemary

CASUARINA
PLANTING PALETTE

AIGLE ROYAL GROUP

DWG CLS-SK-00
REV F
DATE 29.08.18

emerge ASSOCIATES



industrial imagery



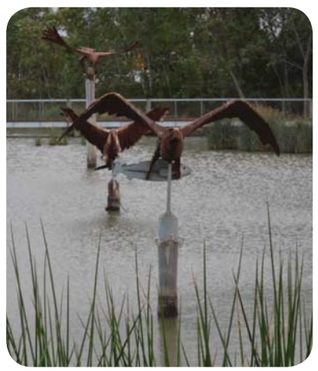
urban plaza


'Steora' smart bench

- mobile device charging
- mobile internet
- temperature controlled seating
- resistant to vandalism







public art/entry statements

- artwork to be approved by Western Power for placement within easement
- kinetic
- showcase technology
- wind turbines to power POS items and street lights






living streams

AIGLE ROYAL GROUP

DWG CLS-SK-00
REV F
DATE 29.08.18

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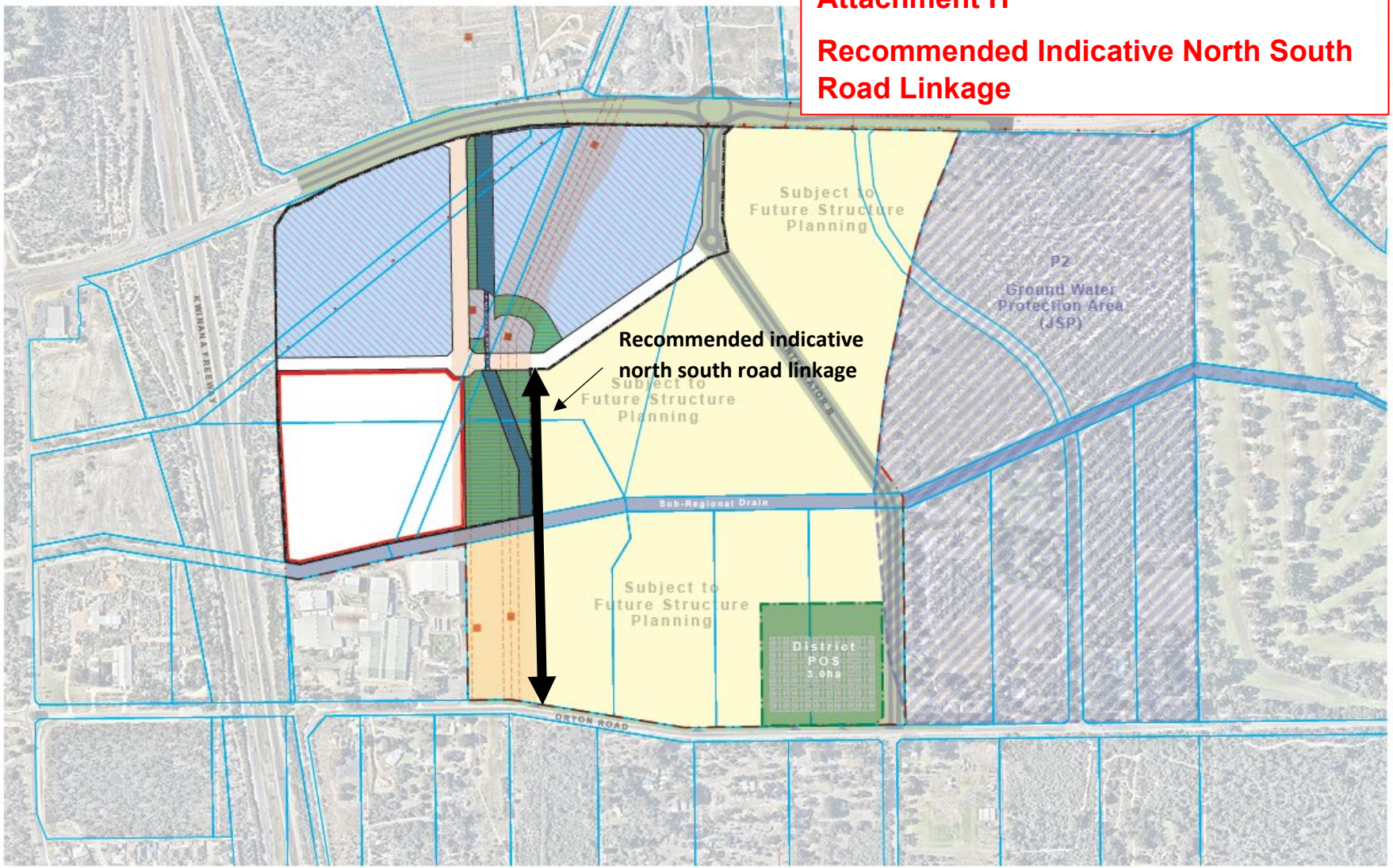
Attachment H

Recommended Indicative North South Road Linkage



Concept Plan

Lots 9011, 9012, 9013, 1199 & 3 Thomas Road, Casuarina

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the art and science of place

© NOTE: Initiatives shown on this plan are conceptual only and subject to detailed investigations including landowner consultation.

15.6 Opposition to proposed Application for Mining Lease 70/1376 over portion of Postans and Sayer Road Reserves, Hope Valley

DECLARATION OF INTEREST:

There were no declarations of interest declared.

SUMMARY:

Council has received an application for Mining Lease 70/1376 over portions of Postans Road and Sayer Road reserves within Hope Valley (Refer Attachment A), from the Department of Mines, Industry Regulation and Safety (DMIRS). The application proposes to extract sand and limestone resources from the road reserves to provide materials for construction and development projects taking place in the Perth metropolitan area. DMIRS is seeking comments from the City of Kwinana in regard to the application.

The proponent intends to commence mining operations upon receipt of all necessary approvals, however a timeframe for the completion of the operations has not been provided. In this regard, whilst a mining timeframe has not been provided the mining lease has been sought for a 21 year period with the option to extend for a further 21 years.

The application proposes to mine sand and limestone resources from within the Postans and Sayer Road reserves. In this regard, City Officers hold the following concerns with the mining application:

1. The land subject to the mining application is within the Hope Valley Wattleup Redevelopment Act Area and has been structure planned. The mining of the road reserves as proposed will effectively sterilise the road reserves for potentially up to 42 years, placing a significant barrier to the redevelopment of the Latitude 32 project;

2. The lands subject to the mining application are local government road reserves, and are currently not capable of being mined as they serve the primary means of access for the adjoining landowners.

3. The mining of the land subject to the application (and adjoining) must be coordinated with an overall earthworks strategy for the Latitude 32 redevelopment. Mining of the road reserves separately and under the approval of the *Mining Act 1978* will prevent this occurring.

The mining application does not address the road pavement asset replacement responsibility following the completion of mining operations. The City currently owns and has the management responsibilities for the roads subject to the mining application, representing approximately 1.6 kilometres of road pavement, which will be affected by the mining operations. The replacement value of the City of Kwinana owned road infrastructure assets within the proposed mining lease area is estimated to be around $1,500,000. These assets will need to be replaced upon the completion of mining operations at the cost of the applicant should the proposal be approved by the DMIRS.

The proposed mining of portions of the Postans and Sayer Road reserves raises a number of matters which have not been addressed as part of the mining application. City Officers have held a number of discussions with the assessing Officers from the DMIRS to seek clarification on the above matters, however to date there has been no resolution to these matters with the Department or the applicant.

15.6 OPPOSITION TO PROPOSED APPLICATION FOR MINING LEASE 70/1376 OVER PORTION OF POSTANS AND SAYER ROAD RESERVES, HOPE VALLEY

Whilst City Officers acknowledge that in order to progress the Latitude 32 redevelopment, portions of Postans and Sayer Road reserves will need to be modified and levels reduced at some stage in the future, the current mining application does not address how the mining operations will be undertaken to maintain access to the adjoining land owners and facilitate the redevelopment of the area. Any mining activities in the Latitude 32 redevelopment area should be undertaken and coordinated with the development levels plan established through Local Structure Plans and/or the Latitude 32 Levels Planning Policy.

For the reasons outlined above, City Officers are of the opinion that the mining application should be objected to, and the City provide the reasons for objection to the DMIRS.

OFFICER RECOMMENDATION:

That Council take the following action with respect to the Application for Mining Lease 70/1376 portions of Postans Road and Sayer Road, Hope Valley:-

1. Resolve to object to the proposed Mining Lease M70/1376 and endorse the letter of objection to the application for Mining Lease 70/1376 in Attachment B;
2. Authorise the CEO to sign the objection letter in Attachment B to the Department of Mines, Industry Regulation and Safety;
3. Authorise the CEO to complete the *Mining Act 1978* Form 16 (OBJECTION) and Statutory Declaration (Attachment C and D) as the City's nominated objector to accompany the City's objection letter.

DISCUSSION:

The City has received an application for Mining Lease for comment from the DMIRS. The mining application seeks approval under the *Mining Act 1978* to extract sand and limestone resource from portions of the Postans and Sayer Road reserves.

As part of the Latitude 32 redevelopment, portions of the Postans and Sayer Road reserves will need to be modified and the levels reduced. In some areas, the levels will need to be reduced by up to 11-14 metres below the existing levels. The proposed mining application has identified the areas of the reserves that need to be reduced in levels and is seeking approval to extract sand and limestone resources from these areas.

In this regard however, whilst it is acknowledged that the portions of reserves will need to be reduced in level at some point in the future, the mining application does not address a number of critical matters. The application does not address the need to ensure that access to the adjoining landowners is continuously maintained while mining activities are being undertaken, and furthermore the application does not outline how the mining activities will impact on the redevelopment objectives (or timing) of Latitude 32.

15.6 OPPOSITION TO PROPOSED APPLICATION FOR MINING LEASE 70/1376 OVER PORTION OF POSTANS AND SAYER ROAD RESERVES, HOPE VALLEY

The application seeks approval to extract sand and limestone resources from the mining area to produce construction materials for the Perth construction and other markets. The resource is proposed to be mined by means of mechanical methods (front-end loaders and excavators) and loaded straight into haulage trucks for transportation to market. The roads proposed to be used to transport the material are Postans Road, Wattleup Road, Rowley Road to the Kwinana Freeway for materials heading east, and Postans Road, Wattelup Road to Stock Road for materials heading west.

The application seeks to commence mining operations upon receipt of all necessary approvals. The mining lease has been sought for a 21-year approval period, with the option to renew the lease for a further 21-year period. The potential for a 42 year mining approval period has the effect of sterilising the subject land for any redevelopment opportunities within this timeframe. The application does not specify a period in which the mining activities will be undertaken, and in this regard, it is anticipated that the timing of mining activities will be directly linked to the demand for sand and limestone construction materials.

City Officers hold a number of concerns with respect to the timing of the mining activities, particularly as there is no specified timeframe for such activities to be completed (with the exception of a 21 plus 21 year mining lease). With the mining activities relying on the demand for construction materials within the Perth area it is likely that mining operations will take a considerable amount of time to complete. The application outlines that material will be extracted and loaded directly into haulage trucks for transportation. This process is acceptable if there is a steady demand for material. However if there is limited demand, then there is the potential for the affected road reserves to be inaccessible for the duration of the mining works.

The Postans Road and Sayer Road reserves serve as the primary point of access for all adjoining landowners. It is expected that these roads will continue to serve as the primary point of access for these properties into the future, however, this is dependent on structure planning for the area. Should mining activities within these road reserves occur in isolation of the broader redevelopment of the Latitude 32 area, it will remove the only point of access for the adjoining landowners. City Officers take the view that should this occur it would have significant adverse impact on redevelopment of Latitude 32 and therefore the proposal is considered as unacceptable.

The Western Australian Planning Commission has approved the Development Area 3 Structure Plan (DA3 SP) for Latitude 32, however redevelopment in the area is yet to commence. In this regard, the DA3 SP identifies the realignment of the Sayer Road reserve and closure of a portion of Postans Road (to be amalgamated into the adjoining lots and re-subdivided). During the redevelopment of the DA3 SP area it is expected that a significant level of coordination between land owners will need to occur. Should the mining application be approved, it will add an additional layer of complexity to the redevelopment of Latitude 32. In this regard, the extraction of resources within the Latitude 32 area needs to be undertaken in a coordinated manner and in accordance with the overall earthworks strategy prepared by LandCorp. If the road reserves are to be mined in isolation this would not occur and causes potential access issues for the adjoining landowners.

15.6 OPPOSITION TO PROPOSED APPLICATION FOR MINING LEASE 70/1376 OVER PORTION OF POSTANS AND SAYER ROAD RESERVES, HOPE VALLEY

The replacement value of the road pavement and other infrastructure assets located in the section of Postans and Sayer Road to be mined is estimated to be approximately $1,500,000. The application does not address the City of Kwinana owned road infrastructure asset replacement responsibility following completion of mining operations. The City currently owns and has the management responsibilities for the roads subject to the mining application, representing approximately 1.6 kilometres of road pavement and other infrastructure assets, which will be completely demolished and removed by the mining operations. In this regard, as the application does not specify the asset replacement responsibilities, the City could potentially be at risk of losing approximately $1,500,000 worth of infrastructure assets within the proposed mining lease area, and may be expected to replace these assets following the completion of mining operations. In the opinion of City Officers, the infrastructure assets will need to be replaced upon the completion of mining operations at the cost of the applicant should the proposal be approved by the DMIRS.

For the reasons outlined in this report, City Officers do not support the application for Mining Lease M70/1376 over portions of Postans and Sayer Road Reserves, Hope Valley.

LEGAL/POLICY IMPLICATIONS:

For the purpose of Councillors considering a financial or impartiality interest only, the proponent is Hanson Construction Materials Pty Ltd.

At the time of preparation of this report the City was still awaiting legal advice to determine the implications of the Mining Lease on the current vesting of the road reserve with the City and what future liability issues may arise. Further the City is seeking clarification of whether there are statutory mechanisms for the City to require the proponent to enter into legal agreements regarding the road asset placement.

FINANCIAL/BUDGET IMPLICATIONS:

There are minimal financial implications in providing administrative assessment of applications for mining approvals and licenses. There may however be financial implications to the City should the objection be accepted and the matter be heard before the Wardens Court. These financial implications relate to any legal advice or representation that the City may seek in any court proceedings.

Mining of the road reserves if approved would result in the loss of approximately $1,500,000 worth of road infrastructure asset to the City. The application does not address the replacement responsibility of these assets which will be removed as part of the mining operations. In this regard, City Officers hold the view that should the application be approved by the DMIRS, then the road replacement should be at the cost of the applicant.

15.6 OPPOSITION TO PROPOSED APPLICATION FOR MINING LEASE 70/1376 OVER PORTION OF POSTANS AND SAYER ROAD RESERVES, HOPE VALLEY

ASSET MANAGEMENT IMPLICATIONS:

Should the mining application be approved by the DMIRS, the City could potentially lose road infrastructure assets with an approximate value of $1,500,000. These assets include road pavement, drainage infrastructure, street lighting and kerbing located within portions of Postans Road and Sayer Road reserves.

ENVIRONMENTAL IMPLICATIONS:

Should the mining application be approved there are likely to be dust and amenity impacts for adjoining land owners and residents in close proximity to the mining operations.

STRATEGIC/SOCIAL IMPLICATIONS:

This proposal will support the achievement of the following outcome and objective detailed in the Corporate Business Plan.

Plan	Outcome	Objective
Corporate Business Plan	Regulatory and Legal	6.6 To implement the long term strategic land use planning for the social, economic and environmental wellbeing of the City.

COMMUNITY ENGAGEMENT:

There are no community engagement implications as a result of this report.

PUBLIC HEALTH IMPLICATIONS

The proposal has the potential to:

- contribute to a negative impact on the following determinants of health and factors -
  - Built Environment – Environmental Quality and Neighbourhood Amenity.

RISK IMPLICATIONS:

The risk implications in relation to this proposal are as follows:

Risk Event	Failure to provide a response to the application and the DMIRS make a determination on the mining application without the City's recommendations.
Risk Theme	Failure to fulfil statutory regulations or compliance requirements.

15.6 OPPOSITION TO PROPOSED APPLICATION FOR MINING LEASE 70/1376 OVER PORTION OF POSTANS AND SAYER ROAD RESERVES, HOPE VALLEY

Risk Effect/Impact	Service Delivery Environment Reputation
Risk Assessment Context	Operational
Consequence	Moderate
Likelihood	Likely
Rating (before treatment)	Moderate
Risk Treatment in place	Reduce - mitigate risk
Response to risk treatment required/in place	Providing the City's recommendations to the DMIRS will reduce the risk of a determination being made without consideration of the City's position.
Rating (after treatment)	Moderate

COUNCIL DECISION

317

MOVED CR D WOOD **SECONDED CR S MILLS**

That Council take the following action with respect to the Application for Mining Lease 70/1376 portions of Postans Road and Sayer Road, Hope Valley:-

1. **Resolve to object to the proposed Mining Lease M70/1376 and endorse the letter of objection to the application for Mining Lease 70/1376 in Attachment B;**
2. **Authorise the CEO to sign the objection letter in Attachment B to the Department of Mines, Industry Regulation and Safety;**
3. **Authorise the CEO to complete the *Mining Act 1978* Form 16 (OBJECTION) and Statutory Declaration (Attachment C and D) as the City's nominated objector to accompany the City's objection letter.**

CARRIED
8/0

ATTACHMENT A

Government of Western Australia
Department of Mines, Industry Regulation and Safety

Our ref: AG: M70/1376
Enquiries: A Grace
Ph: (08) 9222 3296
Email: amanda.grace@dmirs.wa.gov.au

City of Kwinana
PO Box 21
KWINANA WA 6966

Dear Sir/Madam

APPLICATION FOR MINING LEASE 70/1376 BY HANSON CONSTRUCTION MATERIALS PTY LTD

I am writing to advise Hanson Construction Materials Pty Ltd have applied for Mining Lease 70/11376 over 100% of an area in your Shire.

I am now seeking your comments in regard to the application and have attached a copy of the application, a plan, a copy of the draft conditions and a statement of works by Hanson Construction Materials Pty Ltd

Yours faithfully

A Grace

For DIRECTOR
RESOURCES TENURE BRANCH

8 August 2018

Form 21

WESTERN AUSTRALIA
Mining Act 1978
(Secs. 41, 58, 70C, 74, 86, 91, Reg. 64)

APPLICATION FOR MINING TENEMENT

(a) Type of tenement (b) Time & Date marked out (where applicable) (c) Mineral Field	(a) Mining Lease	No. M 70/1376
	(b) 07/12/2017 11:45:00	(c) SOUTH WEST

For each applicant: (d) Full Name and ACN/ABN (e) Address (f) No. of shares (g) Total No. of shares	(d) and (e)	(f) Shares
	HANSON CONSTRUCTION MATERIALS PTY LTD (ACN: 009 679 734) C/- AUSTWIDE MINING TITLE MANAGEMENT PTY LTD, PO BOX 1434, WANGARA, WA, 6947	100
		(g) Total 100

DESCRIPTION OF GROUND APPLIED FOR:
(For Exploration Licences see Note 1. For other Licences see Note 2. For all Licences see Note 3.)

(h) Locality
(i) Datum Peg
(j) Boundaries

(h) Cockburn Sound
(i) Situated at GDA94, Zone 50 at grid coordinates 388132.543mE 6438912.266mN
(j) Thence proceed to coordinates 388135.747mE 6438808.999mN
Thence proceed to coordinates 388098.367mE 6438756.656mN
Thence proceed to coordinates 388099.770mE 6438748.241mN
Thence proceed to coordinates 388207.788mE 6438671.085mN
Thence proceed to coordinates 388742.558mE 6438677.474mN
Thence proceed to coordinates 388750.117mE 6438674.570mN
Thence proceed to coordinates 389000.174mE 6438679.341mN
Thence proceed to coordinates 388985.325mE 6438658.950mN
Thence proceed to coordinates 388746.574mE 6438654.391mN
Thence proceed to coordinates 388738.941mE 6438657.324mN
Thence proceed to coordinates 388201.450mE 6438650.896mN
Thence proceed to coordinates 388088.082mE 6438731.875mN
Thence proceed to coordinates 388079.668mE 6438730.472mN
Thence proceed to coordinates 387892.640mE 6438468.579mN
Thence proceed to coordinates 387874.671mE 6438413.871mN
Thence proceed to coordinates 387874.552mE 6438405.734mN
Thence proceed to coordinates 387854.402mE 6438405.408mN
Thence proceed to coordinates 387855.051mE 6438450.564mN
Thence proceed to coordinates 388070.114mE 6438751.699mN
Thence proceed to coordinates 388103.630mE 6438817.469mN
Thence proceed to coordinates 388112.415mE 6438911.961mN
Thence proceed to coordinates 388132.543mE 6438912.266mN back to Datum
The application is a Conversion of E 70/3943 .

(k) Area (ha or km^2)

(k) 3.18780 HA

(l) Signature of applicant or agent(if agent state full name and address)

(l) *michelle bicanin*
UNIT 6, 42 DELLAMARTA ROAD,
WANGARA, WA, 6065

Date: 14/12/2017

OFFICIAL USE

A NOTICE OF OBJECTION may be lodged at any mining registrar's office on or before the 18th day of January 2018 (See Note 4).

Where an objection to this application is lodged the hearing will take place on a date to be set.

Received at	12:12:42	on	14	December	2017	with fees of
Application	$476.00					
Rent	$70.40					
TOTAL	$546.40					
Receipt No:	79373731809					

Mining Registrar

NOTES

Note 1: EXPLORATION LICENCE

(i) Attachments 1 and 2 form part of every application for an exploration licence and must be lodged with this form in lieu of (h), (i), (j) and (k) above.

(ii) An application for an Exploration Licence shall be accompanied by a statement specifying method of exploration, details of the proposed work programme, estimated cost of exploration and technical and financial ability of the applicant(s).

Note 2: PROSPECTING/MISCELLANEOUS LICENCE AND MINING/GENERAL PURPOSE LEASE

(i) This application form shall be accompanied by a map on which are clearly delineated the boundaries of the area applied for.

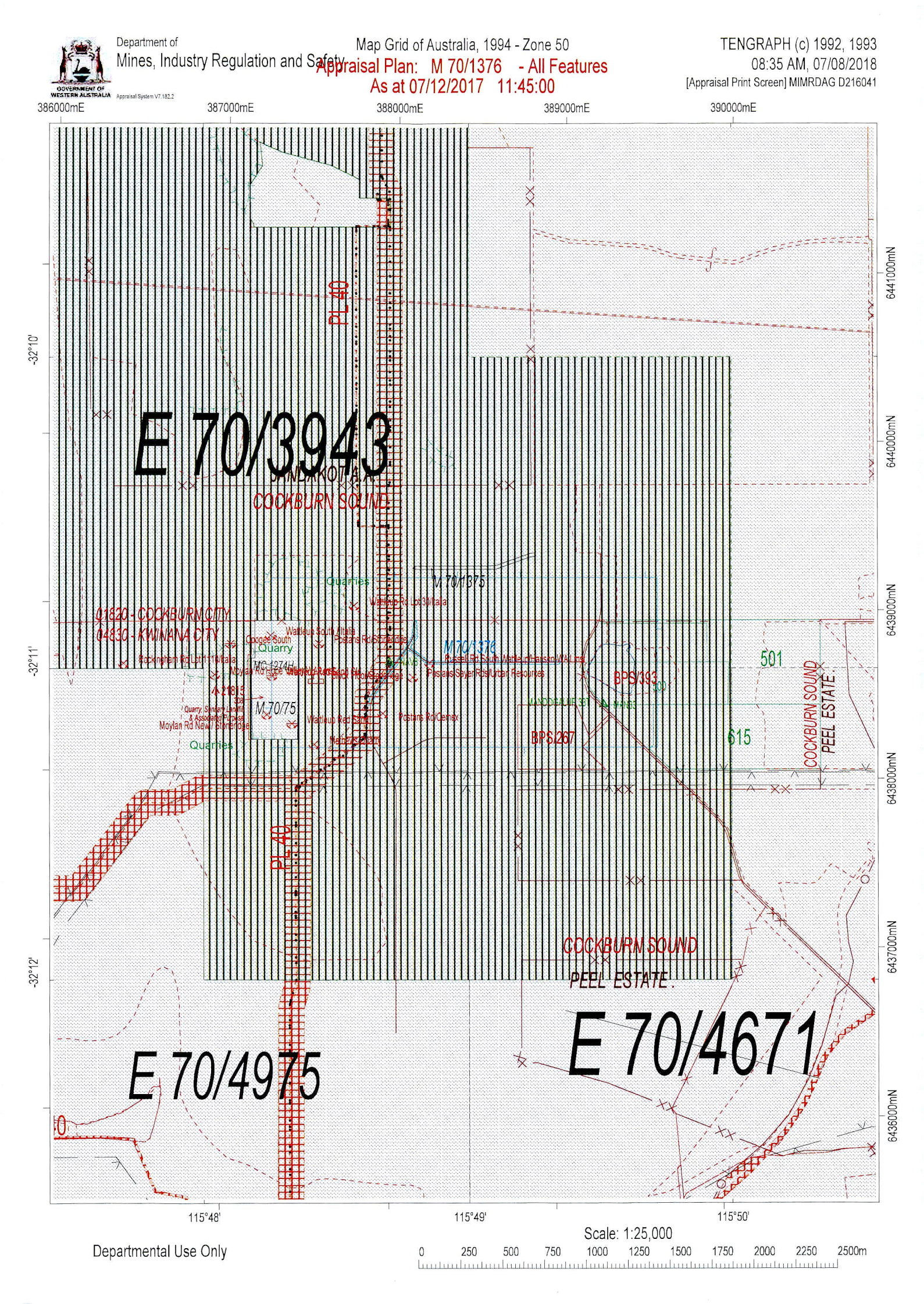
Note 3: GROUND AVAILABILITY

(i) The onus is on the applicant to ensure that ground is available to be marked out and/or applied for.

(ii) The following action should be taken to ascertain ground availability:
(a) public plan search; (b) register search; (c) ground inspection.

Note 4: ALL APPLICATIONS OVER PRIVATE LAND

The period for lodgement of an objection is within 21 days of service of this notice, or the date noted above for lodging objections, whichever is the longer period.



Departmental Use Only

Government of Western Australia
Department of Mines, Industry Regulation and Safety

eMiTS MAINTENANCE

DRAFT Tenement Endorsement and Conditions Extract

Tenement: **M 70/1376**

#	ENDORSEMENTS	Status	Start Date	End Date
1	The Lessee's attention is drawn to the provisions of the Aboriginal Heritage Act 1972 and any Regulations thereunder.	Draft		
2	This mining lease authorises the mining of the land for all minerals as defined in Section 8 of the Mining Act 1978 with the exception of uranium ore.	Draft		
3	The Lessee's attention is drawn to the Environmental Protection Act 1986 and the Environmental Protection (Clearing of Native Vegetation) Regulations 2004, which provides for the protection of all native vegetation from damage unless prior permission is obtained.	Draft		
	In respect to Water Resource Management Areas (WRMA) the following endorsements apply:	Draft		
4	The Lessee's attention is drawn to the provisions of the: • Waterways Conservation Act, 1976 • Rights in Water and Irrigation Act, 1914 • Metropolitan Water Supply, Sewerage and Drainage Act, 1909 • Country Areas Water Supply Act, 1947 • Water Agencies (Powers) Act 1984	Draft		
5	The rights of ingress to and egress from, and to cross over and through, the mining tenement being at all reasonable times preserved to officers of Department of Water and Environmental Regulation (DWER) for inspection and investigation purposes.	Draft		
6	The storage and disposal of petroleum hydrocarbons, chemicals and potentially hazardous substances being in accordance with the current published version of the Department of Water and Environmental Regulation (DWER) relevant Water Quality Protection Notes and Guidelines for mining and mineral processing.	Draft		
7	The taking of groundwater from an artesian well and the construction, enlargement, deepening or altering of any artesian well is prohibited unless current licences for these activities have been issued by Department of Water and Environmental Regulation (DWER).	Draft		
8	Advice shall be sought from the Department of Water and Environmental Regulation (DWER) if proposing any mining/ activity in respect to mining operations within a defined waterway and within a lateral distance of: • 50 metres from the outer-most water dependent vegetation of any perennial waterway, and • 30 metres from the outer-most water dependent vegetation of any seasonal waterway.	Draft		
9	Measures such as drainage controls and stormwater retention facilities are to be implemented to minimise erosion and sedimentation of adjacent areas, receiving catchments and waterways.	Draft		
10	All activities to be undertaken so as to avoid or minimise damage, disturbance or contamination of waterways, including their beds and banks, and riparian and other water dependent vegetation.	Draft		
	In respect to Proclaimed Ground Water Areas the following endorsement applies:	Draft		
11	The taking of groundwater and the construction or altering of any well is prohibited without current licences for these activities issued by the Department of Water and Environmental Regulation (DWER), unless an exemption otherwise applies.	Draft		

#	CONDITIONS	Status	Start Date	End Date
1	All disturbances to the surface of the land made as a result of exploration, including costeans, drill pads, grid lines and access tracks, being backfilled and rehabilitated to the satisfaction of the Environmental Officer, DMIRS. Backfilling and rehabilitation being required no later than 6 months after excavation unless otherwise approved in writing by the Environmental Officer, DMIRS.	Draft		
2	All waste materials, rubbish, plastic sample bags, abandoned equipment and temporary buildings being removed from the mining tenement prior to or at the termination of exploration program.	Draft		
3	Unless the written approval of the Environmental Officer, DMIRS is first obtained, the use of drilling rigs, scrapers, graders, bulldozers, backhoes or other mechanised equipment for surface disturbance or the excavation of costeans is prohibited. Following approval, all topsoil being removed ahead of mining operations and separately stockpiled for replacement after backfilling and/or completion of operations.	Draft		
4	The prior written consent of the Minister responsible for the Mining Act 1978 being obtained before commencing any mining activities on Kwinana Townsite Boundary.	Draft		
	In respect to Petroleum Pipelines thefollowing conditions apply:	Draft		
5	No mining within 25 metres of either side of the Gas/Petroleum pipeline contained within Petroleum Pipeline Licence No PL 1R1 as shown in TENGRAPH.	Draft		
6	No surface excavation approaching closer to the boundary of the Safety Zone established by condition 5 hereof than a distance equal to three times the depth of the excavation without the prior written approval of the Director, Dangerous Goods and Critical Risks, Safety Regulation, DMIRS.	Draft		

#	CONDITIONS	Status	Start Date	End Date
7	No interference with the drainage pattern, and no parking, storage or movement of equipment or vehicles used in the course of mining within the Safety Zone established by Condition 5 hereof without the prior approval of the operators of the Gas/ Petroleum pipeline.	Draft		
8	The Lessee shall not excavate, drill, install, erect, deposit or permit to be excavated, drilled, installed, erected or deposited within the Safety Zone established in Condition 5 hereof, any pit, well, pavement, foundation, building, or other structure or installation, or material of any nature whatsoever without the prior written consent of the Director, Dangerous Goods and Critical Risks, Safety Regulation, DMIRS.	Draft		
9	No explosives being used or stored within one hundred and fifty (150) metres of the Gas/Petroleum pipeline without the prior written consent of the Director, Dangerous Goods and Critical Risks, Safety Regulation, DMIRS.	Draft		
10	Mining on the Safety Zone established in Condition 5 hereof being confined to below a depth of 50 metres from the natural surface unless otherwise approved by the Director, Dangerous Goods and Critical Risks, Safety Regulation, DMIRS.	Draft		
11	The rights of ingress to and egress from the pipeline easement established in Condition 5 hereof being at all times preserved for employees, contractors and agents of the operators of the Gas/Petroleum pipeline.	Draft		
12	Such further conditions as may from time to time be imposed by the Minister responsible for the Mining Act 1978 for the purpose of protecting the Gas/Petroleum pipeline.	Draft		
	In respect of the grant to the Lessee of this Lease , the Native Title Group's consent pursuant to clause 18 of Schedule 10 of the Gnaala Karla Booja People Indigenous Land Use Agreement(s) (relevant ILUA) to such grant is, as a condition precedent, subject to the Minister for Mines, Industry Regulation and Safety (DMIRS) imposing the following condition:	Draft		
13	As the Gnaala Karla Booja People ILUA (relevant ILUA) applies to this Mining Lease , the Lessee must before exercising any of the rights, powers or duties pursuant to this Mining Lease over that portion of the area of land the subject of the relevant ILUA: (i) subject to paragraph (ii), execute and enter into in respect of this Mining Lease an Aboriginal Heritage Agreement (as defined in the relevant ILUA) with the Native Title Agreement Group or Regional Corporation (as the case requires) for the relevant ILUA on terms and conditions agreed by the Lessee and the Native Title Agreement Group or Regional Corporation (as the case may be) for the relevant ILUA (the Parties) or, failing such agreement being reached between the Parties within 20 Business Days of the commencement of negotiations, execute and enter into a NSHA subject only to any necessary modifications in terminology required for the tenure; (ii) where: A. the Parties have been unable to reach agreement on the terms and conditions of an Aboriginal Heritage Agreement under paragraph (i); and B. the Lessee executes a NSHA (subject only to any necessary modifications in terminology required for the tenure); and C. The Lessee provides a copy of the NSHA to the Native Title Agreement Group or Regional Corporation (as the case requires) for the relevant ILUA for execution; if the Native Title Agreement Group or Regional Corporation (as the case requires) does not execute the NSHA and provide a copy of the executed NSHA to the Lessee within 20 Business Days of receipt of the NSHA, the requirements of paragraph (i) do not apply; and (iii) provide to the Department of Mines, Industry Regulation and Safety (DMIRS) a statutory declaration from the Lessee (or if the Lessee is a corporation, from a director of that corporation on its behalf)] in the form contained in Annexure U to the Settlement Terms (as defined in the relevant ILUA), as evidence that the Lessee has complied with the requirements of paragraph (i) of this condition or that paragraph (ii) of this condition applies."	Draft		

-- End of Report --

STRICTLY PRIVATE AND CONFIDENTIAL

SUPPORTING STATEMENT

For a Mining Lease Application E70/3943

Wattleup, WA

Prepared for
Hanson Construction Materials Pty Ltd
c/o Austwide Mining Title Management Ltd
PO Box 1434
Wangara WA 6947

Report Number ISA 092(B) 17-18

14 November 2017

InSitu Advisory

REPORT PREPARED BY:

InSitu Advisory Pty Ltd
15/23 Narabang Way, Belrose, NSW 2085
PO Box 503
Frenchs Forest
NSW 1640

ABN 43 612 657 682

DOCUMENT CONTROL

Report	Status	Date	Prepared	Checked	Authorised
ISA 092(B)-17-18	Final	14 November 2017	Alan Dyer	Darren Herdman	

TABLE OF CONTENTS

FIGURES

1 INTRODUCTION

InSitu Advisory Pty Ltd (InSitu Advisory) was commissioned by Hanson Construction Materials Pty Ltd (Hanson) to produce a Supporting Statement for a Mining Lease Application (MLA) for 'Wattleup Road' within Exploration Licence E70/3943 located within the town of Kwinana within the City of Cockburn, pursuant to Section 74(1)(ca)(ii) of the Mining Act 1978. This Supporting Statement is required by the Western Australian Department of Mines and Petroleum (DMP) and is to be considered in conjunction with the InSitu Advisory report titled 'Mineralisation Report in support of a Mining Lease Application E70/3943 Wattleup Road, WA' dated 15 November 2017, Revision 0.

2 PROJECT DESCRIPTION

Hanson proposes to establish a sand and limestone mining operation within E70/3943 at Wattleup Road immediately south of their existing M70/1275 operation.

E70/3943 Wattleup Road is approximately 25km south of Perth, with its northern boundary close to Russell Road, and the southern boundary adjacent to east-west orientated Thomas Road. E70/3943 is located within the town of Kwinana within the City of Cockburn (see Figure 1).

The proposed Wattleup Road MLA covers four separate areas, termed as MLA #1, MLA #2, MLA #3 and MLA #4 (see Figure 1) within E70/3943. The four areas within the MLA are in a linear pattern following the proposed road reserves associated with the development program.

The regional location of the project is provided in Figure 1 and a Site Plan of the proposed operations is provided in Figure 3. This project is to operate side-by-side with the existing M70/1275.

The project objectives are to mine sand and limestone materials to produce construction materials for the Perth construction and other markets. The resource is believed to be of strategic importance due to its proximity to Perth and proposed infrastructure centres.

Like the adjacent operations, the resource shall be mined by means of a mechanical wheeled loading shovel with the product being loaded straight into haulage trucks and hauled to market. Processing of excavated materials are not envisaged due to the known quality of the sand and limestone within the area.

As-dug sand and limestone will be trucked off site using public roads. Trucks heading east will use the Kwinana Freeway, whilst loads heading west will use Stock Road (see Figure 3).

A preliminary resource estimate was provided in the Mineralisation Report entitled 'Mineralisation Report for a Mining Lease Application, E70/3943 Wattleup Road, WA' which this Supporting Statement accompanies.

E70/3943 totals approximately 38.5km^2 (3,850ha) and was granted to Rocla Pty Ltd (Rocla, now Hanson) on 13 May 2011. This project is to operate side-by-side with the existing adjoining Hanson operation M70/1275. M70/1275 totals approximately 27.85Ha and was granted to Rocla on 13 August 2009.

The Wattleup Road MLA is proposed by Hanson as a further long term resource option for the supply of silica, concrete and building sands to the Perth market.

Mining is planned to commence upon all necessary approvals being granted.

The Exploration Licence, resource boundaries and buffers are shown on Figure 2 together with proposed MLA site infrastructure, and proposed access/haulage routes (see Figure 3).

2.1 Mining Operations

The extent of the mining operation will be to the mining lease boundary is shown on Figure 1.

It is anticipated that loading shovels will work the sand and limestone and load into haulage trucks. Weighing of trucks will be done by onboard weighing equipment, such as that supplied by Loadrite.

A safety management plan will be produced to govern the day to day occupational health and safety requirements of the Project. All equipment will be subject to the inspection and operational requirements of the DMP Special Inspector of Mines (Machinery). A Register Manager and Quarry Manager will be appointed as required under the Sections 33 and 37, respectively, of Mines Safety and Inspection Act 1994.

2.2 Supporting Facilities

Each of the four proposed MLAs will have a modest support facility located nearby (see Figure 3), and will rely partially on the existing Hanson operation at M70/1275. These facilities are likely to include the following:

- Secure compound and shed facilities for storage of plant and machinery at each facilities compound.
- Site office (within existing M70/1275 operation)

Access/haulage roads from the proposed MLA and infrastructure are detailed on Figure 3.

All supporting infrastructure shall be transportable and will be removed at the end of the mining life.

2.3 Operations and Maintenance

Repairs and servicing of mobile plant will occur on site using mobile mechanics from Perth. The mobile mechanics will be fully equipped with hydrocarbon recovery equipment. Alternatively, mobile machinery will be taken to Perth or local fitters for repairs and servicing. Hydrocarbon spill kits will be available on site when mobile plant is operating.

No fuel will be stored on any of the proposed MLAs, a mobile fuel truck stationed at existing Hanson operation M70/1275 shall refuel any operational plant and machinery when required. Due to the likely limited plant used for the mining operation, the quantity of hydrocarbons used on site should be minimal, consisting of diesel and occasional lubrication oils and greases. Diesel shall be stored in self bunded tanks to appropriate Australian Standards. Lubrication oils will be brought onto site with a service truck. The amount of fuel being transferred at any one time will be minimal.

The use of an existing water bore (which Hanson has access to) at 24 Torgoyle Road (corner of Torgoyle Road and Phillips Road) will be utilised if required for on-site dust suppression etc.

2.4 Resource Requirements and Regional Infrastructure

There are no regional infrastructure requirements associated with the project apart from the use of gazetted roads for product haulage and wharf facilities at regional ports in the event that material is required offshore. The resource requirements are summarised below:

- Water use: Majority of water (drawn from 24 Torgoyle Road) will be used for dust suppression on access and haul roads during haulage campaigns and a minor proportion for dust suppression at the extraction and processing areas.

- Energy use: Power is not expected to be utilised within the proposed MLAs. Power is currently available within the existing Hanson M70/1275 Russell Road area for administration facilities.
- Special requirements or infrastructure: There are no special requirements or infrastructure.
- Workforce requirements: There no special workforce requirements.

2.5 Transportation Corridors

As-dug sand and limestone will be trucked off site using public roads. Trucks heading east will use the Kwinana Freeway via either Wattleup Road or Russel Road, whilst loads heading west will also use Stock Road.

2.6 Workforce, Induction and Training

The workforce will be utilised from the existing adjoining M70/1275 operation or commuting from Perth when required on a campaign basis.

Staff will be inducted into the proposed working area and will receive ongoing training.

2.7 Waste Generation and Management

Due to the relatively small scale nature of the Project, very little domestic or industrial waste will be generated. All ancillary rubbish generated onsite such as lunch wrappers or tyres will be disposed of at the local waste / resource recovery facility.

2.8 Compliance with Legislation and Other Approvals

As the Project is relatively low impact with simple processing and ancillary requirements. Approvals required for this mining proposal may include:

- Mining Proposal.
- Mine Closure Plan.
- Project Management Plan – DMP.
- Works Approval and Licence to Operate – WA Department of Water and Environment Regulation (DWER).

The requirements under the Mines Safety and Inspection Act 1994 for the Project Management Plan ('PMP') will be developed in consultation with the District Inspector of Mines and Special Inspector of Mines.

Applications for a Works Approval and a Licence to Operate will be submitted to WA DWER upon tenement grant.

It is anticipated that operations will commence as soon as possible. Operations have already commenced within nearby M70/1275 Russell Road. Phillips Road (MLA #1 and MLA #2) excavation shall be an extension of M70/1275. Wattleup Road (MLA #3) has already commenced on site, whilst Sayer Road (MLA #4) is yet to commence.

3 CLOSURE

This report has been prepared by InSitu with all reasonable skill, care and diligence, and taking account of the manpower and resources devoted to it by agreement with the client. Information reported herein is based on the interpretation of data collected and has been accepted in good faith as being accurate and valid.

This report is for the exclusive use of Hanson Construction Materials Pty Ltd and the DMP. No warranties or guarantees are expressed or should be inferred by any third parties. This report may not be relied upon by other parties without written consent from InSitu Advisory.

InSitu Advisory disclaims any responsibility to the client and others in respect of any matters outside the agreed scope of the work.

4 CONTACT DETAILS

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Email: alan@insituadvisory.com
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Frenchs Forest NSW 1640
www.insituadvisory.com

Darren Herdman
B.Sc. (Hons), FRICS, AAPI (CPV), FIQA, MAusIMM (CP)
Mobile: +61 (0)433 984 699
Email: darren@insituadvisory.com
InSitu Advisory Pty Ltd

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Frenchs Forest NSW 1640
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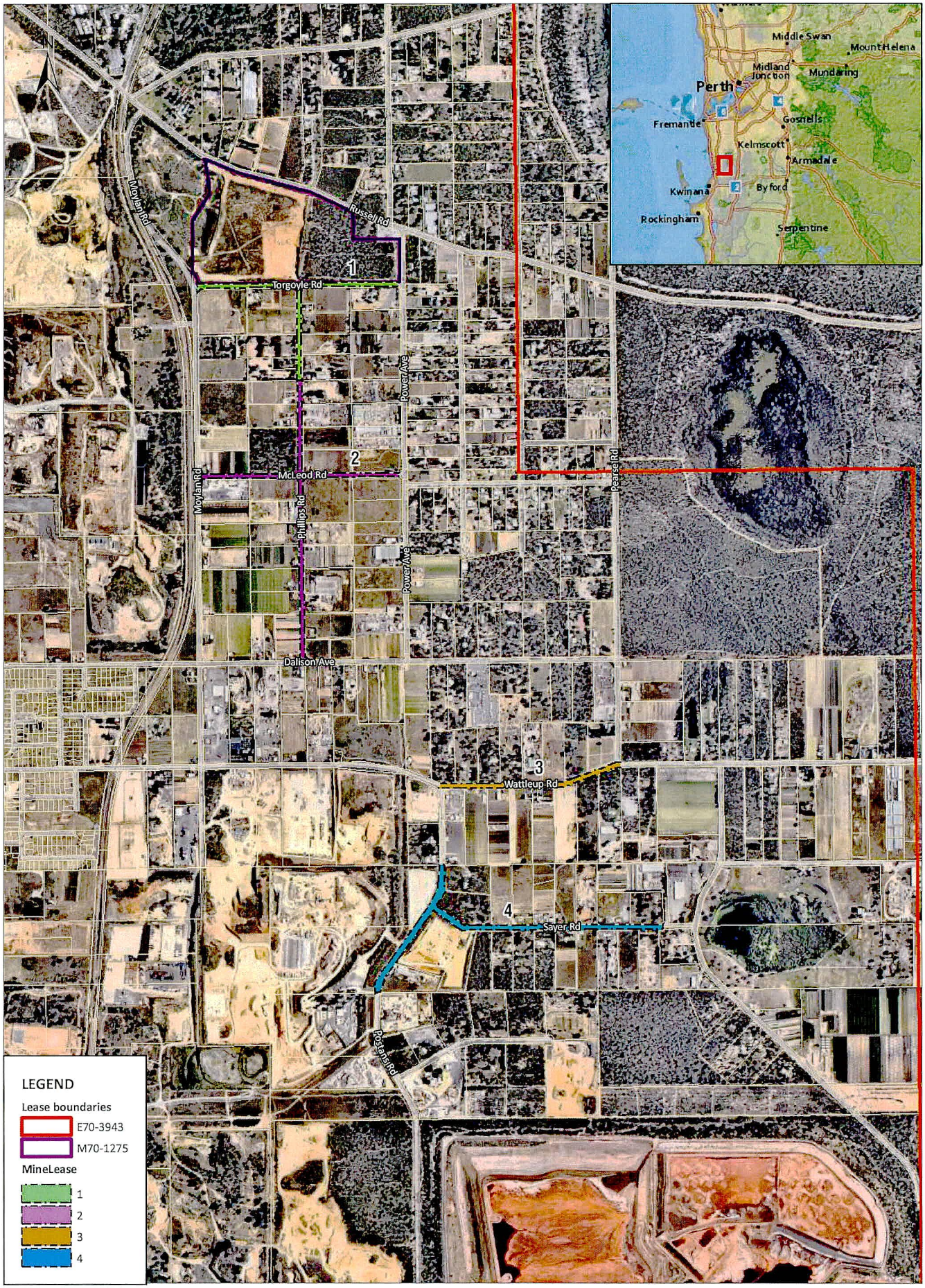
FIGURES



InSitu Advisory

Hanson Construction Materials

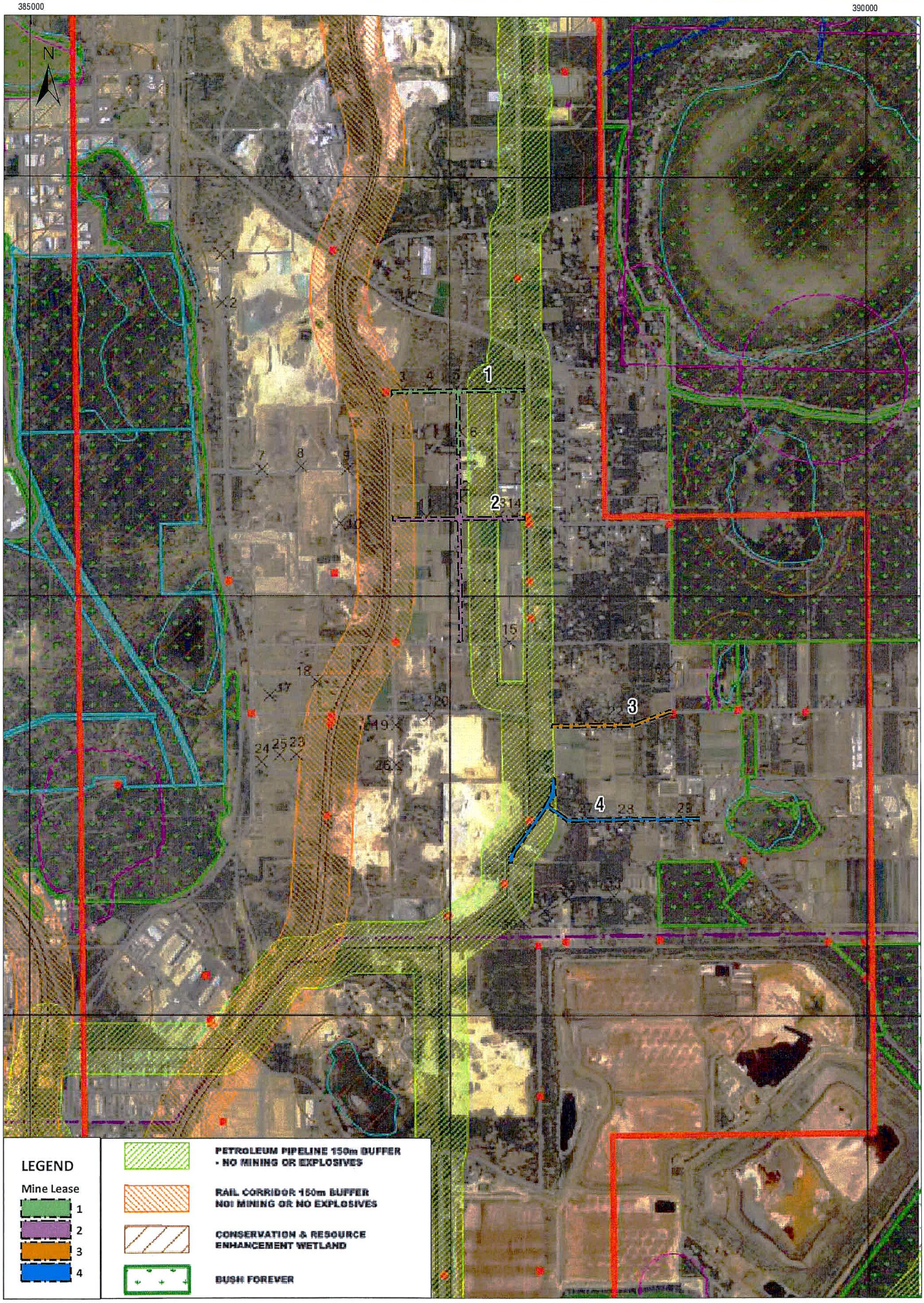
Wattleup Mine Leases
Locality Plan

0 150 300 450 600 m

Scale: 1:20,000

GDA 1994 MGA Zone 50
23-Nov-2017
Sheet Size : A4

FIGURE 1



InSitu Advisory

Hanson Construction Materials

Wattleup Road Mine Leases

Supporting Statement - Reserve Area Plans

0 200 400 600 800 m

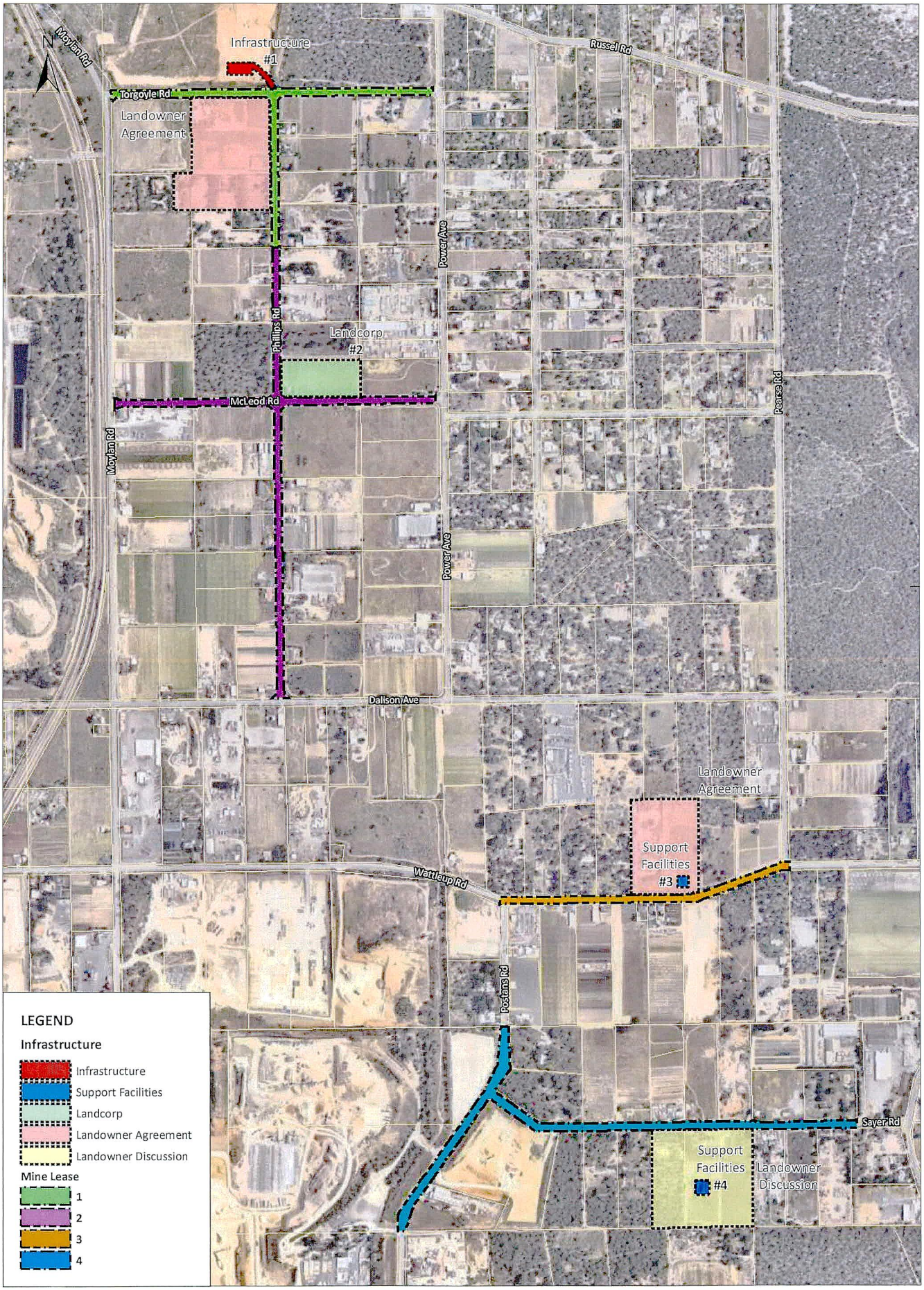
Scale: 1:30,000

GDA 1994 MGA Zone 50

20-Nov-2017

Sheet Size : A4

FIGURE 2



InSitu Advisory

Hanson Construction Materials

Wattleup Road Mine Leases
Supporting Statement - Infrastructure Plan

0 100 200 300 400 m

Scale: 1:12,439

GDA 1994 MGA Zone 50
23-Nov-2017
Sheet Size : A4

FIGURE 3

InSitu Advisory

Sydney Office
P.O. Box 503, Frenchs Forest NSW 1640
Phone: +61 (0)409 169 661 **Email:** alan@insituadvisory.com
Phone: +61 (0)433 984 699 **Email:** darren@insituadvisory.com

Brisbane Office
P.O. Box 713 Ashgrove QLD 4060
Phone: +61 (0)417 638 488 **Email:** shaun@insituadvisory.com

ATTACHMENT B

November 2018

Our Ref: D18/67626

Director Resources Tenure Branch
Mineral House
100 Plain Street
East Perth
Western Australia
6004

Dear Sir,

OBJECTION TO APPLICATION FOR MINING LEASE 70/1376 FOR SAND AND LIMESTONE EXTRACTION OVER PORTION OF POSTANS AND SAYER ROAD RESERVES – HOPE VALLEY.

I refer to the letter the City received dated 8 August 2018 seeking comments in regards to the application for Mining Lease 70/1376 by Hanson Construction Materials Pty Ltd. The City of Kwinana has considered the proposed mining application and hold significant concerns over the proposal, should it be approved.

In this regard, at its Ordinary Council Meeting held on the 14 November 2018, Council considered the matter of the mining proposal over these portions of road reserves and resolved to object to the proposed Mining Lease for the reasons outlined below.

1. The land subject to the mining application is within the Hope Valley Wattleup Redevelopment Act Area and has been structure planned. The mining of the road reserves as proposed will effectively sterilise the road reserves for potentially up to 42 years, placing a significant barrier to the redevelopment of the Latitude 32 project;

2. The land subject to the mining application are Local Government road reserves, and are currently not capable of mining as they serve the primary means of access for the adjoining land owners;

3. The mining of the land subject to the application (and adjoining) must be coordinated with an overall earthworks strategy for the Latitude 32 redevelopment. Mining of the road reserves separately and under the approval of the *Mining Act* will prevent this occurring.

4. The mining application does not address the road pavement asset replacement responsibility following the completion of mining operations. The City currently has the management responsibilities for the roads subject to the mining application, representing approximately 1.6 kilometres of road pavement, which will be affected by the mining operations. In this regard, the City of Kwinana has road assets within the proposed mining lease area with an approximate value of $900,000. These assets will need to be replaced upon the completion of mining operations at the cost of the applicant should the proposal be approved by the DMIRS.

The proposed mining of portions of the Postans and Sayer Road reserves raises a number of matters which have not been addressed as part of the mining application.

Whilst the City acknowledges that in order to progress the Latitude 32 redevelopment, portions of Postans and Sayer Road reserves will need to be modified and levels reduced at some stage in the future. The current mining application does not address how the mining operations will be undertaken to maintain access to adjoining land owners and facilitate the redevelopment of the area. Any mining activities in the Latitude32 redevelopment area should be undertaken and coordinated with the development levels plan established through Local Structure Plans and/or the Latitude 32 Levels Planning Policy.

Should you wish to discuss this matter in further detail, please contact myself on 9439 0200.

Yours sincerely

Joanne Abbiss
Chief Executive Officer

ATTACHMENT C

WESTERN AUSTRALIA

Oaths, Affidavits and Statutory Declarations Act 2005

STATUTORY DECLARATION

(1) Christian name or names and surname of declarant in full. (1) _____

(2) Address. (2) _____

(3) Occupation. in the state of Western Australia (3) _____

sincerely declare as follows:

This declaration is true and I know that it is an offence to make a declaration knowing that it is false in a material particular.

This declaration is made under the Oaths, Affidavits and Statutory Declarations Act 2005 at.....

this .....day of..... 20..... (4)

(4) Ordinary signature of declarant.

by ....

in the presence of .....

Name of authorised witness and qualification as such witness

ATTACHMENT D

Form 16

WESTERN AUSTRALIA
Mining Act 1978
(s. 42, 59, 70D, 75, 97A and r. 120A, 146)

OBJECTION No.

To: The Warden

(a) Mineral Field affected	(a) The undersigned objects to Mineral Field.....
(b) Insert particulars of the matter objected to and mining tenement application affected	(b) for the following reasons —
(c) Set out grounds for objection	(c)
(d) Particulars of objector:	(d)
(i) Full name	(i)
(ii) Residential or business address	(ii)
(iii) Phone / Fax No	(iii)
(iv) Reference	(iv)
(e) Signature of objector/agent/lawyer (see Note 1)	DATED this..... day of ..... 20..... (e) .....
(f) Address for service of objector/agent/lawyer	(f)

OFFICIAL USE

THE MENTION HEARING FOR THE APPLICATION IS TO BE HEARD BEFORE

THE WARDEN at ..... on.....day the ..... day of .....

20 ..... at.....a.m. /p.m. (see Note 2).

Received at ..... a.m. /p.m. on ..... 20.....

.....

Mining Registrar

NOTES 1. If this form is signed by a person who is an employee of the objector, the person must state the person's full name and the position in which the person is employed.

2. A "mention hearing" is an initial hearing where the warden may give directions to the parties, set a hearing date and/or adjourn to a further mention hearing. A party who does not wish to attend in person or by lawyer or agent on the nominated mention hearing date must make written application not less than 7 days before the hearing. Costs may be awarded against a party for non-attendance.

16 Reports - Civic Leadership

16.1 Council and Committee Meeting Dates for 2019 and an Additional Ordinary Council Meeting to be held on 5 December 2018

DECLARATION OF INTEREST:

There were no declarations of interest declared.

SUMMARY:

In accordance with the *Local Government Act 1995* and Council's *Standing Orders Amendment Local Law 2010*, Council is required to resolve each year the days and times when Ordinary and Committee meetings will be held. Meeting dates, including the time and location, are then advertised to provide the Kwinana community and its stakeholders with the opportunity to attend a meeting should they wish to.

It is a requirement of the *Local Government Act 1995* to advertise the meetings that are open to the public in the next 12 months, at least once a year.

An additional Ordinary Council Meeting on 5 December 2018 is recommended to be held due to the expected number of agenda items that will be brought to the 12 December 2018 Ordinary Council Meeting.

OFFICER RECOMMENDATION:

That Council:

1. Approve the schedule of the Ordinary Council Meeting dates and commencement times for 2019, with each meeting being held in the Council Chambers, as follows:

Date	Location	Commencement Time
16 January 2019	Council Chambers	7:00pm
13 February 2019	Council Chambers	7:00pm
27 February 2019	Council Chambers	7:00pm
13 March 2019	Council Chambers	7:00pm
27 March 2019	Council Chambers	7:00pm
10 April 2019	Council Chambers	7:00pm
24 April 2019	Council Chambers	7:00pm
8 May 2019	Council Chambers	7:00pm
22 May 2019	Council Chambers	7:00pm
12 June 2019	Council Chambers	7:00pm
26 June 2019	Council Chambers	7:00pm
10 July 2019	Council Chambers	7:00pm
24 July 2019	Council Chambers	7:00pm
14 August 2019	Council Chambers	7:00pm
28 August 2019	Council Chambers	7:00pm
11 September 2019	Council Chambers	7:00pm
25 September 2019	Council Chambers	7:00pm
9 October 2019	Council Chambers	7:00pm

16.1 COUNCIL AND COMMITTEE MEETING DATES FOR 2019 AND AN ADDITIONAL ORDINARY COUNCIL MEETING TO BE HELD ON 5 DECEMBER 2018

23 October 2019	Council Chambers	7:00pm
13 November 2019	Council Chambers	7:00pm
27 November 2019	Council Chambers	7:00pm
11 December 2019	Council Chambers	7:00pm

2. Approve the schedule of the Committee Meeting dates for 2019, with each meeting being held in the Council Chambers and commencing at 5:30pm, as follows:

Audit Committee	Executive Appraisal Committee
18 March 2019	1 April 2019
17 June 2019	15 July 2019
16 September 2019 5 August 2019	
18 November 2019	

3. Approve an additional Ordinary Council Meeting to be held on 5 December 2018 commencing at 7:00pm.

4. Provide local public notice and advertise the changes on the City of Kwinana public notice boards.

DISCUSSION:

In accordance with Section 5.25(1)(g) of the *Local Government Act 1995,* Council is required to advertise the Council and Committee Meeting dates for the following year. Regulation 12(1) of the *Local Government (Administration) Regulations 1996* states that a local government is to give public notice of the dates, time and place of each Council and Committee Meeting which are to be held in the next 12 months.

The City of Kwinana traditionally holds Ordinary Council Meetings on the second and fourth Wednesdays of each month, except in December and January. In past years, Council has held a single Ordinary meeting in December and January, as the rate of new development applications and items for the agenda slows during these months. Due to the number of expected Council reports to be presented in December, it is recommended that an additional Ordinary Council Meeting is held on 5 December 2018.

Agendas and Minutes for all meetings will be made available online at www.kwinana.wa.gov.au. Advertising of the Ordinary Council and Committee meetings will occur via a local newspaper, the City's website and social media.

Should, for some reason, the Ordinary Council Meeting and/or Committee Meeting dates change during the year, a report to Council will be prepared and if approved by Council, an advertisement will be placed in local newspapers and notices will be placed on City notice boards, social media and the website.

16.1 COUNCIL AND COMMITTEE MEETING DATES FOR 2019 AND AN ADDITIONAL ORDINARY COUNCIL MEETING TO BE HELD ON 5 DECEMBER 2018

LEGAL/POLICY IMPLICATIONS:

Section 5.25(1)(g) of the *Local Government Act 1995* states that regulations may make provision in relation to *the giving of public notice of the date and agenda for Council or Committee meetings*.

Regulation 12(1) of the *Local Government (Administration) Regulations 1996* states:

12. (1) At least once each year a local government is to give local public notice of the dates on which and the time and place at which —

(a) the ordinary council meetings; and

(b) the committee meetings that are required under the Act to be open to members of the public or that are proposed to be open to members of the public, are to be held in the next 12 months.

(2) A local government is to give local public notice of any change to the date, time or place of a meeting referred to in subregulation (1).

Clause 6.2 of the City of Kwinana's *Standing Orders Amendment Local Law 2010* states:

6.2 Meeting Day and Time
The Council shall resolve each year the days and time when ordinary Council meetings shall be held.

FINANCIAL/BUDGET IMPLICATIONS:

Cost of advertising in local papers is approximately $600 and has been provided for in the Governance Advertising and Promotions budget.

ASSET MANAGEMENT IMPLICATIONS:

No asset management implications have been identified as a result of this report or recommendation.

ENVIRONMENTAL IMPLICATIONS:

No environmental implications have been identified as a result of this report or recommendation.

STRATEGIC/SOCIAL IMPLICATIONS:

This proposal will support the achievement of the following outcome and objective detailed in the Corporate Business Plan.

Plan	Outcome	Objective
Corporate Business Plan 2018-2023	Civic Leadership	5.1 An active and engaged Local Government, focussed on achieving the community's vision

COMMUNITY ENGAGEMENT:

There are no community engagement implications as a result of this report.

PUBLIC HEALTH IMPLICATIONS

There are no implications on any determinants of health as a result of this report.

RISK IMPLICATIONS:

Risk Event	If Council does not set these dates then any meeting held after the last Ordinary meeting as previously approved, would be in contravention of the *Local Government Act 1995* and the City of Kwinana *Standing Orders Amendment Local Law 2010*.
Risk Theme	Failure to fulfil statutory regulations or compliance requirements
Risk Effect/Impact	Compliance
Risk Assessment Context	Operational
Consequence	Moderate
Likelihood	Rare
Rating (before treatment)	Low
Risk Treatment in place	Avoid - remove cause of risk
Response to risk treatment required/in place	City Officers have prepared a Council Report, to ensure the City sets, approves and advertises Council and Committee Meeting dates as required by the *Local Government Act 1995* and the City of Kwinana *Standing Orders Amendment Local Law 2010*.
Rating (after treatment)	Low

16.1 COUNCIL AND COMMITTEE MEETING DATES FOR 2019 AND AN ADDITIONAL ORDINARY COUNCIL MEETING TO BE HELD ON 5 DECEMBER 2018

COUNCIL DECISION
318
MOVED CR W COOPER **SECONDED CR S LEE**

That Council:

1. **Approve the schedule of the Ordinary Council Meeting dates and commencement times for 2019, with each meeting being held in the Council Chambers, as follows:**

Date	Location	Commencement Time
16 January 2019	Council Chambers	7:00pm
13 February 2019	Council Chambers	7:00pm
27 February 2019	Council Chambers	7:00pm
13 March 2019	Council Chambers	7:00pm
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13 November 2019	Council Chambers	7:00pm
27 November 2019	Council Chambers	7:00pm
11 December 2019	Council Chambers	7:00pm

2. **Approve the schedule of the Committee Meeting dates for 2019, with each meeting being held in the Council Chambers and commencing at 5:30pm, as follows:**

Audit Committee	Executive Appraisal Committee
18 March 2019	1 April 2019
17 June 2019	15 July 2019
16 September 2019	5 August 2019
18 November 2019	

3. **Approve an additional Ordinary Council Meeting to be held on 5 December 2018 commencing at 7:00pm.**

4. Provide local public notice and advertise the changes on the City of Kwinana public notice boards.

CARRIED
8/0

16.2 Budget Variations

DECLARATION OF INTEREST:

There were no declarations of interest declared.

SUMMARY:

To amend the 2018/2019 budget to reflect various adjustments to the General Ledger with nil effect to the overall budget as detailed below. Due to the nature of these variations, they fall outside the annual budget review.

OFFICER RECOMMENDATION:

That Council approves the required budget variations to the Adopted Budget for 2018/2019 as outlined in the report.

NOTE: AN ABSOLUTE MAJORITY OF COUNCIL IS REQUIRED

DISCUSSION:

ITEM #	DESCRIPTION	CURRENT BUDGET	INCREASE/ DECREASE	REVISED BUDGET
1	Capital Expense – Reserve Development – Orelia Oval steps	(20,000)	(20,000)	(40,000)
	Capital Expense – Reserve Development – Medina Oval Lighting	(300,000)	20,000	(280,000)
	Additional funds are required to complete the additional steps construction project at Orelia Oval. Quotes received exceed the original budget allocation. It is proposed that the additional funds for the project are transferred from the capital Medina Oval Lighting project budget as the tender quote was lower than the original allocated budget.			
2	Capital Expense – Transportation Vehicles – Plant replacement of KWN1983	(28,500)	(11,700)	(40,300)
	Capital Expense – Transportation Vehicles – Plant replacement of 1EWS395	(53,500)	10,000	(43,500)
	Capital Revenue – Transportation Vehicles – Sale of 1EWS395	8,000	1,700	9,700
	Additional funds are required for the plant replacement of KWN1983 to complete a custom fit out to enable a secure and safe working platform for the Building Services department's materials and tools. It is proposed that the additional funds for the project is transferred from the plant replacement of 1EWS395 as the replacement vehicle was under budget and the projected proceeds from sales was exceeded.			

16.2 BUDGET VARIATIONS

LEGAL/POLICY IMPLICATIONS:

The *Local Government Act 1995* Part 6 Division 4 s 6.8 (1) requires the local government not to incur expenditure from its municipal fund for an additional purpose except where the expenditure-

(b) is authorised in advance by resolution*

"additional purpose" means a purpose for which no expenditure estimate is included in the local government's annual budget.

*requires an absolute majority of Council.

FINANCIAL/BUDGET IMPLICATIONS:

The financial implications are detailed in this report.

ASSET MANAGEMENT IMPLICATIONS:

The allocation of funds towards the upgrading and renewal of existing City assets in the capital expenditure items is in line with the Asset Management Strategy and will reduce the current asset management gap.

ENVIRONMENTAL IMPLICATIONS:

No environmental implications have been identified as a result of this report or recommendation.

STRATEGIC/SOCIAL IMPLICATIONS:

This proposal will support the achievement of the following outcome and objective detailed in the Corporate Business Plan.

Plan	Outcome	Objective
Corporate Business Plan	Business Performance	5.4 Ensure the financial sustainability of the City of Kwinana into the future

COMMUNITY ENGAGEMENT:

There are no community engagement implications as a result of this report

PUBLIC HEALTH IMPLICATIONS

There are no public health implications as a result of this report.

16.2 BUDGET VARIATIONS

RISK IMPLICATIONS:

The risk implications in relation to this proposal are as follows:

Risk Event	The City does not manage its finances adequately and allows budget expenditure to exceed allocation and the City then finds itself unable to fund its services that have been approved through the budget process
Risk Theme	Failure to fulfil statutory regulations or compliance Providing inaccurate advice/information
Risk Effect/Impact	Financial Reputation Compliance
Risk Assessment Context	Operational
Consequence	Minor
Likelihood	Rare
Rating (before treatment)	Low
Risk Treatment in place	Reduce (mitigate risk)
Response to risk treatment required/in place	Submit budget variation requests to Council as they arise, identifying financial implications and ensuring there is nil effect on the budget adopted
Rating (after treatment)	Low

COUNCIL DECISION

319

MOVED CR M ROWSE **SECONDED CR S MILLS**

That Council approves the required budget variations to the Adopted Budget for 2018/2019 as outlined in the report.

CARRIED BY AN ABSOLUTE MAJORITY OF COUNCIL
8/0

16.3 Monthly Financial Report September 2018

DECLARATION OF INTEREST:

There were no declarations of interest declared.

SUMMARY:

The Monthly Financial Report, which includes the Monthly Statement of Financial Activity and explanation of material variances, for the period ended 30 September 2018 has been prepared for Council acceptance.

OFFICER RECOMMENDATION:

That Council:

1. **Accepts the Monthly Statements of Financial Activity for the period ended 30 September 2018, contained within Attachment A; and**

2. **Accepts the explanations for material variances for the period ended 30 September 2018, contained within Attachment A.**

DISCUSSION:

The purpose of this report is to provide a monthly financial report, which includes rating, investment, reserve, debtor, and general financial information to Elected Members in accordance with Section 6.4 of the *Local Government Act 1995*.

The period of review is September 2018. The municipal surplus for this period is $37,703,787 compared to a budget position of $36,762,369. This is considered a satisfactory result for the City as the City is maintaining a healthy budget surplus position.

Income for the September 2018 period, year to date is $48,597,778. This is made up of $47,187,191 in operating revenues and $1,410,587 in non-operating grants, contributions and subsidies received. The budget estimated $48,405,319 would be received for the same period. The variance to budget is $192,459. Details of all significant variances are provided in the notes to the Monthly Financial Report contained within Attachment A.

Expenditure for the September 2018 period year to date is $12,900,649. This is made up of $12,362,458 in operating expenditure, and $538,191 in capital expenditure. The budget estimated $17,771,115 would be spent for the same period. The variance to budget is $4,870,466. Details of all significant variances are provided in the notes to the Monthly Financial Report contained within Attachment A.

LEGAL/POLICY IMPLICATIONS:

Section 6.4 of the *Local Government Act 1995* requires a local government to prepare an annual financial statement for the preceding year and other financial reports as are prescribed.

16.3 MONTHLY FINANCIAL REPORT SEPTEMBER 2018

Regulation 34 (1) of the *Local Government (Financial Management) Regulations 1996* requires the local government to prepare monthly financial statements and report on actual performance against what was set out in the annual budget.

FINANCIAL/BUDGET IMPLICATIONS:

There are no financial implications relating to the preparation of the report. Any material variances that have an impact on the outcome of the budgeted closing surplus position are detailed in the Monthly Financial Report contained within Attachment A.

ASSET MANAGEMENT IMPLICATIONS:

There are no asset management implications associated with this report.

ENVIRONMENTAL IMPLICATIONS:

There are no environment implications associated with this report.

STRATEGIC/SOCIAL IMPLICATIONS:

This proposal will support the achievement of the following outcome and objective detailed in the Corporate Business Plan.

Plan	Outcome	Objective
Corporate Business Plan	Business Performance	5.4 Ensure the financial sustainability of the City of Kwinana into the future

COMMUNITY ENGAGEMENT:

There are no community engagement implications as a result of this report.

PUBLIC HEALTH IMPLICATIONS

There are no public health implications as a result of this report.

RISK IMPLICATIONS:

The risk implications in relation to this proposal are as follows:

Risk Event	Inadequate management of the City's provisions, revenues and expenditures.
Risk Theme	Failure to fulfil statutory regulations or compliance Providing inaccurate advice/information
Risk Effect/Impact	Financial Reputation Compliance

16.3 MONTHLY FINANCIAL REPORT SEPTEMBER 2018

Risk Assessment Context	Operational
Consequence	Minor
Likelihood	Unlikely
Rating (before treatment)	Low
Risk Treatment in place	Reduce (mitigate the risk)
Response to risk treatment required/in place	Annual adoption of variance tolerances for reporting purposes.
Rating (after treatment)	Low

COUNCIL DECISION

320

MOVED CR S LEE **SECONDED CR D WOOD**

That Council:

1. **Accepts the Monthly Statements of Financial Activity for the period ended 30 September 2018, contained within Attachment A; and**

2. **Accepts the explanations for material variances for the period ended 30 September 2018, contained within Attachment A.**

CARRIED
8/0

ATTACHMENT A

City of Kwinana

Monthly Financial Report

CITY OF KWINANA

MONTHLY FINANCIAL REPORT
(Containing the Statement of Financial Activity)
For the Period Ended 30 September 2018

LOCAL GOVERNMENT ACT 1995
LOCAL GOVERNMENT (FINANCIAL MANAGEMENT) REGULATIONS 1996

TABLE OF CONTENTS

CITY OF KWINANA
STATEMENT OF FINANCIAL ACTIVITY
(Statutory Reporting Program)
For the Period Ended 30 September 2018

	Note	Adopted Annual Budget	Current Annual Budget	YTD Budget (a)	YTD Actual (b)	Var. $ (b)-(a)	Var. % (b)-(a)/(a)
		$	$	$	$	$	%
Opening Funding Surplus(Deficit)	2	1,345,947	1,345,947	1,345,947	**1,259,903**	(86,044)	(6%)
Revenue from operating activities							
Governance		35,760	35,760	31,344	**57,989**	26,645	85%
General Purpose Funding - Rates	8	38,101,480	38,101,480	37,748,362	**37,662,705**	(85,657)	(0%)
General Purpose Funding - Other		4,477,650	4,477,650	1,226,606	**931,856**	(294,750)	(24%)
Law, Order and Public Safety		330,500	330,500	62,615	**80,907**	18,292	29%
Health		153,066	153,066	8,184	**29,431**	21,247	260%
Education and Welfare		7,168,961	7,209,461	1,812,918	**1,884,154**	71,236	4%
Community Amenities		5,534,442	5,534,442	5,033,442	**5,116,193**	82,751	2%
Recreation and Culture		2,999,818	3,002,518	710,456	**862,143**	151,687	21%
Transport		179,611	179,611	104,611	**170,022**	65,411	63%
Economic Services		1,280,762	1,280,762	375,038	**349,259**	(25,779)	(7%)
Other Property and Services		1,364,646	1,364,646	317,429	**42,532**	(274,897)	(87%)
		61,626,696	**61,669,896**	**47,431,005**	**47,187,191**	(243,814)	(1%)
Expenditure from operating activities							
Governance		(2,596,800)	(2,619,595)	(501,219)	**(971,958)**	(470,739)	(94%)
General Purpose Funding		(790,130)	(790,130)	(200,951)	**(156,166)**	44,785	22%
Law, Order and Public Safety		(3,369,960)	(3,401,521)	(787,118)	**(702,191)**	84,927	11%
Health		(950,887)	(944,777)	(235,165)	**(193,804)**	41,361	18%
Education and Welfare		(11,379,613)	(11,657,775)	(2,902,649)	**(2,400,327)**	502,322	17%
Community Amenities		(10,248,550)	(10,275,616)	(2,164,636)	**(1,821,616)**	343,020	16%
Recreation and Culture		(22,098,138)	(22,264,585)	(5,232,767)	**(3,394,262)**	1,838,505	35%
Transport		(15,431,921)	(15,941,070)	(3,899,492)	**(1,745,187)**	2,154,305	55%
Economic Services		(1,861,358)	(1,859,656)	(445,488)	**(331,771)**	113,717	26%
Other Property and Services		(3,942,836)	(3,216,668)	(833,615)	**(645,176)**	188,439	23%
		(72,670,193)	**(72,971,393)**	**(17,203,100)**	**(12,362,458)**	4,840,643	28%
Operating activities excluded from budget							
Add back Depreciation		13,672,393	13,672,393	3,418,113	**0**	(3,418,113)	(100%)
Adjust (Profit)/Loss on Asset Disposal	7	189,040	189,040	0	**51,311**	51,311	
Amount attributable to operating activities		**2,817,936**	**2,559,936**	**33,646,018**	**34,876,045**	1,230,027	4%
Investing Activities							
Non-operating Grants, Subsidies and Contributions		4,285,605	4,285,605	974,314	**1,410,587**	436,273	(45%)
Proceeds from Disposal of Assets	7	423,500	423,500	77,000	**134,376**	57,376	(75%)
Land and Buildings	11	(4,937,050)	(4,774,573)	(162,469)	**(162,469)**	0	0%
Plant, Furniture and Equipment	11	(2,458,200)	(2,458,200)	(332,500)	**(306,035)**	26,465	8%
Infrastructure Assets - Roads	11	(3,000,084)	(3,000,084)	(24,140)	**(20,140)**	4,000	17%
Infrastructure Assets - Parks and Reserves	11	(1,869,669)	(1,892,396)	(27,677)	**(29,873)**	(2,196)	(8%)
Infrastructure Assets - Footpaths	11	(193,560)	(193,560)	(3,133)	**(3,844)**	(711)	(23%)
Infrastructure Assets - Drainage	11	(2,339,323)	(2,339,323)	(6,083)	**(592)**	5,491	90%
Infrastructure Assets - Street Lighting	11	(394,272)	(394,272)	(4,246)	**(4,246)**	0	0%
Infrastructure Assets - Bus Shelters	11	(20,000)	(20,000)	(3,636)	**(4,980)**	(1,344)	(37%)
Infrastructure Assets - Car Parks	11	0	(7,000)	(4,131)	**(6,012)**	(1,881)	(46%)
Amount attributable to investing activities		**(10,503,053)**	**(10,370,303)**	**483,299**	**1,006,771**	523,473	108%
Financing Activities							
Proceeds from New Debentures	9	2,268,000	2,268,000	0	**0**	0	0%
Self-Supporting Loan Principal		16,168	16,168	4,041	**5,345**	1,304	32%
Transfer from Reserves	6	9,499,275	9,649,275	1,595,564	**885,044**	(710,520)	(45%)
Repayment of Debentures	9	(777,133)	(777,133)	0	**0**	0	0%
Transfer to Reserves	6	(4,667,140)	(4,667,140)	(312,500)	**(329,322)**	(16,822)	(5%)
Amount attributable to financing activities		**6,339,170**	**6,489,170**	**1,287,105**	**561,067**	(726,038)	(56%)
Closing Funding Surplus(Deficit)	2	**0**	**24,750**	**36,762,369**	**37,703,787**	941,418	3%

This statement is to be read in conjunction with the accompanying Financial Statements and notes. All material variances are discussed in Note 1.

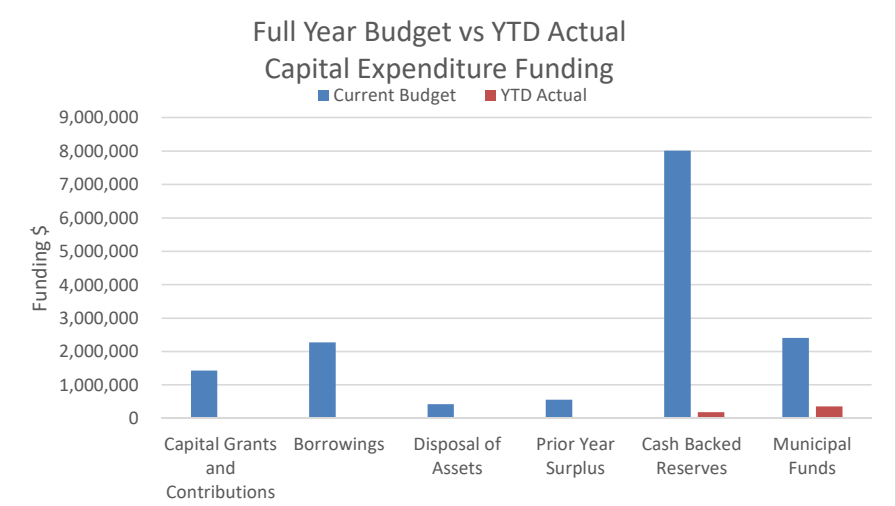
CITY OF KWINANA
STATEMENT OF FINANCIAL ACTIVITY
(By Nature or Type)
For the Period Ended 30 September 2018

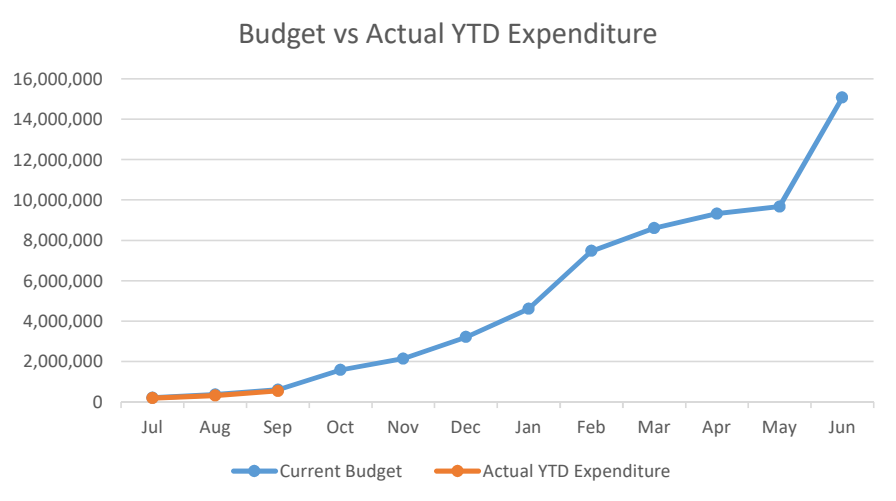
	Note	Adopted Annual Budget	Current Annual Budget	YTD Budget (a)	YTD Actual (b)	Var. $ (b)-(a)	Var. % (b)-(a)/(a)
		$	$	$	$	$	%
Opening Funding Surplus (Deficit)	2	1,345,947	1,345,947	1,345,947	**1,259,903**	(86,044)	(6%)
Revenue from operating activities							
Rates	8	38,101,480	38,101,480	37,748,362	**37,662,705**	(85,657)	(0%)
Operating Grants, Subsidies and Contributions		7,639,227	7,682,427	1,894,487	**1,928,277**	33,790	2%
Fees and Charges		11,694,484	11,694,484	6,682,162	**6,850,683**	168,521	3%
Interest Earnings		2,690,500	2,690,500	753,418	**573,854**	(179,564)	(24%)
Other Revenue		1,489,873	1,489,873	352,576	**171,673**	(180,903)	(51%)
Profit on Disposal of Assets	7	11,132	11,132	0	**0**	0	
		61,626,696	**61,669,896**	**47,431,005**	**47,187,191**	(243,814)	(1%)
Expenditure from operating activities							
Employee Costs		(28,625,503)	(28,334,303)	(6,534,663)	**(6,202,461)**	332,202	5%
Materials and Contracts		(26,006,185)	(26,598,585)	(6,214,122)	**(5,134,191)**	1,079,931	17%
Utility Charges		(2,361,417)	(2,361,417)	(527,167)	**(560,990)**	(33,823)	(6%)
Depreciation on Non-Current Assets		(13,672,393)	(13,672,393)	(3,418,113)	**0**	3,418,113	100%
Interest Expenses		(1,111,762)	(1,111,762)	(41,412)	**(7,812)**	33,600	100%
Insurance Expenses		(570,108)	(570,108)	(451,372)	**(403,707)**	47,665	11%
Other Expenditure		(122,653)	(122,653)	(16,251)	**(1,985)**	14,266	88%
Loss on Disposal of Assets	7	(200,172)	(200,172)	0	**(51,311)**	(51,311)	100%
		(72,670,193)	**(72,971,393)**	**(17,203,100)**	**(12,362,458)**	4,840,643	28%
Operating activities excluded from budget							
Add back Depreciation		13,672,393	13,672,393	3,418,113	**0**	(3,418,113)	(100%)
Adjust (Profit)/Loss on Asset Disposal	7	189,040	189,040	0	**51,311**	51,311	100%
Amount attributable to operating activities		**2,817,936**	**2,559,936**	**33,646,018**	**34,876,045**	1,230,027	4%
Investing activities							
Grants, Subsidies and Contributions		4,285,605	4,285,605	974,314	**1,410,587**	436,273	(45%)
Proceeds from Disposal of Assets	7	423,500	423,500	77,000	**134,376**	57,376	(75%)
Land and Buildings	11	(4,937,050)	(4,774,573)	(162,469)	**(162,469)**	0	0%
Plant, Furniture and Equipment	11	(2,458,200)	(2,458,200)	(332,500)	**(306,035)**	26,465	8%
Infrastructure Assets - Roads	11	(3,000,084)	(3,000,084)	(24,140)	**(20,140)**	4,000	17%
Infrastructure Assets - Parks and Reserves	11	(1,869,669)	(1,892,396)	(27,677)	**(29,873)**	(2,196)	(8%)
Infrastructure Assets - Footpaths	11	(193,560)	(193,560)	(3,133)	**(3,844)**	(711)	(23%)
Infrastructure Assets - Drainage	11	(2,339,323)	(2,339,323)	(6,083)	**(592)**	5,491	90%
Infrastructure Assets - Street Lighting	11	(394,272)	(394,272)	(4,246)	**(4,246)**	0	0%
Infrastructure Assets - Bus Shelters	11	(20,000)	(20,000)	(3,636)	**(4,980)**	(1,344)	(37%)
Infrastructure Assets - Car Parks	11	0	(7,000)	(4,131)	**(6,012)**	(1,881)	(46%)
Amount attributable to investing activities		**(10,503,053)**	**(10,370,303)**	**483,299**	**1,006,771**	523,473	108%
Financing Activities							
Proceeds from New Debentures	9	2,268,000	2,268,000	0	**0**	0	
Self-Supporting Loan Principal		16,168	16,168	4,041	**5,345**	1,304	32%
Transfer from Reserves	6	9,499,275	9,649,275	1,595,564	**885,044**	(710,520)	(45%)
Repayment of Debentures	9	(777,133)	(777,133)	0	**0**	0	
Transfer to Reserves	6	(4,667,140)	(4,667,140)	(312,500)	**(329,322)**	(16,822)	(5%)
Amount attributable to financing activities		**6,339,170**	**6,489,170**	**1,287,105**	**561,067**	(726,038)	(56%)
Closing Funding Surplus (Deficit)	2	**0**	**24,750**	**36,762,369**	**37,703,787**	941,418	3%

This statement is to be read in conjunction with the accompanying Financial Statements and notes. All material variances are discussed in Note 1.

CITY OF KWINANA
STATEMENT OF CAPITAL ACQUISITIONS AND CAPITAL FUNDING
For the Period Ended 30 September 2018

Capital Acquisitions	Note	Adopted Annual Budget	Current Annual Budget	YTD Budget (a)	YTD Actual Total (b)	Variance (a) - (b)
		$	$	$	$	$
Land and Buildings	11	4,937,050	4,774,573	162,469	162,469	0
Plant, Furniture and Equipment	11	2,458,200	2,458,200	332,500	306,035	26,465
Infrastructure Assets - Roads	11	3,000,084	3,000,084	24,140	20,140	4,000
Infrastructure Assets - Parks and Reserves	11	1,869,669	1,892,396	27,677	29,873	(2,196)
Infrastructure Assets - Footpaths	11	193,560	193,560	3,133	3,844	(711)
Infrastructure Assets - Drainage	11	2,339,323	2,339,323	6,083	592	5,491
Infrastructure Assets - Street Lighting	11	394,272	394,272	4,246	4,246	0
Infrastructure Assets - Bus Shelters	11	20,000	20,000	3,636	4,980	(1,344)
Infrastructure Assets - Car Parks	11	0	7,000	4,131	6,012	(1,881)
Capital Expenditure Totals		15,212,158	15,079,408	568,015	**538,191**	29,824
Capital acquisitions funded by:						
Capital Grants and Contributions		**1,423,989**	**1,423,989**	**0**	**8,840**	(8,840)
Borrowings		**2,268,000**	**2,268,000**	**0**	**0**	0
Disposal of Assets		**423,500**	**423,500**	**0**	**0**	0
Prior Year Surplus		**550,934**	**550,934**	**0**	**0**	0
Cash Backed Reserves		**8,133,427**	**8,007,677**	**0**	**177,443**	(177,443)
Municipal Funds		**2,412,308**	**2,405,308**	**568,015**	**351,908**	216,107
Capital Funding Total		**15,212,158**	**15,079,408**	**568,015**	**538,191**	29,824





CITY OF KWINANA

NOTES TO THE STATEMENT OF FINANCIAL ACTIVITY

For the Period Ended 30 September 2018

Note 1: Explanation of Operating Revenue and Expenditure Material Variances by Nature and Type

The material variance thresholds are adopted annually by Council as an indicator of whether the actual expenditure or revenue varies from the year to date budget materially.

The material variance adopted by Council for the 2018/19 year is the greater of $50,000 or 5%.

Nature and Type Category	Var. $	Var. %	Var.	Timing/ Permanent	Explanation of Variance
Operating Revenues					
Rates	(85,657)	(0%)		No Material Variance	
Operating Grants, Subsidies and Contributions	33,790	2%		No Material Variance	
Fees and Charges	168,521	3%		No Material Variance	
Interest Earnings	(179,564)	(24%)	M	Timing	Timing variance as budget has been spread evenly over the 12 months. Investments matured in July and were additionally offset by the reversal of accrued interest (262k) recognised in 2017/18.
Other Revenue	(180,903)	(51%)	M	Timing	The Engineering project management fee has not yet been posted to the capital expenditure accounts.
Profit on Disposal of Assets	0			No Material Variance	
Operating Expense					
Employee Costs	332,202	5%	M	Permanent	Salary savings due to vacancies in budgeted positions.
Materials and Contracts	1,079,931	17%	M	Timing	Costs have been budgeted to be spent over 12 months. Each month, a number of invoices are not received until after period end processing has finished, resulting in the expenditure reported in these statements not reflecting the actual cost in the month the expense was incurred. City Officers are looking at ways to improve reporting and ensure that these costs are captured in line with when the works are completed.
Utility Charges	(33,823)	(6%)		No Material Variance	
Depreciation on Non-Current Assets	3,418,113	100%	M	Timing	Timing variance as depreciation will be calculated after the annual financial report has been audited.
Interest Expenses	33,600	100%		No Material Variance	
Insurance Expenses	47,665	11%		No Material Variance	
Other Expenditure	14,266	88%		No Material Variance	
Loss on Disposal of Assets	(51,311)	100%		No Material Variance	

CITY OF KWINANA

NOTES TO THE STATEMENT OF FINANCIAL ACTIVITY

For the Period Ended 30 September 2018

Note 1: Explanation of Operating Revenue and Expenditure Material Variances by Nature and Type

The material variance thresholds are adopted annually by Council as an indicator of whether the actual expenditure or revenue varies from the year to date budget materially.

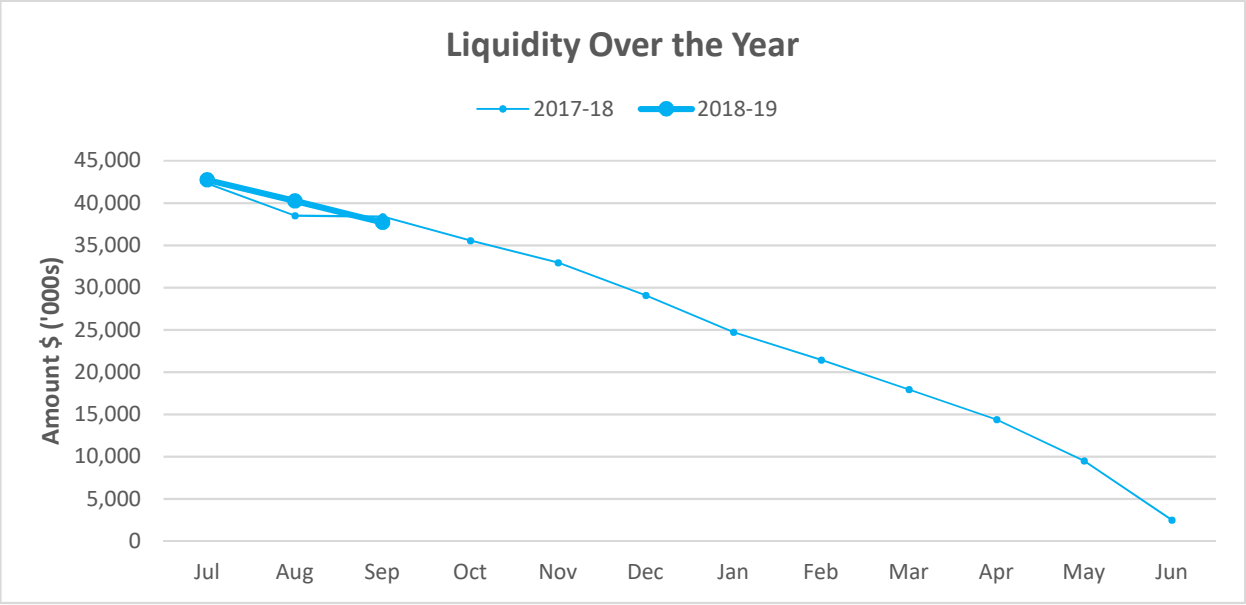
The material variance adopted by Council for the 2018/19 year is the greater of $50,000 or 5%.

Nature and Type Category	Var. $	Var. %	Var.	Timing/ Permanent	Explanation of Variance
Capital Revenues					
Grants, Subsidies and Contributions	436,273	(45%)	M	Timing	Developer Contributions were budgeted to be received later in the year, but the City received $1.1m YTD. Timing of contributions is difficult to estimate due to the unknown timing of subdivisions.
Proceeds from Disposal of Assets	57,376	(75%)	M	Timing	The capital expenditure budget has been spread over the year in line with expectations of works, the capital income is still to be uploaded in line with expectations of receipts.
Capital Expenses					
Land and Buildings	0	0%		No Material Variance	
Plant, Furniture & Equipment	26,465	8%		No Material Variance	
Infrastructure - Roads	4,000	17%		No Material Variance	
Infrastructure Assets - Parks and Reserves	(2,196)	(8%)		No Material Variance	
Infrastructure Assets - Footpaths	(711)	(23%)		No Material Variance	
Infrastructure Assets - Drainage	5,491	90%		No Material Variance	
Infrastructure Assets - Street Lighting	0	0%		No Material Variance	
Infrastructure Assets - Bus Shelters	(1,344)	(37%)		No Material Variance	
Infrastructure Assets - Car Parks	(1,881)	(46%)		No Material Variance	
Financing					
Proceeds from New Debentures	0	0%		No Material Variance	
Proceeds from Advances	0	0%		No Material Variance	
Self-Supporting Loan Principal	1,304	32%		No Material Variance	
Transfer from Reserves	(710,520)	(45%)	M	Timing	Early receipt of the 2018/19 Financial Assistance Grant was transferred in June 2018 into the Restricted Grants and Contributions Reserve ($803k). The transfer of these funds from reserve was not budgeted and occurred in July 2018.
Advances to Community Groups	0	0%		No Material Variance	
Repayment of Debentures	0	0%		No Material Variance	
Transfer to Reserves	(16,822)	(5%)		No Material Variance	

CITY OF KWINANA
NOTES TO THE STATEMENT OF FINANCIAL ACTIVITY
For the Period Ended 30 September 2018

Note 2: Net Current Funding Position

	Note	Last Years Closing 30 June 2018	This Time Last Year 30 Sep 2017	Current 30 Sep 2018
		$	$	$
Current Assets				
Cash Unrestricted		21,137	18,710,239	18,836,101
Cash Restricted - Reserves	6	52,875,771	49,419,527	52,320,049
Receivables - Rates	5(a)	3,597,121	22,506,583	22,955,554
Receivables - Sundry Debtors	5(b)	720,635	646,325	507,745
Other Current Assets		411,656	158,287	221,163
Accrued Income		491,927	0	0
Inventories		34,180	31,263	33,844
		58,152,427	91,472,224	94,874,456
Less: Current Liabilities		(4,016,753)	(3,641,076)	(4,850,620)
Less: Cash Reserves	6	(52,875,771)	(49,419,527)	(52,320,049)
Net Current Funding Position - Surplus/(Deficit)		**1,259,903**	**38,411,621**	**37,703,787**



CITY OF KWINANA
NOTES TO THE STATEMENT OF FINANCIAL ACTIVITY
For the Period Ended 30 September 2018

Note 3(a): Cash and Investments

	Total Amount	Interest Rate	Calculated Interest Earnings	Institution	S&P Rating	Deposit Date	Maturity Date	Term Days
	$	%	$					
CBA Municipal Bank Account	3,943,882	Variable	N/A	CBA	AA	N/A	N/A	N/A
CBA Reserves Bank Account	-	Variable	N/A	CBA	AA	N/A	N/A	N/A
CBA Trust Bank Account	2,203,103	Variable	N/A	CBA	AA	N/A	N/A	N/A
Cash On Hand - Petty Cash	4,650	N/A	N/A	PC	N/A	N/A	N/A	N/A
Sub-total Cash Deposits	**6,151,635**		-					
(b) **Term Deposits - Investments**								
BEN - TD2716903	2,000,000	2.75%	48,671	BEN	A	22/08/2018	11/07/2019	323
BWA - TD4749320	2,000,000	2.60%	12,822	BWA	AA	28/08/2018	26/11/2018	90
BWA - TD4749321	2,000,000	2.75%	40,534	BWA	AA	28/08/2018	24/05/2019	269
BWA - TD4749322	2,000,000	2.75%	48,822	BWA	AA	28/08/2018	18/07/2019	324
BWA - TD4752169	2,000,000	2.62%	12,921	BWA	AA	4/09/2018	3/12/2018	90
BEN - TD2737116	4,000,000	2.68%	80,180	BEN	A	11/09/2018	11/06/2019	273
NAB - TD33-586-9867	2,000,000	2.65%	17,279	NAB	AA	11/09/2018	8/01/2019	119
NAB - TD33-629-1673	2,000,000	2.70%	38,318	NAB	AA	11/09/2018	28/05/2019	259
Sub-total - Term Deposits - Investments	**18,000,000**		**299,547**					
Reserve Funds Investments (Cash Backed Reserves)								
Aged Persons Units Reserve - TD36-866-8236	752,844	2.65%	5,029	NAB	AA	1/08/2018	1/11/2018	92
Asset Management Reserve - TD36-842-8945	505,471	2.65%	3,382	NAB	AA	1/08/2018	1/11/2018	92
Asset Replacement Reserve - TD42-972-1062	504,448	2.64%	3,284	NAB	AA	7/08/2018	5/11/2018	90
Banksia Park DMF Reserve - TD42-997-1790	131,640	2.64%	857	NAB	AA	7/08/2018	5/11/2018	90
Community Services & Emergency Relief Reserve - TD43-069-3230	84,567	2.64%	551	NAB	AA	7/08/2018	5/11/2018	90
CLAG Reserve - TD43-083-2341	267,587	2.64%	1,742	NAB	AA	7/08/2018	5/11/2018	90
Workers Compensation Reserve - TD69-136-9789	321,970	2.65%	2,099	NAB	AA	9/08/2018	7/11/2018	89
Settlement Agreement Reserve - TD68-951-1678	161,049	2.65%	1,052	NAB	AA	9/08/2018	7/11/2018	89
Infrastructure Reserve - TD68-832-2429	342,197	2.65%	2,236	NAB	AA	9/08/2018	7/11/2018	89
Golf Course Cottage Reserve - TD68-730-8350	28,217	2.65%	184	NAB	AA	9/08/2018	7/11/2018	89
Future Community Infrastructure Reserve - TD88-185-4822	1,392,416	2.65%	12,232	NAB	AA	15/08/2018	14/12/2018	121
Family Day Care Reserve - TD88-195-0531	1,496,264	2.65%	13,145	NAB	AA	15/08/2018	14/12/2018	121
Employee Leave Reserve - TD44-453-4644	2,077,584	2.65%	45,402	NAB	AA	27/08/2018	24/06/2019	301
Employee Leave Reserve - TD76-099-7157	2,090,308	2.65%	45,529	NAB	AA	28/08/2018	24/06/2019	300
Refuse Reserve - TD80-618-4101	2,200,095	2.60%	13,164	NAB	AA	8/08/2018	31/10/2018	84
Refuse Reserve - TD4741512	2,683,478	2.65%	17,535	BWA	AA	2/08/2018	31/10/2018	90
Refuse Reserve - TD4747990	583,404	2.65%	3,812	BWA	AA	23/08/2018	21/11/2018	90
Information Technology Reserve - TD4747992	1,891,619	2.65%	12,360	BWA	AA	23/08/2018	21/11/2018	90
City Assist Initiative Reserve - TD4747993	100,584	2.65%	657	BWA	AA	23/08/2018	21/11/2018	90
Youth Engagement Strategy Reserve - TD4747996	145,069	2.65%	948	BWA	AA	23/08/2018	21/11/2018	90
Sub-total - Term Deposits - (Cash Backed Reserves)	**17,760,811**		**185,200**					
Reserve Funds Investments (Developer Contributions)	-							
DCA - 1 Hard Infrastructure - Bertram - TDB35732709.97	1,890,771	2.56%	11,935	CBA	AA	22/08/2018	20/11/2018	90
DCA - 2 Hard Infrastructure - Wellard - TD2718200	1,892,760	2.55%	11,901	BEN	A	23/08/2018	21/11/2018	90
DCA - 5 Hard Infrastructure - Wandi - TD74-094-8075	1,302,629	2.63%	8,541	NAB	AA	27/08/2018	26/11/2018	91
DCA - 5 Hard Infrastructure - Wandi - TD76-129-4293	9,029	2.63%	59	NAB	AA	28/08/2018	26/11/2018	90
DCA - 7 Hard Infrastructure - Mandogalup (West) - TD27-609-7675	11,713	2.65%	103	NAB	AA	15/08/2018	14/12/2018	121
DCA - 9 Soft Infrastructure - Wandi/Anketell - TD97-154-6348	10,487,573	2.65%	137,057	NAB	AA	30/08/2018	26/02/2019	180
DCA - 10 Soft Infrastructure - Casuarina/Anketell - TD27-453-1941	227,912	2.65%	2,002	NAB	AA	15/08/2018	14/12/2018	121
DCA - 11 Soft Infrastructure - Wellard East - TDB35732709.99	5,952,985	2.56%	37,577	CBA	AA	22/08/2018	20/11/2018	90
DCA - 12 Soft Infrastructure - Wellard West - TD4740441	6,674,970	2.65%	43,616	BWA	AA	1/08/2018	30/10/2018	90
DCA - 13 Soft Infrastructure - Bertram - TD27-521-3013	282,230	2.65%	2,479	NAB	AA	15/08/2018	14/12/2018	121
DCA - 14 Soft Infrastructure - Wellard/Leda - TD27-496-1706	504,779	2.65%	4,434	NAB	AA	15/08/2018	14/12/2018	121
DCA - 15 Soft Infrastructure - Townsite - TD27-479-8398	158,315	2.65%	1,391	NAB	AA	15/08/2018	14/12/2018	121
Sub-total - Reserve Funds Investments (Developer Contributions)	**29,395,667**		**261,096**					
	-							
	-							
Total	**71,308,113**	**-**	**745,843**					
Less Trust Bank	(2,125,763)							
Total Municipal Controlled Funds	**69,182,350**		**745,843**					

CITY OF KWINANA
NOTES TO THE STATEMENT OF FINANCIAL ACTIVITY
For the Period Ended 30 September 2018

Note 3(b): Cash and Investments - Compliance with Investment Policy

Portfolio Credit Risk	Funds Held	Actual at Period End	Limit per Policy	
AAA & Bendigo Bank Kwinana Community Branch	7,892,760	6%	100%	✔
AA	63,410,703	94%	100%	✔
A	-	0%	60%	✔
BBB	-	0%	20%	✔
Unrated	-	-	20%	✔

Counterparty Credit Risk	Funds Held	Actual at Period End	Limit per Policy	
BEN (AAA)	7,892,760	6%	45%	✔
BWA (AA)	20,079,124	29%	45%	✔
CBA (AA)	13,990,741	24%	45%	✔
NAB (AA)	29,340,838	41%	45%	✔

Comments - Investment Policy Compliance

The City's investments are invested in line with Council Policy - Investments. The above tables exclude the total of petty cash ($4,650) held by the City.
Interest received on the City's investments year to date is $168,446.

5.5.1 Portfolio Credit Framework

To control the credit quality on the investment portfolio, the following credit framework limits the percentage of the portfolio exposed to any particular credit rating category.

S&P Long Term Rating	S&P Short Term Rating	Direct Investment Maximum for category %
AAA and Bendigo Bank Kwinana Community Branch	A-1+ and Bendigo Bank Kwinana Community Branch	100%
AA	A-1+	100%
A	A-1	60%
BBB	A-2	20%

If any of the investments within the portfolio are subject to a credit rating downgrade such that the portfolio credit percentages are no longer compliant with the Investment Policy, or there is a review of this policy, the investment will be divested as soon as practicable.

5.5.2 Counterparty Credit Framework

Exposure to an individual counterparty/institution will be restricted by its credit rating so that single entity exposure is limited, as detailed in the table below:

S&P Long Term Rating	S&P Short Term Rating	Direct Investment Maximum for category %
AAA and Bendigo Bank Kwinana Community Branch	A-1+ and Bendigo Bank Kwinana Community Branch	45%
AA	A-1+	45%
A	A-1	25%
BBB	A-2	10%

If any of the investments within the portfolio are subject to a credit rating downgrade such that the portfolio credit percentages are no longer compliant with the Investment Policy, or there is a review of this policy, the investment will be divested as soon as practicable.

CITY OF KWINANA
NOTES TO THE STATEMENT OF FINANCIAL ACTIVITY
For the Period Ended 30 September 2018

Note 4: Budget Amendments

GL Code	Description	Increase / (Decrease) to Net Surplus Position	Amended Budget Surplus / (Deficit)
		$	$
27/06/2018 Annual Budget Adoption			**0**
Items not requiring Council Approval as per OCM 27/06/2018 Council Decision 210			
Grant received from Children's Book Council of Australia to cover fees of authors, illustrators and storytellers			
400104.1106.60	Library - Op Exp - Advertising and Promotions	(1,200)	
300018.1297.15	Library - Op Rev - Library Contributions	1,200	
		0	**0**
Transfer Library software expenditure from IT budget to Library budget			
400761.2020.64	Computing Infrastructure - Corporate Applications	12,000	
400104.1124.60	Library - Computer Services	(12,000)	
		0	**0**
Transfer program income and expenditure to be managed by the Recquatic			
400275.2034.60	Recquatic operating expenditure - Senior Sational	(3,000)	
400275.2035.60	Recquatic operating expenditure - Active Women	(3,000)	
300234.2034.30	Recquatic operating income - Senior Sational	1,550	
300234.2035.30	Recquatic operating income - Active Women	1,550	
400094.1600.60	CDO Recreation & Leisure operating expenditure - Senior Sational	3,000	
400094.1600.60	CDO Recreation & Leisure operating expenditure - Active Women	3,000	
300158.1600.30	CDO Recreation & Leisure operating income - Senior Sational	(1,550)	
300158.1600.30	CDO Recreation & Leisure operating income - Active Women	(1,550)	
		0	**0**
Transfer funds to miscellaneous expendible equipment to Community Centres Admin budget			
400708.1144.60	Community Centres Admin - Expendable Equipment	(4,000)	
400733.1144.60	Bertram Community Centre - Expendable Equipment	1,000	
400731.1144.60	Darius Community Centre - Expendable Equipment	2,000	
400732.1144.60	Wellard Community Centre - Expendable Equipment	1,000	
		0	**0**
Temporary employment of City Legal Officer to assist the City Legal Team with tasks and projects			
400008.1210.61	Operating Expense – GSS Contract Salaries	25,000	
400512.1031.50	Operating Expense – Governance Salaries	(25,000)	
		0	**0**
Good Things Foundation granted funds to assistance with the Get Online Week as part of the City's involvement with the Be Connected program.			
400104.1106.60	Operating Expense – Library Advertising & Promotions	(1,500)	
300018.1297.15	Operating Income – Library Contributions & Donations	1,500	
		0	**0**
To cover the cost of fixed term Community Development Officer			
400067.1210.61	Operating Expense – Community Services Admin Contract Salaries	27,200	
400092.1031.50	Operating Expense – CDO Recreation & Leisure Salaries	(27,200)	
		0	**0**
To provide account for Environment Services to allocate legal expenses sought on development and sand mining issues. Funds available from Consultancy budget due to reduction of expected costs for Street Tree Data project.			
400439.1177.60	Operating Expense - Natural Environment Legal Expenses	8,000	
400439.1125.60	Operating Expense - Natural Environment Consultancy	(8,000)	
		0	**0**
Increase scope of Fire Notice project to include public notice, printing of leaflet and information letter, and postage to residents.			
400503.1220.60	Operating Expense - Fire and Emergency Stationery	23,500	
400053.1106.60	Operating Expense - Governance Advertising and Promotion	(23,500)	
		0	**0**
Items approved by Council falling outside Council Decision 210			
08/08/2018 Additional funds required for the completeion of DCA 13 Local Sporting Ground with Community Sports Facility			
600019.1002.60	Capital expenditure - Kwinana Tennis Courts fencing	(150,000)	
700013.1917.06	Transfer from reserve - Future Community Infrastructure Reserve	150,000	

CITY OF KWINANA
NOTES TO THE STATEMENT OF FINANCIAL ACTIVITY
For the Period Ended 30 September 2018

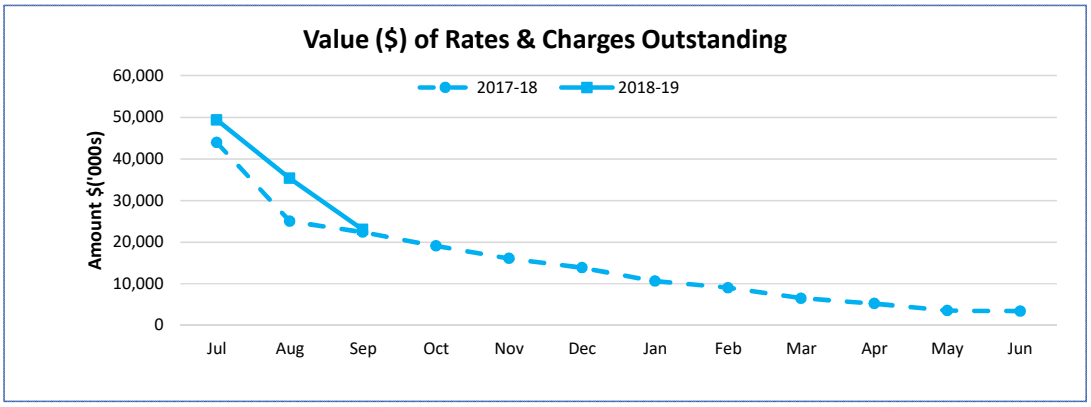
Note 4: Budget Amendments

GL Code	Description	Increase / (Decrease) to Net Surplus Position	Amended Budget Surplus / (Deficit)
		0	**0**
22/08/2018 Capital projects funded in 2017/18 that were not finalised, requiring funds to be carried forward to 2018/19			
600023.1565.60	Capital expenditure - Kwinana Tennis Courts fencing	(22,727)	
600008.1568.60	Capital expenditure - Medina Oval bitumenise entrance and carpark	(7,000)	
600015.1002.60	Capital expenditure - Building Contingency	29,727	
		0	**0**
12/09/2018 Transfer of Aged Person Units and Banksia Park capital works to operating maintenance for items that are under the threshold for asset capitalisation, including trnasfer from capital to operating reserves.			
400644.1600.60	Operating Expense – Aged Persons Unit Maintenance Program	(192,750)	
600067.1002.60	Capital Expense – Aged Persons Unit Building Renewals	192,750	
700074.1014.06	Reserve Transfer – Aged Persons Unit Operating	192,750	
700072.1014.06	Reserve Transfer – Aged Persons Unit Capital	(192,750)	
400643.1600.60	Operating Expense – Banksia Park Maintenance Program	(90,000)	
600068.1002.60	Capital Expense – Banksia Park Building Renewals	90,000	
700071.1016.06	Reserve Transfer – Banksia Park Operating	90,000	
700073.1786.06	Reserve Transfer – Banksia Park Capital	(90,000)	
		0	**0**
12/09/2018 Aboriginal Resource Worker funding from the Department of Education and Training, and My Time funding from Ngala had not been confirmed at the time of the Budget 2018/2019 preparation. This funding has now been confirmed and the expenditure budgets are required to be applied. The additional cost of the Aboriginal Resource Worker program is proposed to be funded from a reduction in Family Day Care general employee expenditure.			
400654.1031.50	Employee Expense - Family Day Care Aboriginal Resource - Salaries	(26,369)	
400654.1035.50	Employee Expense - Family Day Care Aboriginal Resource - Superannuation	(3,164)	
400655.1126.60	Operating Expense - Family Day Care Aboriginal Resource - Consumables	(4,500)	
400655.1195.60	Operating Expense - Family Day Care Aboriginal Resource – Other Expenses	(3,500)	
400655.1210.61	Operating Expense - Family Day Care Aboriginal Resource – Salaries Contract	(2,000)	
400655.1226.60	Operating Expense - Family Day Care Aboriginal Resource - Telephone	(450)	
400655.1826.60	Operating Expense - Family Day Care Aboriginal Resource – Travel FDC Van	(4,300)	
400656.1037.51	Operating Expense - Family Day Care Aboriginal Resource - Workers Compensation Premium	(527)	
400656.1038.51	Employee Expense Other - Family Day Care Aboriginal Resource – Training Staff	(1,000)	
400311.1031.50	Employee Expense - Family Day Care General - Salaries	26,369	
400311.1035.50	Employee Expense - Family Day Care General - Superannuation	3,164	
400312.1037.51	Operating Expense - Family Day Care General - Workers Compensation Premium	527	
300210.1362.15	Operating Revenue - Family Day Care Aboriginal Resource - Operational Subsidy	30,500	
300210.1841.15	Operating Revenue - Family Day Care Aboriginal Resource - NGALA My Time Funding	10,000	
		24,750	**24,750**
26/09/2018 Funds are required for the replacement of nine reverse cycle air conditioner unit/motors at the Library including the installation of manholes to enable servicing of units. It is proposed that the funds for the project is transferred from the capital contingency budget allocation under Building Construction.			
600019.1002.60	Capital Expense – Buildings – Library air conditioning motor replacement	(31,000)	
600015.1002.60	Capital Expense – Buildings – Building contingency	31,000	
		0	**24,750**
	Amended Budget Surplus / (Deficit)		**24,750**

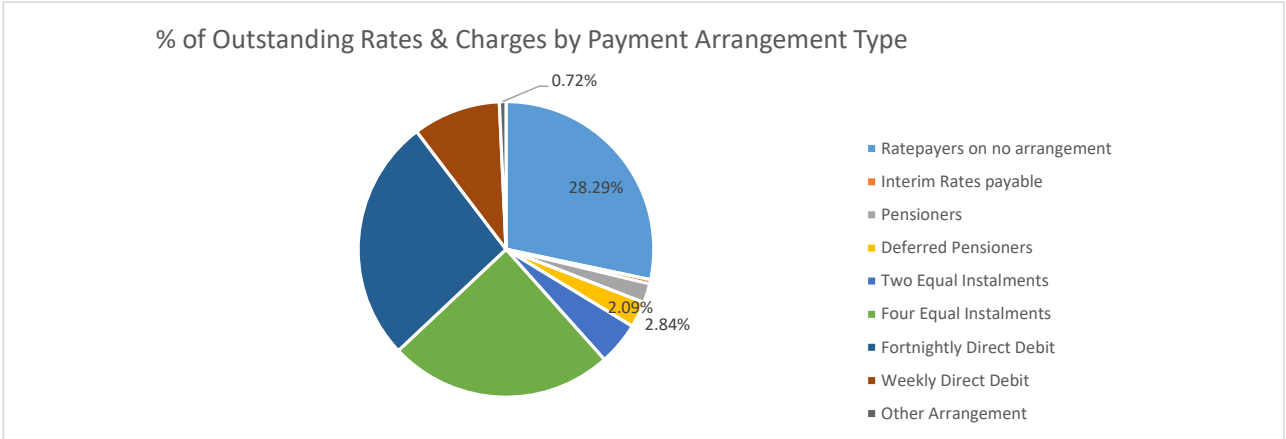
CITY OF KWINANA
NOTES TO THE STATEMENT OF FINANCIAL ACTIVITY
For the Period Ended 30 September 2018

Note 5(a): Receivables - Rates & Charges

Receivables - Rates & Charges Receivable	30 June 2018	30 Sep 2017	30 Sep 2018
	$		$
Opening Arrears Previous Years	3,360,788	2,616,983	4,275,903
Levied this year	46,715,340	46,074,338	48,859,088
Less Collections to date	(45,056,420)	(26,316,722)	(28,708,834)
Less Excess Rates received	(743,805)		(799,399)
Rates & Charges Collectable	**4,275,903**	**22,374,599**	**23,626,758**
Less Pensioner Deferred Rates	(678,782)	(598,153)	(671,204)
Net Rates & Charges Collectable	**3,597,121**	**21,776,446**	**22,955,554**
% Outstanding	7.70%	47.26%	46.98%



Outstanding Rates & Charges by Payment Arrangement Type	30 Sep 2018	
	$	%
Ratepayers on no arrangement	6,684,934	28.29%
Interim Rates payable	113,446	0.48%
Pensioners	493,290	2.09%
Deferred Pensioners	671,204	2.84%
Two Equal Instalments	1,110,306	4.70%
Four Equal Instalments	5,808,753	24.59%
Fortnightly Direct Debit	6,303,508	26.68%
Weekly Direct Debit	2,270,178	9.61%
Other Arrangement	171,138	0.72%
	23,626,758	**100.00%**



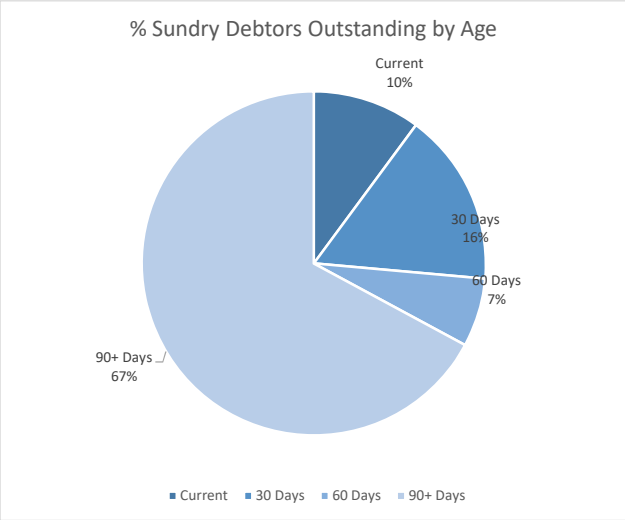
CITY OF KWINANA
NOTES TO THE STATEMENT OF FINANCIAL ACTIVITY
For the Period Ended 30 September 2018

Note 5(b): Receivables - General

Receivables - General

	Current	30 Days	60 Days	90+ Days	Total
	$	$	$	$	$
Sundry Debtors	39,689	63,885	25,365	263,060	391,999
Infringements Register					115,746
Total Receivables General Outstanding					**507,745**

Amounts shown above include GST (where applicable)



Sundry Debtors Outstanding Over 90 Days Exceeding $1,000

Debtor #	Description	Status	$
Debts with Fines Enforcement Registry			
1825.07	Court awarded fines and costs	With Fines Enforcement Registry. Payments are being received.	2,703
2442.07	Court imposed fine	No payments received. With Fines Enforcement Registry.	5,732
2535.07	Dog attack prosecution costs	Regular payments ceased in 2015; with Fines Enforcement Registry.	6,444
2726.07	Planning and Development Act prosecution	FER confirmed that a Warrant of Commitment was issued with time served.	20,171
3321.07	Dog fines and prosecution costs	Regular payments of $25 per fortnight via Fines Enforcement Registry.	2,285
3485.07	Food Act prosecutions	No payments received. With Fines Enforcement Registry.	13,524
3909.07	Local Government Act prosecution	No payments received. With Fines Enforcement Registry.	3,652
3910.07	Local Government Act prosecution	Direct debit arrangement of $30 per fortnight.	1,062
3936.07	Prosecution RO 706-709	Regular payments of $150 per fortnight via Fines Enforcement Registry.	8,852
3953.07	Local Law prosecution	Regular payments of $45 per fortnight via Fines Enforcement Registry.	2,464
4060.07	Littering Act prosecution	Direct debit arrangement of $50 per fortnight.	2,462
4131.07	Dangerous Dog Prosecution	No payments received. With Fines Enforcement Registry.	4,654
4233.07	Local Law Prosecution.	Case 225766/18. Registered with Fines Enforcement Registry 13/08/2018.	2,500
Other Sundry Debtors			
296.04	Commercial Property Rent	City Legal in discussions with lessee.	12,499
303.04	Structural Maintenance Fee / Loan	Payment arrangement in place to have debt cleared by end of financial year.	11,831
854.04	Rent and Outgoings	Investigating dispute regarding CPI increase.	5,212
897.04	Deed of Settlement	Payment arrangement in place to have debt cleared by end of financial year.	125,000
3571.04	Lot 1876 Harman St Leda	City Legal to present recommendation to Council.	1,080
3884.03	Removal of abandoned vehicle	Regular payments of $40 per fortnight being received.	2,035
3922.03	Verge clean up costs	Legal to advise. Debt has been linked to property.	1,090
3951.06	Developer Contributions - Fairhaven Estate	Waiting on subdivision prior to payment as per agreement.	3,786
4123.07	Removal of Asbestos	No reply to correspondence. Debt has been linked to the property.	1,705
4162.04	Community Centre hire fees	Notice of demand sent 26/7/18. No response to communication.	2,068
4141.03	Hazard Reduction Braddock Rd Wellard	Final reminder sent with no response to date. Debt has been linked to the property.	2,048
Total Debtors 90+ days > $1,000			**244,859**

CITY OF KWINANA
NOTES TO THE STATEMENT OF FINANCIAL ACTIVITY
For the Period Ended 30 September 2018

Note 6: Cash Backed Reserves

	Adopted Budget				Current Budget				Actual					Variance
Reserve	Opening Balance $	Transfers In (incl Interest) (+) $	Transfers Out (-) $	Closing Balance $	Opening Balance $	Transfers In (incl Interest) (+) $	Transfers Out (-) $	Current Budget Closing Balance $	Opening Balance $	Actual Transfers In (+) $	Interest Earned (+) $	Transfers Out (-) $	YTD Closing Balance $	Actual vs Current Budget $
Municipal Reserves														
Aged Persons Units Reserve	765,541	308,844	(232,750)	841,635	765,541	308,844	(232,750)	841,635	748,728	0	4,116	0	752,844	(88,791)
Asset Management Reserve	501,595	8,721	(180,000)	330,316	501,595	8,721	(180,000)	330,316	501,595	0	3,876	0	505,471	175,155
Asset Replacement Reserve	748,122	263,007	(351,200)	659,929	748,122	263,007	(351,200)	659,929	498,123	0	6,325	0	504,448	(155,480)
Banksia Park Reserve	134,175	2,333	(49,738)	86,769	134,175	2,333	(49,738)	86,769	115,626	0	488	0	116,114	29,345
City Assist Initiative Reserve	100,401	1,743	(102,144)	(0)	100,401	1,743	(102,144)	(0)	100,401	0	1,025	0	101,426	101,426
Community Services & Emergency Relief Reserve	84,017	1,461	0	85,478	84,017	1,461	0	85,478	84,017	0	2,761	0	86,778	1,301
Contiguous Local Authorities Group Reserve	263,146	14,575	(20,000)	257,721	263,146	14,575	(20,000)	257,721	265,873	0	1,714	0	267,587	9,866
Employee Leave Reserve	4,119,629	71,623	(300,000)	3,891,252	4,119,629	71,623	(300,000)	3,891,252	4,231,590	0	7,263	0	4,238,853	347,601
Family Day Care Reserve	1,479,306	25,719	(805,560)	699,465	1,479,306	25,719	(805,560)	699,465	1,462,302	0	9,460	0	1,471,762	772,297
Future Community Infrastructure Reserve	1,538,389	26,746	(663,284)	901,851	1,538,389	26,746	(813,284)	751,851	1,381,900	0	10,516	0	1,392,416	490,565
Golf Course Cottage Reserve	28,033	487	0	28,520	28,033	487	0	28,520	28,033	0	184	0	28,217	149,696
Information Technology Reserve	1,890,703	32,871	(1,416,000)	507,574	1,890,703	32,871	(1,416,000)	507,574	1,890,703	0	5,124	0	1,895,827	1,388,253
Infrastructure Reserve	339,968	5,911	0	345,879	339,968	5,911	0	345,879	339,968	0	0	0	339,968	(5,911)
Refuse Reserve	8,698,885	180,697	(83,880)	8,795,702	8,698,885	180,697	(83,880)	8,795,702	8,736,657	0	65,833	0	8,802,490	6,788
Restricted Grants & Contributions Reserve	1,694,812	0	(1,694,812)	0	1,694,812	0	(1,694,812)	0	2,491,721	0	0	(885,044)	1,606,677	1,606,676
Settlement Agreement Reserve	160,000	2,782	0	162,782	160,000	2,782	0	162,782	160,000	0	1,049	0	161,049	(1,733)
Workers Compensation Reserve	330,200	5,741	0	335,941	330,200	5,741	0	335,941	338,710	0	1,692	0	340,402	4,461
Youth Engagement Reserve	130,412	2,264	(132,676)	0	130,412	2,264	(132,676)	0	144,650	0	2,344	0	146,994	146,993
Sub-Total Municipal Reserves	**23,007,334**	**955,524**	**(6,032,044)**	**17,930,814**	**23,007,334**	**955,524**	**(6,182,044)**	**17,780,814**	**23,520,597**	**0**	**123,771**	**(885,044)**	**22,759,324**	**4,978,510**
Developer Contribution Reserves														
DCA 1 - Hard Infrastructure - Bertram	1,851,461	182,424	(491,817)	1,542,068	1,851,461	182,424	(491,817)	1,542,068	1,887,550	0	17,866	0	1,905,416	363,348
DCA 2 - Hard Infrastructure - Wellard	1,772,974	429,946	(2,197,177)	5,743	1,772,974	429,946	(2,197,177)	5,743	1,877,524	0	15,236	0	1,892,760	1,887,017
DCA 4 - Hard Infrastructure - Anketell	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DCA 5 - Hard Infrastructure - Wandi	1,286,174	661,998	(454,627)	1,493,545	1,286,174	661,998	(454,627)	1,493,545	1,309,322	0	4,737	0	1,314,059	(179,486)
DCA 7 - Hard Infrastructure - Mandogalup West	11,803	14,077	(159)	25,720	11,803	14,077	(159)	25,720	11,713	0	72	0	11,785	(13,935)
DCA 8 - Soft Infrastructure - Mandogalup	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DCA 9 - Soft Infrastructure - Wandi/Anketell	10,446,476	576,997	(141,136)	10,882,338	10,446,476	576,997	(141,136)	10,882,338	10,487,573	0	64,154	0	10,551,727	(330,611)
DCA 10 - Soft Infrastructure - Casuarina/Anketell	229,412	246,696	(3,099)	473,009	229,412	246,696	(3,099)	473,009	227,912	0	0	0	227,912	(245,097)
DCA 11 - Soft Infrastructure - Wellard East	5,734,336	1,081,744	(77,473)	6,738,607	5,734,336	1,081,744	(77,473)	6,738,607	5,944,904	0	44,818	0	5,989,722	(748,885)
DCA 12 - Soft Infrastructure - Wellard West	6,622,131	355,217	(89,468)	6,887,880	6,622,131	355,217	(89,468)	6,887,880	6,663,351	0	51,770	0	6,715,121	(172,760)
DCA 13 - Soft Infrastructure - Bertram	283,730	8,356	(3,833)	288,252	283,730	8,356	(3,833)	288,252	282,230	0	2,435	0	284,665	(3,587)
DCA 14 - Soft Infrastructure - Wellard/Leda	480,660	130,374	(6,494)	604,540	480,660	130,374	(6,494)	604,540	504,779	0	3,102	0	507,881	(96,659)
DCA 15 - Soft Infrastructure - City Site	144,189	23,788	(1,948)	166,029	144,189	23,788	(1,948)	166,029	158,316	0	1,362	0	159,678	(6,352)
Sub-Total Developer Contribution Reserves	**28,863,346**	**3,711,616**	**(3,467,231)**	**29,107,731**	**28,863,346**	**3,711,616**	**(3,467,231)**	**29,107,731**	**29,355,174**	**0**	**205,551**	**0**	**29,560,725**	**452,994**
Total Reserves	**51,870,680**	**4,667,140**	**(9,499,275)**	**47,038,545**	**51,870,680**	**4,667,140**	**(9,649,275)**	**46,888,545**	**52,875,771**	**0**	**329,322**	**(885,044)**	**52,320,049**	**5,431,504**

CITY OF KWINANA
NOTES TO THE STATEMENT OF FINANCIAL ACTIVITY
For the Period Ended 30 September 2018

Note 7: Disposal of Assets

Asset Number	Asset Description	YTD Actual Net Book Value	YTD Actual Proceeds	YTD Actual Profit	YTD Actual (Loss)	Budget Net Book Value	Budget Proceeds	Budget Profit	Budget (Loss)
		$	$	$	$	$	$	$	$
	Motor Vehicles								
5061	Plant Replacement - P402					19,875	14,000		(5,875)
5060	Plant Replacement - P403					19,875	14,000		(5,875)
5080	Plant Replacement - P407	19,333	14,373		(4,961)	19,111	8,000		(11,111)
5597	Plant Replacement - P435					22,222	24,000	1,778	
5705	Plant Replacement - P445					20,979	13,000		(7,979)
5876	Plant Replacement - P457					16,275	12,000		(4,275)
5859	Plant Replacement - P460	29,333	19,600		(9,733)	29,111	18,000		(11,111)
5884	Plant Replacement - P461					18,645	23,000	4,355	
5871	Plant Replacement - P464					21,750	23,000	1,250	
5838	Plant Replacement - P465	23,500	15,736		(7,764)	22,959	8,000		(14,959)
5809	Plant Replacement - P467	27,000	23,009		(3,991)	26,583	24,000		(2,583)
5872	Plant Replacement - P462					23,208	13,000		(10,208)
5983	Plant Replacement - P490	19,651	15,736			18,601	13,500		(5,101)
5831	Plant Replacement - P455					26,584	24,000		(2,584)
5856	Plant Replacement - P459					29,111	23,000		(6,111)
5093	Plant Replacement - P406	18,000	13,236		(4,764)	17,750	7,000		(10,750)
5885	Plant Replacement - P463					23,208	13,000		(10,208)
5666	Plant Replacement - P437	22,000	10,509		(11,491)	21,500	8,000		(13,500)
	Plant & Equipment								
2587	Plant Replacement Program - 7 X 4 Box Trailer with Water Tank and 5.5 Hp Pump - P148					0	1,000	1,000	
4957	Plant Replacement Program - Agrizzi Rota Slasher 72 inch - P413					0	1,000	1,000	
3974	Plant Replacement Program - Cat Skid Steer Loader - P347					25,600	20,000		(5,600)
3722	Plant Replacement Program - Hino 300 Series 816 Crew Cab Truck - Parks - P324					35,486	25,000		(10,486)
4083	Plant Replacement Program - Massey Ferguson Tractor - Parks - P354					51,333	30,000		(21,333)
3842	Plant Replacement Program - Mitsubishi Canter Tip Truck - Infra - P333					29,750	15,000		(14,750)
2819	Plant Replacement Program - Salloy Boxtop Trailer with Water Tank and Pump - P199					189	1,000	811	
3407	Plant Replacement Program - Disposal Only					20,540	12,000		(8,540)
3447	Plant Replacement Program - Disposal Only					4,062	5,000	938	
5646	Plant Replacement Program - KAP Ride on Mower with Catcher - replace P444					18,001	6,000		(12,001)
3481	P289 Tip Truck from 17/18	30,784	22,176		(8,608)	30,233	25,000		(5,233)
		189,602	**134,376**	**0**	**(51,311)**	**612,539**	**423,500**	**11,132**	**(200,172)**
	Net Profit/(Loss)				**(51,311)**				**(189,040)**

CITY OF KWINANA
NOTES TO THE STATEMENT OF FINANCIAL ACTIVITY
For the Period Ended 30 September 2018

Note 8: Rating Information		YTD Actual						Budget					
	Rate in	Number of Properties	Rateable Value	Rate Revenue	Interim Rates	Back Rates	Total Revenue	Number of Properties	Rateable Value	Rate Revenue	Interim Rate	Back Rate	Total Revenue
RATE TYPE	$		$	$	$	$	$		$	$	$	$	$
Differential General Rate													
Gross Rental Value (GRV)													
Improved Residential	0.07999	13,585	236,241,336	18,859,093	118,398	10,326	18,987,817	13,549	235,768,136	18,859,093	529,676	-	19,388,769
Improved Special Residential	0.07120	815	19,427,651	1,372,308	10,941	0	1,383,249	807	19,273,991	1,372,308	-	-	1,372,308
Light Industrial and Commercial	0.09043	136	23,421,923	2,118,044	(8,477)	(2,340)	2,107,227	136	23,421,923	2,118,044	-	-	2,118,044
General Industry and Service Commercial	0.08647	320	35,560,611	3,074,926	0	0	3,074,926	320	35,560,611	3,074,926	-	-	3,074,926
Large Scale General Industry and Service Commercial	0.08909	46	46,905,960	4,178,852	0	0	4,178,852	46	46,905,960	4,178,852	-	-	4,178,852
Vacant Residential	0.16828	401	8,038,760	1,375,819	(36,363)	(5,900)	1,333,556	415	8,175,770	1,375,819	-	-	1,375,819
Vacant Non Residential	0.10304	33	2,287,380	235,692	0	0	235,692	33	2,287,380	235,692	-	-	235,692
Unimproved Value (UV)													
General Industrial	0.01759	3	121,200,000	2,131,908	-	-	2,131,908	3	121,200,000	2,131,908	-	-	2,131,908
Mining	0.00847	25	39,960,000	338,461	-	-	338,461	25	39,960,000	338,461	-	-	338,461
Urban/Urban Deferred	0.00505	143	245,861,000	1,241,497	(9,797)	-	1,231,700	143	245,841,000	1,241,497	-	-	1,241,497
Sub-Totals		**15,507**	**778,904,621**	**34,926,600**	**74,702**	**2,086**	**35,003,388**	**15,477**	**778,394,771**	**34,926,600**	**529,676**	**-**	**35,456,276**
	Minimum												
Minimum Payment	**$**												
Gross Rental Value (GRV)													
Improved Residential	$1,036	1,430	1,658,878	1,481,480	(2,072)	(404)	1,479,004	1,430	16,916,772	1,481,480	-	-	1,481,480
Improved Special Residential	$1,036	4	6,228	3,108	1,036	0	4,144	3	40,820	3,108	-	-	3,108
Light Industrial and Commercial	$1,348	25	31,800	33,700	0	0	33,700	25	274,661	33,700	-	-	33,700
General Industry and Service Commercial	$1,348	34	47,994	45,832	0	0	45,832	34	299,022	45,832	-	-	45,832
Large Scale General Industry and Service Commercial	$1,348	0	-	-	0	0	-	0	-	-	-	-	-
Vacant Residential	$1,036	959	923,572	992,488	(41,420)	2,793	953,861	958	4,987,503	992,488	-	-	992,488
Vacant Non Residential	$1,036	2	-	2,072	0	0	2,072	2	4,320	2,072	-	-	2,072
Unimproved Value (UV)													
General Industrial	$1,348	0	923,572	-	0	0	-	0	-	-	-	-	-
Mining	$1,348	15	47,994	20,220	1,344	0	21,564	15	186,557	20,220	-	-	20,220
Rural	$1,036	64	1,658,878	66,304	52,836	0	119,140	64	9,608,600	66,304	-	-	66,304
Sub-Totals		**2,533**	**5,298,916**	**2,645,204**	**11,724**	**2,389**	**2,659,317**	**2,531**	**32,318,255**	**2,645,204**	**-**	**-**	**2,645,204**
		18,040	**784,203,537**	**37,571,804**	**86,426**	**4,475**	**37,662,705**	**18,008**	**810,713,026**	**37,571,804**	**529,676**	**-**	**38,101,480**
Concession							-						-
Amount from General Rates							**37,662,705**						**38,101,480**
Ex-Gratia Rates							-						-
Specified Area Rates							-						-
Totals							**37,662,705**						**38,101,480**

CITY OF KWINANA
NOTES TO THE STATEMENT OF FINANCIAL ACTIVITY
For the Period Ended 30 September 2018

Note 9: Information on Borrowings

(a) Debenture Repayments

Particulars	01 Jul 2018	New Loans		Principal Repayments		Principal Outstanding		Interest Repayments	
		Actual	Current Budget	Actual	Current Budget	Actual	Current Budget	Actual	Current Budget
		$		$	$	$	$	$	$
Governance									
Loan 99 - Administration Office Renovations	761,572	0	0	0	89,773	761,572	671,799	(780)	51,364
Loan 107 - Administration / Chambers Building Refurbishment	0	0	2,268,000	0	0	0	0	0	0
Education & Welfare									
Loan 96 - Youth Specific Space	147,840	0	0	0	25,366	147,840	122,474	(395)	11,654
Loan 100 - Youth Specific Space	1,521,312	0	0	0	122,515	1,521,312	1,398,797	(1,165)	79,645
Recreation and Culture									
Loan 94 - Wellard Sports Pavilion	204,825	0	0	0	46,488	204,825	158,337	(2,060)	13,704
Loan 95 - Orelia Oval Pavilion	354,815	0	0	0	60,878	354,815	293,937	(949)	27,970
Loan 97 - Orelia Oval Pavilion Extension	1,685,135	0	0	0	198,641	1,685,135	1,486,494	(1,727)	113,653
Loan 102 - Library & Resource Centre	7,421,567	0	0	0	0	7,421,567	7,421,567	(5,524)	386,720
Loan 104 - Recquatic Refurbishment	3,350,000	0	0	0	0	3,350,000	3,350,000	(1,853)	159,125
Loan 105 - Bertram Community Centre	1,296,840	0	0	0	0	1,296,840	1,296,840	10,079	50,827
Loan 106 - Destination Park - Calista	1,516,532	0	0	0	96,111	1,516,532	1,420,421	(911)	57,307
Transport									
Loan 98 - Streetscape Beautification	1,028,123	0	0	0	121,193	1,028,123	906,930	(1,053)	69,341
Loan 101 - City Centre Redevelopment	2,500,000	0	0	0	0	2,500,000	2,500,000	14,766	79,250
Self Supporting Loans									
Recreation and Culture									
Loan 103B - Golf Club Refurbishment	282,850	0	0	0	16,168	282,850	266,682	(616)	11,202
	22,071,411	**0**	**2,268,000**	**0**	**777,133**	**22,071,411**	**21,294,278**	**7,812**	**1,111,762**

(b) New Debentures

No new debentures were raised during the reporting period.

CITY OF KWINANA
NOTES TO THE STATEMENT OF FINANCIAL ACTIVITY
For the Period Ended 30 September 2018

Note 10: Trust Fund

Funds held at balance date over which the City has no control and which are not included in this statement are as follows:

Description	Opening Balance 01 Jul 2017	Amount Received	Amount Paid	Closing Balance 30 Sep 2018
	$	$	$	$
Hall Security Bonds	71,653	46,301	(40,200)	**77,754**
Footpath & Kerbing Security Deposits	410,680		(50,270)	**360,410**
Sports Forfeiture Security Deposits	200			**200**
Bus Hire Security Deposits	3,000	500	(500)	**3,000**
Demolition Security Deposits	2,351			**2,351**
Miscellaneous Deposits	82,423	395	(270)	**82,548**
Footpath Construction Bonds	2,000			**2,000**
Land Subdivision Bonds	588,211			**588,211**
Road Maintenance Bonds	293,234	33,324	(86,264)	**240,294**
Landscaping Subdivision Bonds	138,787			**138,787**
Planning Advertising Bonds	0			**0**
Mortimer Road - Community Trust	10,421			**10,421**
ATU Landscaping Bonds	2,378			**2,378**
Landscaping Development Bonds	64,477			**64,477**
Subdivision Handrails	15,395			**15,395**
APU Security Bonds	15,481			**15,481**
Off Road Vehicles	1,510			**1,510**
Councillor Nomination Deposits	0			**0**
DCA Contingency Bonds	265,736			**265,736**
Contiguous Local Authorities Group (CLAG)	200			**200**
Retention Funds	37,524	25,818	(8,793)	**54,549**
Public Open Space Cash In Lieu	200,061			**200,061**
	2,205,722	**106,338**	**(186,296)**	**2,125,763**

CITY OF KWINANA
NOTES TO THE STATEMENT OF FINANCIAL ACTIVITY
For the Period Ended 30 September 2018

Note 11: Capital Acquisitions

Assets	Total YTD Actual	Budget				Comment
		Adopted Annual Budget	Current Annual Budget	YTD Budget	YTD Variance	
	$	$		$	$	
Level of completion indicator, please see table at the end of this note for further detail.						
Buildings						
Arts & Cultural Centre Upgrade - Stage 1 of 2	745	100,000	100,000	745	0	
Automated Gates - Recquatic Front Counter	0	90,000	90,000	0	0	
Banksia Park Retirement Village Building Renewals	0	90,000	0	0	0	Budget variation to transfer funds to the operating budget approved by Council 12 September 2018
Building Contingency	3,925	100,000	39,273	3,925	0	
Building Renewals - Darius Wells	0	25,000	25,000	0	0	
Building Renewals - Kwinana Senior Citizens Centre	0	100,000	100,000	0	0	
Building Renewals - Margaret Feilman	0	15,000	15,000	0	0	
Building Renewals - Thomas Oval Netball Clubrooms	0	6,500	6,500	0	0	
Building Renewals - Wheatfield Cottage	0	20,000	20,000	0	0	
Building Upgrades - CCTV Administration Building	0	100,000	100,000	0	0	
Building Upgrades - Medina	0	100,000	100,000	0	0	
Callistemon Court Retirement Village Building Renewals	0	192,750	0	0	0	Budget variation to transfer funds to the operating budget approved by Council 12 September 2018
DCA 12 - Local Sporting Ground with Community Centre / Pavilion - Wellard West	0	294,300	294,300	0	0	
DCA 14 - Local Sporting Ground with Pavilion Extension (Wellard/Leda)	0	261,484	261,484	0	0	
DCA 9 - Local Sports Ground Clubroom (Clubroom construction cost)	0	107,500	107,500	0	0	
Solar Panels Upgrade	0	30,000	30,000	0	0	
Administration Building & Civic Centre - Stage 1 of 2	0	2,268,000	2,268,000	0	0	
Callistemon Court Retirement Village Building Upgrade	0	40,000	40,000	0	0	
Entry Statement	723	18,000	18,000	723	0	
DCA 13 - Local Sporting Ground with Community Sports Facility	157,076	328,516	478,516	157,076	0	
Family Daycare Building Replacement of Playroom, Kitchenette and Toy Library	0	650,000	650,000	0	0	
Library - Replacement of Air Conditioners Motors	0	0	31,000	0	0	
Buildings Total	**162,469**	**4,937,050**	**4,774,573**	**162,469**	**0**	

CITY OF KWINANA
NOTES TO THE STATEMENT OF FINANCIAL ACTIVITY
For the Period Ended 30 September 2018

Note 11: Capital Acquisitions

Assets	Total YTD Actual	Budget: Adopted Annual Budget	Budget: Current Annual Budget	Budget: YTD Budget	Budget: YTD Variance	Comment
Plant, Furniture and Equipment						
Furniture and Equipment						
Design and Replacement of Mayoral Chains	0	10,000	10,000	0	0	
Computing Equipment						
City Website Redevelopment	0	70,000	70,000	0	0	
Corporate Business System Renewal - Implementation	0	1,191,000	1,191,000	0	0	
Self Check Touchscreen Computer & Workstation - Library	0	7,000	7,000	0	0	
Plant and Equipment						
CFWD Disability Hoist - Recquatic *Replaces W12459*	0	12,000	12,000	0	0	
CWD Fixed Variable Notice Board *Replaces W12494*	0	70,000	70,000	0	0	
Plant Replacement Program - 7 X 4 Box Trailer with Water Tank and 5.5 Hp Pump - P148	0	7,000	7,000	0	0	
Plant Replacement Program - Agrizzi Rota Slasher 72 inch - P413	0	9,000	9,000	0	0	
Plant Replacement Program - Cat Skid Steer Loader - P347	0	90,000	90,000	0	0	
Plant Replacement Program - Hino 300 Series 816 Crew Cab Truck - Parks - P324	0	80,000	80,000	0	0	
Plant Replacement Program - Massey Ferguson Tractor - Parks - P354	0	85,000	85,000	0	0	
Plant Replacement Program - Mitsubishi Canter Tip Truck - Infra - P333	0	120,000	120,000	0	0	
Plant Replacement Program - Salloy Boxtop Trailer with Water Tank and Pump - P199	0	7,000	7,000	0	0	
Plant Replacement Program - Toro Ground Master Ride on Mower - Capital Maintenance - P499	0	7,000	7,000	0	0	
Plant Replacement Program - Toro Rear Discharge Ride on Mower - P500	0	7,000	7,000	0	0	
Plant Replacement Program - KAP Ride on Mower with Catcher - replace P444	0	38,200	38,200	0	0	
Motor Vehicles						
Plant Replacement - P402 - KWN1961	0	37,500	37,500	0	0	
Plant Replacement - P403 - KWN1960	38,071	37,500	37,500	37,500	(571)	Purchase completed
Plant Replacement - P406 - KWN1898	28,884	28,500	28,500	28,500	(384)	Purchase completed
Plant Replacement - P407 - KWN1949	28,884	28,500	28,500	28,500	(384)	Purchase completed
Plant Replacement - P435 - KWN1957	0	33,500	33,500	0	0	
Plant Replacement - P437 - KWN1993	24,518	25,000	25,000	25,000	482	Purchase completed
Plant Replacement - P445 - KWN1983	0	28,500	28,500	0	0	
Plant Replacement - P455 - KWN1987	0	25,000	25,000	0	0	
Plant Replacement - P457 - 1EXX509	0	41,500	41,500	0	0	
Plant Replacement - P459 - 1EWW253	36,653	41,500	41,500	41,500	4,847	Purchase completed
Plant Replacement - P460 - 1EWW269	38,127	41,500	41,500	41,500	3,373	Purchase completed
Plant Replacement - P461 - 1EXX886	0	41,500	41,500	0	0	
Plant Replacement - P462 - 1EWO612	0	25,000	25,000	0	0	
Plant Replacement - P463 - 1GBJ678	0	41,500	41,500	0	0	
Plant Replacement - P464 - 1EXM745	0	41,500	41,500	0	0	
Plant Replacement - P465 - 1EWS395	40,319	53,500	53,500	53,500	13,181	Purchase completed
Plant Replacement - P467 - KWN1984	33,424	35,000	35,000	35,000	1,576	Purchase completed
Plant Replacement - P490 - 1GCH844	37,155	41,500	41,500	41,500	4,345	Purchase completed
Plant , Furniture and Equipment Total	**306,035**	**2,458,200**	**2,458,200**	**332,500**	**26,465**	

CITY OF KWINANA
NOTES TO THE STATEMENT OF FINANCIAL ACTIVITY
For the Period Ended 30 September 2018

Note 11: Capital Acquisitions

Assets	Total YTD Actual	Budget				Comment
		Adopted Annual Budget	Current Annual Budget	YTD Budget	YTD Variance	
Park and Reserves						
Bore - Current Condition 5 Cubicle & Pump Replacement Program	4,500	75,000	75,000	4,500	0	
Bore - Renewal / Replacement	0	105,000	105,000	0	0	
CFWD Family Daycare Play Equipment and Landscaping *Replaces W12573*	0	101,569	101,569	0	0	
Fencing Replacement Program	0	57,000	57,000	0	0	
KIA Street Tree Planting Program (B)	0	75,000	75,000	0	0	
Kwinana Loop Trail	0	80,000	80,000	0	0	
CFWD Medina Oval Lighting *Replaces W12591*	0	300,000	300,000	0	0	
Parks and Reserves Renewals - Kwinana Adventure Park	0	40,000	40,000	0	0	
Pimlico Cresent Maintenance (F)	0	110,000	110,000	0	0	
Public Open Space Playgrounds Renewals - Exercise Equipment/Sport	0	5,000	5,000	0	0	
Public Open Space Playgrounds Renewals - Goal Post Renewal	0	5,000	5,000	0	0	
Public Open Space Playgrounds Renewals - Oval/Courts/Lights	0	8,000	8,000	0	0	
Public Open Space Playgrounds Renewals - Park Furniture / Lights	0	6,000	6,000	0	0	
Public Open Space Playgrounds Renewals - Prince RegenT Park Combination Unit and Rubber Softfall - Calista Oval Playgroun	0	100,000	100,000	0	0	
Public Open Space Playgrounds Renewals - Casuarina Fire Station Reserve - Park Bench - Casuarina Reserve Park Seats (2) - Pe	0	8,000	8,000	0	0	
Public Open Space (POS) Upgrade - Orelia Oval Additional Steps to meet grass	450	20,000	20,000	450	0	
Public Open Space (POS) Upgrades - Parks for People Minor Projects	0	25,000	25,000	0	0	
Public Open Space (POS) Upgrades - Parks for People Strategy	0	100,000	100,000	0	0	
Sporting Infrastructure - Wandi Playing Fields (Honeywood)	0	89,100	89,100	0	0	
Street Tree Planting Program (A) - Bertram Stage 2	0	65,000	65,000	0	0	
Thomas Oval Lighting	0	495,000	495,000	0	0	
Kwinana Tennis Courts - Fencing	24,923	0	22,727	22,727	0	Budget Variation approved by Council 22 August 2018. Project completed.
Parks and Reserves Total	**29,873**	**1,869,669**	**1,892,396**	**27,677**	**0**	

CITY OF KWINANA
NOTES TO THE STATEMENT OF FINANCIAL ACTIVITY
For the Period Ended 30 September 2018

Note 11: Capital Acquisitions

Assets	Total YTD Actual	Budget: Adopted Annual Budget	Budget: Current Annual Budget	Budget: YTD Budget	Budget: YTD Variance	Comment
Roads						
Urban Road Grant Construction						
Road Reseal A - Gilmore Avenue - South bound lanes	0	380,490	380,490	0	0	
Road Reseal C - Sulphur Road - Tanson road to Parmelia Ave	0	361,900	361,900	0	0	
Road Reseal B - Orelia Avenue (Thomas Road to Chistmas Ave - Incl roundabout)	0	492,800	492,800	0	0	
Black Spot Grant Construction						
Kwinana Beach Road (J)	8,840	48,253	48,253	8,840	0	
Roads to Recovery Grant Construction						
Road Reseal D - Orelia Avenue - Nye Way to Chistmas Ave	0	181,500	181,500	0	0	
Road Reseal E - Cowcher Way West & Ridley Way West From Derbal Street to Medina Avenue	0	253,000	253,000	0	0	
DCA Funded Construction						
DCA 1 - Millar Road	0	436,703	436,703	0	0	
DCA 1 - Wellard Road Upgrade – Bertram Road to Millar Road (Item J)	11,300	100,000	100,000	11,300	0	
DCA 5 - Lyon Road - Cassowary to Kenby (Satterleys)	0	437,250	437,250	0	0	
Municipal Road Construction						
Gilmore Avenue Pedestrian Crossing	0	60,000	60,000	4,000	4,000	
Local Area Traffic Management B - Harlow Road Bollard Installation	0	17,188	17,188	0	0	
Road Reseal F - Duckpond Road & Banksia Road intersection	0	82,500	82,500	0	0	
Road Reseal G - Clementi Road	0	104,500	104,500	0	0	
Road Reseal L - Henry Street A	0	44,000	44,000	0	0	
Roads Total	**20,140**	**3,000,084**	**3,000,084**	**24,140**	**4,000**	
Street Lighting						
Latitude 32 Lighting Changeover *Replaces 12757*	0	262,272	262,272	0	0	
Street Lighting - Various Locations *Replaces W12554*	477	22,000	22,000	477	0	
Street Lighting - Johnson Road/McWhirter Promenade	3,769	110,000	110,000	3,769	0	
Street Lighting Total	**4,246**	**394,272**	**394,272**	**4,246**	**0**	
Bus Shelter Construction						
Bus Shelters (Replaces W12553)	4,980	20,000	20,000	3,636	(1,344)	
Bus Shelter Construction Total	**4,980**	**20,000**	**20,000**	**3,636**	**(1,344)**	
Footpath Construction						
Footpath A - Rowley Road - Lyon Road to Freeway	0	55,000	55,000	0	0	
Footpath Construction - between Adventure Park and Gilmore Avenue (W12557)	3,844	138,560	138,560	3,133	(711)	
Footpath Construction Total	**3,844**	**193,560**	**193,560**	**3,133**	**(711)**	

CITY OF KWINANA
NOTES TO THE STATEMENT OF FINANCIAL ACTIVITY
For the Period Ended 30 September 2018

Note 11: Capital Acquisitions

Assets	Total YTD Actual	Budget: Adopted Annual Budget	Budget: Current Annual Budget	YTD Budget	YTD Variance	Comment
Drainage Construction						
DCA 2 - Peel Sub N Drain - Lot 64 Woolcoot Rd & Lot 379 Millar, 27 & 201 Mortimer Rd's	0	1,916,198	1,916,198	0	0	
DCA 2 - Peel Sub N2 Drain - Lot 64 Woolcoot Rd	0	257,025	257,025	0	0	
Drainage A - Burlington Street Drainage Sump	592	93,500	93,500	6,083	5,491	
Drainage B - Gilmore Avenue	0	33,000	33,000	0	0	
Drainage C - Sulphur Road - Tanson To Parmelia	0	39,600	39,600	0	0	
Drainage Construction Total	**592**	**2,339,323**	**2,339,323**	**6,083**	**5,491**	
Car Park Construction						
Medina Oval - Bituminise entrance & Carpark	6,012	0	7,000	4,131	(1,881)	Budget Variation approved by Council 22 August 2018. Project completed.
Car Park Construction Total	**6,012**	**0**	**7,000**	**4,131**	**(1,881)**	
Capital Expenditure Total	**538,191**	**15,212,158**	**15,079,408**	**568,015**	**32,020**	

Level of Completion Indicators (Percentage YTD Actual to Annual Budget)

- 0%
- 20%
- 40%
- 60%
- 80%
- 100%
- Over 100%

CITY OF KWINANA
NOTES TO THE STATEMENT OF FINANCIAL ACTIVITY
For the Period Ended 30 September 2018

Note 12: Schedule of Grants, Subsidies & Contributions

Description	Current Annual Budget	YTD Actual	Comments
Operating Grants, Subsidies & Contributions			
Community Amenities			
PTA Bus Shelter Subsidy	13,000	-	
SMCC - KIC Coastcare in the KIA	10,000	10,000	
SMCC - BP Coastcare	10,000	-	
SMCC - Perth Region NRM for SMCC	5,000	-	
SMCC - Tronox Adopt a Beach	5,000	5,000	
SMCC - Degremont Adopt a Beach	5,000	-	
Alcoa - Challenger Beach Rehabilitation	16,000	-	
NATE - Seedling Subsidy Scheme	2,000	499	
Education and Welfare			
Banksia Park Operating Cost Contribution	331,344	82,482	
Family Daycare - Mainstream Childcare Benefit Subsidy	3,000,000	1,065,450	
Family Daycare - Subsidy Other	45,000	15,563	
Family Daycare - Inclusion Subsidy Scheme	5,000	8,339	
CCB Subsidy	1,500,000	208,560	
Subsidy Other	10,000	2,526	
NGALA My Time Program	10,000	2,640	
Operational Subsidy - Aboriginal Resource Worker	30,500	-	
Youth Social Justice Program	172,561	43,140	
Youth Incentive Sponsorship	35,000	-	
Youth Pathways Strategy Grant	2,500	-	
Skate Park Activation Grant	5,000	-	
Good Spirit Learning Program Grant	20,000	-	
Youth Wellbeing Benchmark Survey Grant	5,000	-	
Art Therapy Youth Grant	50,000	-	
General Purpose Funding			
Local Government General Purpose Grant	737,676	119,330	
Local Government General Purpose Grant - Roads	669,912	94,610	
Non Rateable Property - Dampier to Bunbury Natural Gas Pipeline Corridor	170,000	-	
Health			
Mosquito Management Contributions (CLAG)	10,000	12,028	
Department of Health - Larvicide	1,000	-	
Law Order & Public Safety			
Department Fire and Emergency Services - ESL	161,000	-	
Department Fire and Emergency Services - LEMC Aware Grant	4,000	-	
Recreation & Culture			
Arts - Harmony & Reconciliation	5,000	-	
Sponsorship - Big Concert	60,000	62,500	
Childrens Festival	35,000	-	
Youth Festival	10,000	-	
Music in the Schools/Community	5,000	-	
Recreation - KidSport (DLGSC)	150,000	6,685	
Library Contributions & Donations	7,700	4,784	
Shared Use Agreements	108,702	-	
Recquatic Holiday Program DEDU payments	78,421	14,118	
Volunteer Centre - Thank a Volunteer Event	1,500	-	
Transport			
Main Roads Annual Direct Grant	104,611	170,022	
Main Roads Street Light Subsidy	5,000	-	
Main Roads Maintenance Contribution	70,000	-	
Total Operating Grants, Subsidies & Contributions	**7,682,427**	**1,928,277**	

CITY OF KWINANA
NOTES TO THE STATEMENT OF FINANCIAL ACTIVITY
For the Period Ended 30 September 2018

Note 12: Schedule of Grants, Subsidies & Contributions

Description	Current Annual Budget	YTD Actual	Comments
Non-Operating Grants, Subsidies & Contributions			
Community Amenities			
DCA 1 - Hard Infrastructure - Bertram	127,900	-	
DCA 2 - Hard Infrastructure - Wellard	377,733	-	
DCA 4 - Hard Infrastructure - Anketell	-	633,006	
DCA 5 - Hard Infrastructure - Wandi	624,121	-	
DCA 7 - Hard Infrastructure - Mandogalup (west)	13,729	-	
DCA 9 - Soft Infrastructure - Wandi / Anketell	269,358	411,499	
DCA 10 - Soft Infrastructure - Casuarina/Anketell	239,940	-	
DCA 11 - Soft Infrastructure - Wellard East	912,873	-	
DCA 12 - Soft Infrastructure - Wellard West	160,201	-	
DCA 14 - Soft Infrastructure - Wellard / Leda	116,219	42,759	
DCA 15 - Soft Infrastructure - Townsite	19,542	4,582	
Recreation & Culture			
Department of Infrastructure - Thomas Oval Lighting	150,000	-	
Department of Education - Wandi Playing Fields	25,500	-	
Lotterywest - Kwinana Loop Trail	37,670	-	
Transport	-		
City of Cockburn - Contribution to Footpath	25,000	-	
Federal Road Grant - Roads to Recovery	388,966	-	
State Road Grant - Orelia Avenue Resurfacing	298,667	119,467	Initial 40% of grant claimed
State Road Grant - Sulphur Road Resurfacing	219,333	87,733	Initial 40% of grant claimed
State Road Grant - Gilmore Avenue Resurfacing	230,600	92,240	Initial 40% of grant claimed
State Road Grant - State Black Spot - Kwinana Beach Road	48,253	19,301	Initial 40% of grant claimed
Total Non-Operating Grants, Subsidies & Contributions	**4,285,605**	**1,410,587**	

16.4 Adoption of Parking and Parking Facilities Local Law 2018

DECLARATION OF INTEREST:

There were no declarations of interest declared.

SUMMARY:

At its Ordinary Council Meeting held on the 9 May 2018, Council resolved to give state-wide public notice of its proposal to make the *Parking and Parking Facilities Amendment Local Law 2018* for public consultation. The consultation was undertaken between the 25 May 2018 and 17 July 2018. One submission was received during the consultation period from the Department of Local Government, Sporting and Cultural Industries (DLGSC); a detailed report outlining the submission was provided at the Ordinary Council Meeting held 8 August 2018 (Attachment E).

As a result of the DLGSC submission, it was recommended under section 3.13 of the *Local Government Act 1995* that the City recommence the local law review process and adopt a new *Parking and Parking Facilities Local Law,* and to repeal the current *Parking and Parking Facilities Local Law 2010* as detailed in Attachment C*.*

Subsequently, at its Ordinary Council Meeting held 8 August 2018, Council resolved to give state-wide public notice of its proposal to make the proposed *Parking and Parking Facilities Local Law 2018* as detailed in Attachment A. The proposed local law was advertised for the required period of 42 days, as prescribed in the *Local Government Act 1995,* the local public notice was placed in the Weekend Courier, 17 August 2018 and state wide notice was placed in the West Australian, 17 August 2018, as detailed in Attachment D. The consultation period closed on 9 October 2018, during this time the City received one submission, which raised concerns regarding the occurrence of street parking within the City, in particular the Honeywood Estate (as detailed in Attachment E).

OFFICER RECOMMENDATION:

That Council:

1. That the Presiding Member reads aloud the *Parking and Parking Facilities Local Law 2018* purpose and effect:

    a. The purpose of this local law is to regulate the parking or standing of vehicles in all or specified thoroughfares and reserves under the care, control and management of the local government and to provide for the management and operation of parking facilities.

    b. The effect of this local law is that a person parking a vehicle within the parking region is to comply with the provisions of this local law.

2. That Council resolve to:

    a. Repeal the current *Parking and Parking Facilities Local Law 2010,*

    b. Adopt the *Parking and Parking Facilities Local Law 2018* proposed at Attachment A,

16.4 ADOPTION OF PARKING AND PARKING FACILITIES LOCAL LAW 2018

c. Cause the *Parking and Parking Facilities Local Law 2018* to be published in the Government Gazette and provide a local public notice stating the purpose and effect of the local law, when the local law will come into operation and that copies are available for public inspection, and

d. Authorise the Chief Executive Officer to complete and then sign with the Mayor the Explanatory Memorandum and Statutory Procedures Checklist of the process used at Attachment F, as required to be provided to the Joint Standing Committee on Delegated Legislation and the Minister for Local Government; Heritage; Culture and The Arts within 10 working days of the Gazettal Notice publication date.

NOTE: AN ABSOLUTE MAJORITY OF COUNCIL IS REQUIRED

DISCUSSION:

The purpose of this local law is to regulate the parking or standing of vehicles in all or specified thoroughfares and reserves under the care, control and management of the local government and to provide for the management and operation of parking facilities.

The effect of this local law is that a person parking a vehicle within the parking region is to comply with the provisions of this local law.

The City's current *Parking and Parking Facilities Local Law 2010* was adopted by Council on 15 December 2010, and at its Ordinary Council Meeting held 8 August 2018, Council resolved to advertise for public consultation a proposed *Parking and Parking Facilities Local Law 2018*. The consultation period closed on 9 October 2018. One submission was received during the consultation period, the submission was relating to concerns regarding street parking within the City, in particular parking in the Honeywood Estate. City Officers have since responded to the submission addressing the submittors concerns, as detailed in Attachment E.

A number of staff working group meetings and an Elected Members' forum have taken place to review the current local law.

The resulting draft *Parking and Parking Facilities Local Law 2018*, as it will appear when advertised in the Government Gazette, is shown in Attachment A.

To assist Elected Members to recall these proposed changes, a copy of the current local law, including the proposed amendments is provided at Attachment B.

Explanatory Notes of all proposed amendments that have been made to the *Parking and Parking Facilities Local Law 2010* are contained within Attachment B. Deletions to current text are in red strike-through, proposed new text in blue and explanatory notes that do not form part of the local law, in brown text.

The City of Kwinana Town Planning Scheme Amendment 151 clarified definitions in relation to commercial vehicles and following the approval of the Scheme Amendment by the Western Australian Planning Commission on 15 August 2017, the local law required further minor amendments to incorporate the changes which are included in the *Parking and Parking Facilities Local Law 2018*.

16.4 ADOPTION OF PARKING AND PARKING FACILITIES LOCAL LAW 2018

LEGAL/POLICY IMPLICATIONS:

Local Government Act 1995

3.12 Procedure for making local laws

(1) In making a local law a local government is to follow the procedure described in this section, in the sequence in which it is described.

(2) At a council meeting the person presiding is to give notice to the meeting of the purpose and effect of the proposed local law in the prescribed manner.

(3) The local government is to —
(a) give Statewide public notice stating that —
(i) the local government proposes to make a local law the purpose and effect of which is summarized in the notice

FINANCIAL/BUDGET IMPLICATIONS:

Budgeted Amount:	$67,500
Expenditure to Date:	$1,875.18
Proposed Cost:	Estimated - $14,400.00
Balance:	Estimated - $51,372.82

If the *Parking and Parking Facilities Local Law 2018* is adopted, the cost of gazetting the *Parking and Parking Facilities Local Law 2018* is considerably more than the cost for gazettal of an amended local law.

It is estimated that the cost to gazette the full *Parking and Parking Facilities Local Law 2018* will be approximately $13,500.

ASSET MANAGEMENT IMPLICATIONS:

There are no direct asset management implications related to this report.

ENVIRONMENTAL IMPLICATIONS:

There are no direct environmental implications related to this report.

STRATEGIC/SOCIAL IMPLICATIONS:

This proposal will support the achievement of the following outcomes and objectives detailed in the Strategic Community Plan.

Plan	Outcome	Objective
Strategic Community Plan	A safe and welcoming place	1.3 Facilitate improved community safety and reduced crime levels
	Accessibility for everyone	1.9 Improve levels of disability access and inclusion throughout the community
	A well planned City	4.4 Create diverse places and spaces where people can enjoy a variety of lifestyles with high levels of amenity

COMMUNITY ENGAGEMENT:

The proposed local law was advertised for the required period of 42 days, as prescribed in the *Local Government Act 1995,* the local public notice was placed in the Weekend Courier, 17 August 2018 and state wide notice was placed in the West Australian, 17 August 2018, as detailed in Attachment D. The consultation period closed on 9 October 2018, during this time the City received one submission, which raised concerns regarding the occurrence of street parking within the City, in particular the Honeywood Estate (as detailed in Attachment E).

The *Parking, Parking Facilities Local Law 2018* is to be published in the Government Gazette and a local public notice will also be given to advise when the local law comes into operation, and that copies will be available for public information.

PUBLIC HEALTH IMPLICATIONS

The recommendation has the potential to cause a significant improvement to the following determinants of health and factors:

- Built Environment –
    - Neighbourhood Amenity; and
- Socio-economic Factors –
    - Education;
    - Employment;
    - Income and
    - Community Safety

16.4 ADOPTION OF PARKING AND PARKING FACILITIES LOCAL LAW 2018

RISK IMPLICATIONS:

The risk implications in relation to this proposal are as follows:

Risk Event	Local Law is not reviewed as required by the *Local Government Act 1995*
Risk Theme	Failure to fulfil statutory regulations or compliance requirements
Risk Effect/Impact	Compliance
Risk Assessment Context	Strategic
Consequence	Minor
Likelihood	Unlikely
Rating (before treatment)	Moderate
Risk Treatment in place	Avoid - remove cause of risk
Response to risk treatment required/in place	Ensure the review of local laws complies with legislated requirements
Rating (after treatment)	Low

COUNCIL DECISION

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MOVED CR W COOPER **SECONDED CR M ROWSE**

That Council:

1. **That the Presiding Member reads aloud the *Parking and Parking Facilities Local Law 2018* purpose and effect:**

   a. **The purpose of this local law is to regulate the parking or standing of vehicles in all or specified thoroughfares and reserves under the care, control and management of the local government and to provide for the management and operation of parking facilities.**

   b. **The effect of this local law is that a person parking a vehicle within the parking region is to comply with the provisions of this local law.**

2. **That Council resolve to:**

   a. **Repeal the current *Parking and Parking Facilities Local Law 2010,***

   b. **Adopt the *Parking and Parking Facilities Local Law 2018* proposed at Attachment A,**

   c. **Cause the *Parking and Parking Facilities Local Law 2018* to be published in the Government Gazette and provide a local public notice stating the purpose and effect of the local law, when the local law will come into operation and that copies are available for public inspection, and**

16.4 ADOPTION OF PARKING AND PARKING FACILITIES LOCAL LAW 2018

d. Authorise the Chief Executive Officer to complete and then sign with the Mayor the Explanatory Memorandum and Statutory Procedures Checklist of the process used at Attachment F, as required to be provided to the Joint Standing Committee on Delegated Legislation and the Minister for Local Government; Heritage; Culture and The Arts within 10 working days of the Gazettal Notice publication date.

CARRIED BY AN ABSOLUTE MAJORITY OF COUNCIL 8/0

ATTACHMENT A

City of Kwinana

City of Kwinana
Parking and Parking Facilities Local Law 2018

Local Government Act 1995

City of Kwinana

PARKING AND PARKING FACILITIES LOCAL LAW 2018

Contents

To be included – does not form part of local law.

ATTACHMENT A

Local Government Act 1995

City of Kwinana

PARKING AND PARKING FACILITIES LOCAL LAW 2018

Under the powers conferred by the *Local Government Act 1995* and under all other powers enabling it, the City of Kwinana resolved on [insert date] to adopt the following local law.

PART 1 — PRELIMINARY

1.1 Citation

This local law may be cited as the City *of Kwinana Parking and Parking Facilities Local Law 2018.*

1.2 Commencement

This local law comes into operation 14 days after the date of its publication in the *Government Gazette.*

1.3 Purpose and effect

(1) The purpose of this local law is to regulate the parking or standing of vehicles in all or specified thoroughfares and reserves under the care, control and management of the local government and to provide for the management and operation of parking facilities.

(2) The effect of this local law is that a person parking a vehicle within the parking region is to comply with the provisions of this local law.

1.4 Repeal

The *Town of Kwinana Parking Local Law 2000* published in the *Government Gazette* on 11 January 2011 is repealed.

1.5 Application

(1) Subject to subclause (2), this local law applies to the parking region as described in Schedule 1.

(2) (a) The local government may enter into an agreement in writing with the owner or occupier of a parking facility or a parking station that is not owned or occupied by the local government for the application of this local law to the facility or station.

(b) The agreement referred to in subclause (2)(a) may be made on such terms and conditions as the parties may agree.

(3) This local law does not apply to a parking facility or a parking station that is not occupied by the local government, unless the local government and the owner or occupier of that facility or station have agreed in writing that this local law will apply to that facility or station.

(4) Where a parking facility or a parking station is identified in a register maintained by the local government, the facility or station shall be deemed to be a facility or station to which this local law applies.

(5) The provisions of Parts 3, 4 and 5 do not apply to a bicycle parked at a bicycle rail or bicycle rack.

1.6 Interpretation

(1) In **this** local law unless the context requires otherwise –

Act means the *Local Government Act 1995*;

Australian Standard means an Australian Standard published by Standards Australia and as amended from time to time;

attended parking station means a parking station attended by an officer of the local government and in respect of which fees for the parking of a vehicle are payable immediately prior to the removal of the vehicle from the station;

authorised person means a person appointed by the local government under section 9.10 of the Act, to perform any of the functions of an authorised person under this local law;

authorised vehicle means a vehicle authorised by the local government, the Chief Executive Officer or an authorised person or by any written law to park on a thoroughfare or parking facility;

bicycle has the meaning given to it by the *Code*;

bicycle path has the meaning given to it by the *Code*;

bus has the meaning given to it by the *Code*;

bus embayment has the meaning given to it by the *Code*;

bus stop has the meaning given to it by the *Code*;

bus zone has the meaning given to it by the *Code*;

caravan means a vehicle that is fitted or designed to allow human habitation and which is drawn by another vehicle, or which is capable of self-propulsion;

carriageway means a portion of thoroughfare that is improved, designed or ordinarily used for vehicular traffic and includes the shoulders, and areas, including embayments, at the side or centre of the carriageway, used for the stopping or parking of vehicles; and where a thoroughfare has two or more of those portions divided by a median strip, the expression means each of those portions, separately;

centre in relation to a carriageway, means a line or a series of lines, marks or other indications –

(a) for a two-way carriageway – placed so as to delineate vehicular traffic travelling in different directions; or

(b) in the absence of any such lines, marks or other indications – the middle of the main, travelled portion of the carriageway;

Chief Executive Officer means the Chief Executive Officer of the local government;

children's crossing has the meaning given to it by the *Code*;

Code means the *Road Traffic Code 2000*;

coin means any coin which is legal tender pursuant to the *Currency Act 1965* (Commonwealth);

commercial vehicle means a vehicle whether licenced or not, that has a gross vehicle mass of greater than 4.5 tonnes and/or which is greater than 7 metres in length and 2.4 metres in height, including –

(a) a utility, van, truck, tractor, bus or earthmoving equipment; and

(b) a vehicle that is, or is designed to be an attachment to a vehicle referred to in paragraph (a);

costs of the local government include its administrative costs;

cul-de-sac means a carriageway closed at one end that has the same entry and exit point;

disability parking permit has the meaning given to it by the *Local Government (Parking for People with Disabilities) Regulations 2014;*

display means to place in a prominent place inside the vehicle on the front passenger's side, preferably on the dashboard, in order that the text may readily be seen and read from outside of the vehicle;

district means the district of the local government;

driver means any person driving or having control of a vehicle;

eating area means an area in which tables, chairs and other structures are provided for the purpose of the supply of food and beverages to a member of the public or the consumption of food and beverages by a member of the public;

edge line for a carriageway, means a line marked along the carriageway at or near the far left or the far right of the carriageway;

emergency vehicle has the meaning given to it by the *Code*;

fire hydrant means an upright pipe with a spout, nozzle or other outlet for drawing water from a main or service pipe in case of fire or other emergency;

footpath has the meaning given to it by the *Code*;

GTM means 'gross trailer mass' as given to it by the *Code*;

GVM means 'gross vehicle mass' as given to it by the *Code*;

kerb means any structure, mark, marking or device to delineate or indicate the edge of a carriageway;

laneway means a narrow carriageway generally situated at the rear of a lot, the purpose of which is to service the lots adjacent to it and not as a general thoroughfare for through traffic;

loading zone means a parking stall which is set aside for use by commercial vehicles if there is a sign referable to that stall marked 'Loading Zone';

local government means the City of Kwinana;

mail zone has the meaning given to it by the *Code*;

median strip has the meaning given to it by the *Code*;

metered space means a section or part of a metered zone that is controlled by a parking meter and that is marked or defined in any way to indicate where a vehicle may be parked on payment of a fee or charge;

metered zone means any road or reserve, or part of any road or reserve, in which parking meters regulate the stopping or parking of vehicles;

motorcycle has the meaning given to it by the *Code*;

motor vehicle means a self-propelled vehicle that is not operated on rails, and includes a trailer, semi-trailer, or caravan while attached to the vehicle, but does not include a power assisted pedal cycle;

no parking area means a portion of a carriageway to which a no parking sign applies or an area to which a no parking sign applies;

no parking sign means a sign with the words 'no parking' in red letters on a white background, or the letter 'P' within a red annulus and a red diagonal line across it on a white background;

no stopping area means a portion of a carriageway to which a no stopping sign applies or an area to which a no stopping sign applies;

no stopping sign means a sign with the words 'no stopping' or 'no standing' in red letters on a white background or the letter 'S' within a red annulus and a red diagonal line across it on a white background;

obstruct means to prevent or impede or to make difficult the normal passage of any vehicle, wheelchair, perambulator or pedestrian and obstruction shall have a corresponding meaning;

occupier has the meaning given to it by the *Act*;

owner -

(a) where used in relation to a vehicle licensed under the *Road Traffic Act 1974* means the person in whose name the vehicle has been registered under the *Road Traffic Act 1974*;

(b) where used in relation to any other vehicle, means the person who owns, or is entitled to possession of that vehicle; and

(c) where used in relation to land, has the meaning given to it by the *Act*;

park in relation to a vehicle, means to permit a vehicle, whether attended or not by any person, to remain stationary except for the purpose of –

(a) avoiding conflict with other traffic; or

(b) complying with the provisions of any law; or

(c) taking up or setting down persons or goods (maximum of 2 minutes);

parking area means a portion of a carriageway to which a permissive parking sign applies or a parking facility managed by the local government to which a permissive parking sign applies;

parking facilities includes land, buildings, shelters, road reserve, parking area, metered zone, ticket machine zone, parking bay, parking station, attended parking station, parking stalls and other facilities open to the public generally for the parking of vehicles whether or not a fee is charged, and includes any signs, notices and facilities used in connection with the parking of vehicles;

parking region means the whole of the district except for those areas, roads, bridges and subways under the control and direction of the Commissioner of Main Roads;

parking stall means a section or part of a thoroughfare or of a parking station which is marked or defined by painted lines, metallic studs, coloured bricks or pavers or similar devices for the purpose of indicating where a vehicle may be parked, but does not include a metered space;

parking station means any land, or structure provided for the purpose of accommodating vehicles;

parking ticket means a ticket which is issued from a ticket issuing machine and which authorises the parking of a vehicle in a parking stall or a parking station or part of a parking station;

pedestrian crossing has the meaning given to it by the *Code*;

permit means a permit issued under this local law;

reserve means any land –

(a) which belongs to the local government;

(b) of which the local government is the management body under the *Land Administration Act 1997*; or

(c) which is an 'otherwise unvested facility' within section 3.53 of the *Act*;

residential street means a thoroughfare where the majority of properties abutting the thoroughfare are used for residential purposes;

residential zone means land within the residential zone specified within the City of Kwinana's town planning scheme dealing with zoning;

right of way means a portion of land that is –

(a) shown and marked "Right of Way" or "ROW", or coloured or marked in any other way to signify that the portion of land is a right of way, on any plan or diagram deposited with the Registrar of Titles that is subject to the provisions of section 167A of the *Transfer of Land Act 1893*;

(b) shown on a diagram or plan of survey relating to a subdivision that is created as a right of way and vested in the Crown under section 152 of the *Planning and Development Act 2005*; and

(c) shown and marked as a right of way on a map or plan deposited with the Registrar of Titles and transferred to the Crown under the *Transfer of Land Act 1893*,

but does not include:

(a) private driveways; and

(b) a right of way created by a deed of easement between two or more parties;

Road Traffic Act means the *Road Traffic Act 1974*;

Schedule means a Schedule to this local law;

shared zone has the meaning given to it by the *Code*;

sign includes a traffic sign, inscription, road marking, mark, structure or device on which may be shown words, numbers, expressions or symbols, and which is placed on or near a thoroughfare or within a parking station or reserve for the purpose of prohibiting, regulating, guiding, directing or restricting the parking or stopping of vehicles;

special purpose vehicle has the meaning given to it by the *Code*;

special residential zone means land within the special residential zone specified within the City of Kwinana's town planning scheme dealing with zoning;

Standards Australia means Standards Australia Limited ACN 087 326 690;

stop in relation to a vehicle means to stop a vehicle and permit it to remain stationary, except for the purposes of avoiding conflict with other traffic or of complying with the provisions of any law;

symbol includes, but is not limited to, any symbol specified by the current Australian Standard 1742.11 and any symbol specified from time to time by Standards Australia for use in the regulation of parking;

tare weight in relation to a vehicle, means the weight of the vehicle without any passengers or load;

taxi means a taxi within the meaning of section 47Z of the *Transport Co-ordination Act 1966*;

taxi zone has the meaning given to it by the *Code*;

ticket issuing machine means a machine or device which is installed in a parking facility and which upon the insertion of coins or a token, pass, card, key or device issues a parking ticket;

ticket machine zone means a parking facility in which ticket issuing machines are installed but does not include a parking station;

thoroughfare has the meaning given to it by the *Act*;

town planning schemes are local planning schemes as defined in the *Planning and Development Act 2005* and mean the Town of Kwinana Town Planning Schemes No 2 and No 3 or any subsequently adopted local planning scheme of the City of Kwinana;

traffic island has the meaning given to it by the *Code*;

trailer means any vehicle without motive power of its own, designed for attachment to a motor vehicle for the purpose of being towed including a trailerable vessel, but does not include the rear portion of an articulated vehicle, or a side car;

trailerable vessel means a monohull or multi-hull boat which can be transported on the road on the same trailer used to launch and retrieve it;

unattended in relation to a vehicle, means that the driver has left the vehicle so that the driver is more than 3 metres from the closest point of the vehicle;

vehicle has the meaning of every conveyance, whether licensed or not, a vessel or aircraft, and every object capable of being propelled or drawn including trailers and caravans, on wheels or tracks, or by any means;

verge means the portion of a thoroughfare which lies between the boundary of a carriageway and the adjacent property line but does not include a footpath.

(2) For the purposes of the application of the definitions “no parking area” and “parking area” an arrow inscribed on a sign erected at an angle to the boundary of the carriageway is deemed to be pointing in the direction in which it would point, if the signs were turned at an angle of less than 90 degrees until parallel with the boundary.

(3) A reference to a word or expression inscribed on a sign includes a reference to a symbol depicting the word or expression.

(4) A reference to a parking station, ticket machine zone or metered zone includes a reference to part of the parking station, ticket machine zone or metered zone.

(5) Unless the context otherwise requires, where a term is used, but not defined in this local law and –

(a) it is defined in the *Act*, it shall have the meaning given to it in the *Act*; and

(b) it is defined in the *Road Traffic Act* or in the *Code*, it shall have the meaning given to it in the *Road Traffic Act* or the *Code*.

1.7 Classes of vehicles

For the purpose of this local law, vehicles are divided into the following classes –

(a) buses;

(b) commercial vehicles;

(c) motorcycles and bicycles;

(d) taxis;

(e) trailers and caravans (a trailerable vessel is included in this class to the extent that it is located upon a trailer); and

(f) all other vehicles.

1.8 Powers of the local government

The local government may, by resolution, prohibit or regulate by signs or otherwise, the stopping or parking of any vehicle or any class of vehicles in any part of the parking region, but must do so consistently with the provisions of this local law.

1.9 Determination of fees, charges and costs

All fees, charges and costs referred to in this local law shall be determined and imposed by the local government from time to time in accordance with sections 6.16 to 6.20 of the *Act*.

1.10 Relationship with other laws

In the event of any inconsistency with any Act, Regulation or local planning scheme, the provisions of those Acts, Regulations or local planning schemes are to prevail.

PART 2 — SIGNS

2.1 Erection of signs

The local government may erect a sign for the purposes of this local law on any land, building or other structure within the parking region.

2.2 Compliance with signs

(1) A person shall comply with the direction on every sign displayed, marked, placed, or erected pursuant to this local law.

(2) An inscription or symbol on a sign operates and has effect according to its meaning and a person contravening the direction on a sign commits an offence under this local law.

2.3 Unauthorised signs and defacing of signs

A person shall not without the approval of the local government –

(a) display, mark, set up or exhibit a sign purporting to be or resembling a sign marked, set up or exhibited by the local government under this local law;

(b) remove, deface or misuse a sign or property, set up or exhibited by the local government under this local law or attempt to do any such act; or

(c) affix a board, sign, placard, notice or other thing to or paint or write upon any part of a sign set up or exhibited by the local government under this local law.

2.4 General provisions about signs

(1) A sign marked, erected, set up, established or displayed on or near a thoroughfare or in a parking station is, in the absence of evidence to the contrary to be deemed to be a sign marked, erected, set up, established or displayed under the authority of this local law.

(2) The first three letters of any day of the week when used on a sign indicate that day of the week.

(3) For the purpose of this local law, the local government may use Australian Standard AS 1742.11, as a guide for the development or marking of signs, but is not bound to do so and, where it does use it as a guide may vary any of the provisions of Australian Standard AS 1742.11 as it sees fit.

2.5 Application of this local law to pre-existing signs

A sign that –

(a) was erected by the local government or the Commissioner of Main Roads prior to the coming into operation of this local law; and

(b) relates to the parking of vehicles within the parking region,

shall be deemed for the purposes of this local law to have been erected by the local government under the authority of this local law.

2.6 Part of thoroughfare to which sign applies

Where under this local law the parking of vehicles in a thoroughfare is controlled by a sign, the sign shall be read as applying to that part of the thoroughfare which –

(a) lies beyond the sign;

(b) lies between the sign and the next sign beyond that sign; and

(c) is on that side of the thoroughfare nearest to the sign.

PART 3 — PARKING STALLS AND PARKING STATIONS

3.1 Determination of parking stalls and parking stations

(1) The local government may by resolution constitute, determine and vary and also indicate by signs –

(a) parking stalls;

(b) parking stations;

(c) permitted time and conditions of parking in parking stalls and parking stations which may vary with the locality;

(d) permitted classes of vehicles which may park in parking stalls and parking stations;

(e) permitted classes of persons who may park in specified parking stalls or parking stations; and

(f) the manner of parking in parking stalls and parking stations.

(2) Where the local government makes a determination under subclause (1) it shall erect signs to give effect to the determination.

3.2 Vehicles to be within parking stall on thoroughfare

(1) Subject to subclauses (2), (3) and (4), a person shall not park a vehicle in a parking stall in a thoroughfare otherwise than –

(a) parallel to and as close to the kerb as is practicable;

(b) wholly within the stall; and

(c) headed in the direction of the movement of traffic on the side of the thoroughfare in which the stall is situated.

(2) Subject to subclause (3) where a parking stall in a thoroughfare is set out otherwise than parallel to the kerb, then a person must park a vehicle in that stall wholly within it.

(3) If a vehicle is too long or too wide to fit completely within a single parking stall then the person parking the vehicle shall do so within the minimum number of parking stalls needed to park that vehicle, but shall not park outside an area marked with stalls.

(4) A person shall not park a vehicle partly within and partly outside a parking area.

3.3 Parking prohibitions and restrictions

(1) A person shall not –

(a) stop or park a vehicle in a parking station so as to obstruct any entrance, exit, carriageway, passage or thoroughfare of the parking station;

(b) except with the permission of the local government or an authorised person park a vehicle on any part of a parking station contrary to a sign referable to that part;

(c) permit a vehicle to park on any part of a parking station, if an authorised person directs the driver of such vehicle to move the vehicle from such part or from the parking station; or

(d) park or attempt to park a vehicle in a parking stall in which another vehicle is parked but this paragraph does not prevent the parking of a motorcycle and a

bicycle together in a stall marked “M/C'”, if the bicycle is parked in accordance with subclause (2).

(2) No person shall park any bicycle –

(a) in a parking stall other than in a stall marked “M/C”; and

(b) in such stall other than against the kerb,

unless it is parked at a bicycle rail or in a bicycle rack.

(3) Notwithstanding the provisions of subclause (1)(b) a driver may park a vehicle in a parking stall or station (except in a parking area for people with disabilities) for twice the period of time permitted by the sign, provided that –

(a) the driver's vehicle displays a disability parking permit; and

(b) a person with disabilities to which that disability parking permit relates is either the driver of, or a passenger in the vehicle.

PART 4 — PARKING GENERALLY

4.1 Restrictions on parking in particular areas

(1) Subject to subclause (2), a person shall not park a vehicle in a thoroughfare or part of a thoroughfare, or part of a parking station –

(a) if by a sign it is set apart for the parking of vehicles of a different class;

(b) if by a sign it is set apart for the parking of vehicles by persons of a different class;

(c) during any period when the parking of vehicles is prohibited by a sign; or

(d) by exceeding the length of time specified by a sign.

(2) (a) In subclause(2)(b) **driver** means a driver where –

(i) the driver's vehicle displays a disability parking permit; and
(ii) a disabled person to which the disability parking permit sticker relates is either the driver of the vehicle or a passenger in the vehicle.

(b) A driver may park a vehicle in a thoroughfare or a part of a thoroughfare or part of a parking station, except in a thoroughfare or a part of a thoroughfare or part of a parking station to which a disabled parking sign relates, for twice the period of time permitted by a sign referable to the thoroughfare or the part of the thoroughfare or the part of the parking station.

(3) A person shall not park a vehicle –

(a) in a no parking area;

(b) in a parking area, except in accordance with both the signs associated with the parking area and with this local law;

(c) in a stall marked “M/C” unless it is a motorcycle without a sidecar or a trailer, or it is a bicycle.

(4) A person shall not, without the prior permission of the local government, or an authorised person, park a vehicle in an area designated by a sign stating “Authorised Vehicles Only”.

4.1A Stopping in a parking area for people with disabilities

(1) In this clause, unless the contrary intention appears –

authorised vehicle means a vehicle —

(a) used by the holder of a disability parking permit; and

(b) identified in accordance with regulation 6 of the *Local Government (Parking for People with Disabilities) Regulations 2014*;

disability parking permit means a current document issued by the National Disability Service (ACN 008 445 485), consisting of —

(a) an Australian Disability Parking Permit; and

(b) an ACROD Parking Program Card;

(2) A vehicle shall not stop in a parking area for people with disabilities unless –

(a) the vehicle displays an ACROD Program Card; and

(b) either the driver or a passenger of that vehicle possess a current Australian Disability Parking Permit.

(3) In this clause, a parking area for people with disabilities is a parking stall –

(a) to which a parking control sign of the kind referred to in regulation 3 paragraphs (i) and (k) of the definition of that term in the *Road Traffic Code 2000* applies; and

(b) a people with disabilities symbol (as depicted in the *Road Traffic Code 2000* regulation 171(2)), clearly marked on the ground within the limits of the permit parking.

4.2 Parking vehicle on a carriageway

(1) A person parking a vehicle on a carriageway other than in a parking stall shall park it so that it complies with the requirements of clause 4.8 and –

(a) in the case of a two-way carriageway, so that it is as near as practicable to and parallel with, the left boundary of the carriageway and headed in the direction of the movement of traffic on the side of the thoroughfare on which the vehicle is parked;

(b) in the case of a one-way carriageway, so that it is as near as practicable to and parallel with either boundary of the carriageway and headed in the direction of the movement of traffic on the side of the thoroughfare on which the vehicle is parked;

(c) so that at least 3 metres of the width of the carriageway lies between the vehicle and the farther boundary of the carriageway, or any continuous line or median strip, or between the vehicle and a vehicle parked on the farther side of the carriageway;

(d) so that the front and the rear of the vehicle respectively is not less than 1 metre from any other vehicle, except a motorcycle without a trailer, or a bicycle parked in accordance with this local law;

(e) in a cul-de-sac so as to not obstruct the turning of vehicles within the cul-de-sac;

(f) in a laneway so as to not obstruct any vehicle on the carriageway, and

(g) so that it does not obstruct any vehicle on a carriageway;

unless otherwise indicated by a sign.

(2) In this clause, **continuous dividing line** means –

(a) a single continuous dividing line only;

(b) a single continuous dividing line to the left or right of a broken dividing line; or

(c) 2 parallel continuous dividing lines.

(3) (a) The driver of any vehicle standing on any carriageway in any park or reserve shall place and keep the vehicle close to and parallel with the road edge, kerb or footpath on the left of the vehicle, except where channels or other obstructions prevent this from being done;

(b) Subclause (3)(a) shall not apply to a vehicle parked in an area where the parking bays have been marked other than parallel to the road edge.

4.3 When parallel and right-angled parking apply

Where a sign associated with a parking area is not inscribed with the words *"angle parking"* (or with an equivalent symbol depicting this purpose), then unless a sign associated with the parking area indicates, or marks on the carriageway indicate, that vehicles have to park in a different position, where the parking area is –

(a) adjacent to the boundary of a carriageway, a person parking a vehicle in the parking area shall park it as near as practicable to and parallel with that boundary; and

(b) at or near the centre of the carriageway, a person parking a vehicle in that parking area shall park it at approximately right angles to the centre of the carriageway.

4.4 When angle parking applies

(1) Where a sign associated with a parking area is inscribed with the words *"angle parking"* (or with an equivalent symbol depicting this purpose), a person parking a vehicle in the area shall park the vehicle at an angle of approximately 45 degrees to the centre of the carriageway unless otherwise indicated by the inscription on the parking sign or by marks on the carriageway.

(2) This clause does not apply to –

(a) a commercial vehicle; or

(b) any vehicle when it is being loaded or unloaded immediately with passengers, goods, merchandise or materials collected from or delivered to the premises.

4.5 General prohibitions on parking

(1) (a) This clause does not apply to a vehicle parked in a parking stall.

(b) Subclauses (2)(c), (e) and (g) do not apply to a vehicle which parks in a bus embayment.

(2) Subject to any law relating to intersections with traffic control signals a person shall not park a vehicle on a thoroughfare so that any portion of the vehicle is –

(a) between any other stationary vehicle or vehicles and the centre of the carriageway (double parking);

(b) on or adjacent to a median strip;

(c) obstructing a right of way, private driveway or carriageway or so close as to deny a vehicle reasonable access to or egress from the right of way, private driveway or carriageway;

(d) alongside or opposite any excavation, works, hoarding, scaffolding or obstruction on the carriageway, if the vehicle would obstruct traffic;

(e) on or within 10 metres of any portion of a carriageway bounded by a traffic island;

(f) either wholly or partially on or overhanging any footpath or pedestrian crossing;

(g) between the boundaries of a carriageway and any double longitudinal line consisting of two continuous lines or between a double longitudinal line consisting of a continuous line and a broken or dotted line and the boundary of a carriageway nearer to the continuous line, unless there is a distance of at least 3 metres clear between the vehicle and the double longitudinal line;

(h) on an intersection, except adjacent to a carriageway boundary that is not broken by an intersecting carriageway;

(i) within 1 metre of a fire hydrant or fire plug, or of any sign or mark indicating the existence of a fire hydrant or fire plug;

(j) within 3 metres of a public letter pillar box, unless the vehicle is being used for the purposes of collecting postal articles from the pillar box; or

(k) within 10 metres of the commencement of the change of direction of the kerb of a road at an intersecting carriageway on either the approach or departure side;

unless a sign indicates otherwise.

(3) A person shall not park a vehicle so that any portion of the vehicle is within 10 metres of the departure side of –

(a) a sign inscribed with the words “Bus Stop” or “Hail Bus Here” (or with equivalent symbols depicting these purposes) unless the vehicle is a bus stopped to take up or set down passengers; or

(b) a children’s crossing or pedestrian crossing.

(4) A person shall not park a vehicle so that any portion of the vehicle is within 20 metres of the approach side of –

(a) a sign inscribed with the words “Bus Stop” or “Hail Bus Here” (or with equivalent symbols depicting these purposes) unless the vehicle is a bus stopped to take up or set down passengers;

(b) a children’s crossing or pedestrian crossing.

(5) A person shall not park a vehicle so that any portion of the vehicle is within 20 metres of either the approach side or the departure side of the nearest rail of a railway level crossing.

4.6 Authorised person may order vehicle on thoroughfare to be moved

The driver of a vehicle shall not park a vehicle on any part of a thoroughfare in contravention of this local law after an authorised person has directed the driver to move it.

4.7 No movement of vehicles to avoid time limitation

(1) Where the parking of vehicles in a parking facility is permitted for a limited time, a person shall not move a vehicle within the parking facility so that the total time of parking exceeds the maximum time allowed for parking in the parking facility.

(2) Where the parking of vehicles in a thoroughfare is permitted for a limited time, a person shall not move a vehicle along that thoroughfare so that the total time of parking exceeds the maximum time permitted, unless the vehicle has first been removed from the thoroughfare for at least two hours.

(3) Where parking in a thoroughfare is restricted as to time and a vehicle has been parked in that thoroughfare a person shall not park that vehicle again in that thoroughfare unless there is between the place where the vehicle had been parked and the place where the vehicle is subsequently parked another thoroughfare that meets or intersects that thoroughfare.

4.8 No parking of vehicles exposed for sale and in other circumstances

A person shall not park a vehicle on any part of a thoroughfare –

(a) for the purpose of exposing it for sale;

(b) if that vehicle is not licensed under the *Road Traffic Act 1974*;

(c) if that vehicle is a trailer or a caravan unattached to a motor vehicle; or

(d) for the purpose of effecting repairs to it, nor dismantle or construct it, other than to effect the minimum repairs necessary to enable the vehicle to be moved to a place other than a thoroughfare.

4.9 Parking on private land

(1) In this clause a reference to **"private land"** does not include land –

(a) which belongs to the local government;

(b) of which the local government is the management body under the *Land Administration Act 1997*;

(c) which is an 'otherwise unvested facility' within section 3.53 of the *Act*;

(d) which is the subject of an agreement referred to in clause 1.5(2); or

(e) which is identified in a register of parking stations maintained by the local government in accordance with clause 1.5.

(2) Parking on private land other than land identified in sub-clause (1) is dealt with in the town planning schemes.

(3) Unless otherwise permitted by law, a person shall not park a vehicle on land identified in sub-clause (1) without the consent of the local government.

4.10 Parking on reserves

No person other than an employee or approved contractor of the local government in the course of his or her duties or a person authorised by the local government shall drive or park a vehicle upon or over any portion of a reserve other than upon an area specifically set aside for that purpose.

4.11 Parking on verges

(1) Unless otherwise permitted by clause 7.3, a person shall not –

(a) park any vehicle (commercial or otherwise); or

(b) park a trailer or caravan unattached to a motor vehicle; or

(c) park a vehicle during any period when parking of vehicles on that verge is prohibited by a sign adjacent and referable to that verge,

so that any portion of it is on a verge.

(2) Subclause (1)(a) does not apply to;

(a) the person if he or she is the owner or occupier of the premises adjacent to that verge, or is a person authorised by the occupier of those premises to park the vehicle so that any portion of it is on the verge; or

(b) a vehicle when it is being loaded or unloaded immediately with goods, merchandise or materials collected from or delivered to the premises adjacent to the portion of the verge on which the vehicle is parked. Provided that the person is authorised by the occupier of those premises and no obstruction is caused to the passage of any vehicle or person using a carriageway or a footpath; or

(c) a commercial vehicle associated with building works being carried out on the premises at that time and place.

(3) Subclause 2(a) does not allow for or include the parking of commercial vehicles.

4.12 Suspension of parking limitations for urgent, essential or official duties

(1) Where by a sign the parking of vehicles is permitted for a limited time on a portion of a thoroughfare or parking facility, the local government or an authorised person may, subject to the *Code*, permit a person to park a vehicle in that portion of the thoroughfare or parking facility for longer than the permitted time in order that the person may carry out urgent, essential or official duties.

(2) Where permission is granted under subclause (1), the local government or an authorised person may prohibit the use by any other vehicle of that portion of the thoroughfare or parking facility to which the permission relates, for the duration of that permission.

4.13 Parking in a parking station

(1) Display of Tickets—

(a) Subject to subclause (2) a person shall not stop or park a vehicle in any part of a parking station equipped with a ticket issuing machine or a parking facility during any permitted period unless:

(i) an unexpired parking ticket or unexpired parking tickets applicable to that part of the parking station and issued on that day; and

(ii) the date and time of issue or expiry of the ticket, as the case may be, and the number of the ticket, if any, printed thereon, are displayed inside the vehicle and clearly visible to and able to be read by an authorised person from outside the vehicle at all times while the vehicle remains stopped or parked in that part of the parking station.

(b) For the purposes of subclause (1), a parking ticket issued in respect of any parking station or any part of a parking station which has been set aside under this local law shall be applicable only to that parking station or that part of that parking station, as the case may be.

(c) A reference in this clause to:

(i) **permitted period** means the period stated on the ticket issuing machines in the parking station during which the parking of vehicle is permitted upon the purchase of a parking ticket;

(ii) **unexpired parking ticket** means a parking ticket on which:

(a) a date and expiry time is printed and that time has not expired; or

(b) a date and time of issue is printed and the period for which that ticket remains valid as stated on the ticket issuing machine from which the ticket was purchased has not expired.

(2) Use of Parking Tickets—

A person shall not—

(a) deface, alter, add to, erase, obliterate or otherwise interfere with a parking ticket or any information, printing or imprint thereon;

(b) park a vehicle in a parking station or parking facility if there is displayed in that vehicle so as to be visible from outside the vehicle a parking ticket which has been defaced, altered, added to, erased, obliterated or otherwise interfered with; or

(c) produce to an authorised person or the local government to accept payment of parking fees, a parking ticket which is, or any information, printing or imprint on which is defaced, altered, added to, erased, obliterated or otherwise interfered with.

(3) Fees for Motorcycles in Parking Stations—

(a) A fee payable for the parking of a motorcycle and the period of application of the fee in a parking station may be determined and imposed by the local government.

(b) The local government shall not be obliged to accept payment of any fee referred to in this clause.

(4) Parking Position for Motorcycles—

A person shall not stop or park a motorcycle in a parking station equipped with a ticket issuing machine unless—

(a) wholly within a parking stall marked with the symbol *"M/C"* or otherwise designated as being set aside for the parking of motorcycles;

(b) that person has paid to the local government the fee; and

(c) during the period for which the fee is applicable.

(5) Set aside Parking Stations for Multiple Occupants—

The local government in respect of any period or time may by the use of signs set aside any parking station or any part of a parking station and prohibit entry thereto by vehicles other than vehicles carrying in addition to the driver at least one other person.

(6) Parking Restrictions for Vehicles with Multiple Occupants—

(a) The local government may determine and impose a fee payable for the parking of a vehicle in any parking station or part of a parking station at any time or for specified times.

(b) A person shall not stop or park a vehicle in any parking station or part of a parking station which has been set aside under this local law at the times or within such period specified pursuant to this local law unless the vehicle is carrying at least one other person.

(c) A person shall not enter any parking station or part of a parking station which has been set aside under this local law at the times or within such period specified pursuant to this local law unless that person is the driver of or passenger in a vehicle carrying at least one other person.

PART 5 — PARKING AND STOPPING

Division 1 — Parking and stopping generally

5.1 No stopping and no parking signs, and yellow edge lines

(1) No stopping—

A driver shall not stop on a part of a carriageway, or in an area, to which a no stopping sign applies.

(2) No parking—

A driver shall not stop on a part of a carriageway or in an area to which a no parking sign applies, unless the driver is –

(a) dropping off, or picking up, passengers or goods;

(b) does not leave the vehicle unattended; and

(c) completes the dropping off, or picking up, of the passengers or goods within 2 minutes of stopping and drives on.

(3) No stopping on a carriageway with yellow edge lines—

A driver shall not stop at the side of a carriageway marked with a continuous yellow edge line.

Division 2 — Stopping in zones for particular vehicles

5.2 Stopping in a loading zone

A person shall not stop a vehicle in a loading zone unless it is –

(a) a motor vehicle used for commercial or trade purposes engaged in the picking up or setting down of goods; or

(b) a motor vehicle taking up or setting down passengers,

but, in any event, shall not remain in that loading zone:

(c) for longer than a time indicated on the "*loading zone*" sign; or

(d) longer than 30 minutes (if no time is indicated on the sign).

5.3 Stopping in a taxi zone or a bus zone

(1) A driver shall not stop in a taxi zone, unless the driver is driving a taxi.

(2) A driver shall not stop in a bus zone unless the driver is driving a public bus, or a bus of a type that is permitted to stop at the bus zone by information on or with the "*bus zone*" sign applying to the bus zone.

5.4 Stopping in a mail zone

A person shall not stop a vehicle in a mail zone.

5.5 Other limitations in zones

A person shall not stop a vehicle in a zone to which a sign applies if stopping the vehicle would be contrary to any limitation in respect to classes of persons or vehicles, or specific activities allowed, as indicated by additional words on a sign that applies to the zone.

Division 3 — Other places where stopping is restricted

5.6 Stopping in a shared zone

A driver shall not stop in a shared zone unless –

(a) the driver stops at a place on a part of a carriageway, or in an area, to which a sign applies and the driver is permitted to stop at that place by the sign;

(b) the driver stops in a parking bay and the driver is permitted to stop in the parking bay under this local law;

(c) the driver is dropping off, or picking up, passengers or goods; or

(d) the driver is engaged in door-to-door delivery or collection of goods, or in the collection of waste or garbage.

5.7 Double parking

(1) A driver shall not stop a vehicle so that any portion of the vehicle is between any other stopped vehicle and the centre of the carriageway.

(2) This clause does not apply to –

(a) a driver stopped in traffic; or

(b) a driver angle parking on the side of the carriageway or in a median strip parking area, in accordance with this local law.

5.8 Stopping near an obstruction

A driver shall not stop on a carriageway near an obstruction on the carriageway in a position that further obstructs traffic on the carriageway.

5.9 Stopping on a bridge or in a tunnel, etc

(1) A driver shall not stop a vehicle on a bridge, causeway, ramp or similar structure unless –

(a) the carriageway is at least as wide on the structure as it is on each of the approaches and a sign does not prohibit stopping or parking; or

(b) the driver stops at a place on a part of a carriageway, or in an area, to which a sign applies and the driver is permitted to stop at that place by the sign.

(2) A driver shall not stop a vehicle in a tunnel or underpass unless –

(a) the carriageway is at least as wide in the tunnel or underpass as it is on each of the approaches and a traffic sign does not prohibit stopping or parking; or

(b) the driver of a motor vehicle stops at a bus stop, or in a bus zone or parking area marked on the carriageway, for the purpose of setting down or taking up passengers.

5.10 Stopping on crests, curves, etc

(1) Subject to subclause (2), a driver shall not stop a vehicle on, or partly on, a carriageway, in any position where it is not visible to the driver of an overtaking vehicle, from a distance of 50 metres within a built-up area, and from a distance of 150 metres outside a built-up area.

(2) A driver may stop on a crest or curve on a carriageway that is not in a built-up area if the driver stops at a place on the carriageway, or in an area, to which a sign applies and the driver is permitted to stop at that place by the sign.

5.11 Stopping near a fire hydrant etc

A driver shall not stop a vehicle so that any portion of the vehicle is within one metre of a fire hydrant or fire plug, or of any sign or mark indicating the existence of a fire hydrant or fire plug, unless –

(a) the driver is driving a public bus, and the driver stops in a bus zone or at a bus stop and does not leave the bus unattended; or

(b) the driver is driving a taxi, and the driver stops in a taxi zone and does not leave the taxi unattended.

5.12 Stopping at or near a bus stop

(1) A driver shall not stop a vehicle so that any portion of the vehicle is within 20 metres of the approach side of a bus stop, or within 10 metres of the departure side of a bus stop, unless –

(a) the vehicle is a public bus stopped to take up or set down passengers; or

(b) the driver stops at a place on a part of a carriageway, or in an area, to which a sign applies and the driver is permitted to stop at that place by the sign.

(2) In this clause –

(a) distances are measured in the direction in which the driver is driving; and

(b) a trailer attached to a public bus is deemed to be a part of the public bus.

5.13 Stopping on a path, median strip, or traffic island

The driver of a vehicle (other than a bicycle or an animal) shall not stop so that any portion of the vehicle is on a traffic island or median strip, unless the driver stops in an area, to which a sign applies and the driver is permitted to stop at that place by the sign.

5.14 Stopping on verges

(1) Unless otherwise permitted by clause 7.3, a person shall not –

(a) stop any vehicle (commercial or otherwise) ; or

(b) stop a trailer or caravan unattached to a motor vehicle; or

(c) stop a vehicle during any period when stopping of vehicles on that verge is prohibited by a sign adjacent and referable to that verge,

so that any portion of it is on a verge.

(2) Subclause (1)(a) does not apply to;

(a) the person if he or she is the owner or occupier of the premises adjacent to that verge, or is a person authorised by the occupier of those premises to stop the vehicle so that any portion of it is on the verge; or

(b) a vehicle when it is being loaded or unloaded immediately with goods, merchandise or materials collected from or delivered to the premises adjacent to the portion of the verge on which the vehicle is stopped provided that the person is authorised by the occupier of those premises and no obstruction is caused to the passage of any vehicle or person using a carriageway or a footpath; or

(c) a commercial vehicle associated with building works being carried out on the premises at that place.

(3) Subclause 2(a) does not allow for or include the stopping of commercial vehicles for a period of longer than 4 hours.

5.15 Obstructing access to and from a path, driveway, etc

(1) A driver shall not stop a vehicle so that any portion of the vehicle is in front of a path, in a position that obstructs access by vehicles or pedestrians to or from that path, unless –

(a) the driver is dropping off, or picking up, passengers; or

(b) the driver stops in a parking stall and the driver is permitted to stop in the parking stall under this local law.

(2) A driver shall not stop a vehicle on or across a driveway or other way of access for vehicles travelling to or from adjacent land, unless –

(a) the driver is dropping off, or picking up, passengers; or

(b) the driver stops in a parking stall and the driver is permitted to stop in the parking stall under this local law.

5.16 Stopping near a public letter box

A driver shall not stop a vehicle so that any portion of the vehicle is within 3 metres of a public letter box, unless the driver –

(a) is dropping off, or picking up, passengers or mail; or

(b) stops at a place on a part of a carriageway, or in an area, to which a sign applies and the driver is permitted to stop at that place by the sign.

5.17 Stopping on a thoroughfare – commercial vehicles

Subject to any clause to the contrary or sign referable to the thoroughfare, a person shall not stop a commercial vehicle;

(a) on a thoroughfare in a built-up area, for any period exceeding 4hours, unless actively engaged in the picking up or setting down of goods; or

(b) on a thoroughfare outside a built-up area, except on the shoulder of the carriageway, or in a truck bay or other area set aside for the parking of such vehicles; or

c) on a thoroughfare in a residential or special residential zoned area between the hours of 6.00pm one day and 6.00am the following day; unless

a permit has been issued in accordance with clause 5.21 of this local law.

5.18 Stopping on a carriageway with a bicycle parking sign

The driver of a vehicle (other than a bicycle) shall not stop on a part of a carriageway to which a “bicycle parking” sign applies, unless the driver is dropping off, or picking up, passengers.

5.19 Stopping on a carriageway with motorcycle parking sign

The driver of a motorvehicle shall not stop on a part of a carriageway, or in an area, to which a **“motorcycle parking”** sign applies, or an area marked **“M/C”** unless –

(a) the vehicle is a motorcycle; or

(b) the driver is dropping off, or picking up, passengers.

5.20 Eating areas in parking stalls

A person shall not stop or park a vehicle in a parking stall which has been authorised in writing by the local government, to be set up or conducted as an eating area and which is designated by signs as such at that time.

5.21 Permits in parking facilities

(1) The local government or authorised person may, whether upon payment of a fee or not, issue a Parking Facilities Permit which allows a specific vehicle or class of vehicle to stop or park –

(a) in a specified kerbside area;

(b) in a car park which is controlled by a sign, in contravention of the restriction specified on that sign; or

(c) in any other place under the control of the local government.

(2) A permit issued under subclause (1) may –

(a) authorise the stopping or parking of the vehicle continuously for a specified period or periods between specified times or from time to time during a specified period; and

(b) be revoked or suspended at any time by the local government or an authorised person before the expiration of any time or period specified in the permit.

(3) A person shall not stop or park a vehicle in respect of which a permit has been issued pursuant to subclause (2) –

(a) except at the times or during the period specified in the permit;

(b) for any purpose other than the purpose for which the permit was issued; or

(c) at any time after the cancellation, withdrawal or suspension of the permit.

(4) Further conditions may be imposed in accordance with subclause (1) by the local government in relation to the issuing of such a permit.

5.22 Motorcycle stalls

(1) A person shall not stop or park a vehicle other than a bicycle or a motorcycle to which no side car or side-box is attached in a parking stall –

(a) marked with the symbol “M/C”; or

(b) in which the parking of bicycles or motorcycles is permitted by a sign referable to that parking stall.

(2) A person shall not stop or park a bicycle or motorcycle in a parking stall marked with the symbol “M/C” –

(a) for longer than the maximum period permitted for parking in that parking stall by a sign referable to that parking stall or metered space;

(b) if there is no sign referable to that parking stall than for longer than the maximum period during which a vehicle may stop or be parked as specified on any sign referable to any parking stall adjacent thereto; or

(c) otherwise than wholly within the stall.

PART 6 — TICKET ISSUING MACHINES AND ZONES

6.1 Ticket issuing machines

(1) Damage to Ticket Issuing Machines

A person shall not or attempt to remove, damage, deface, misuse or interfere with any ticket issuing machine.

(2) Signs on Ticket Issuing Machines

A person shall not, without the permission of the local government, affix any board, sign, placard, notice, cover or other thing to or paint, mark or write upon any ticket issuing machine.

(3) Use of Coins in Ticket Issuing Machines

A person shall not insert or cause to be inserted or attempt to insert into a coin slot of a ticket issuing machine any thing other than a coin appropriate to that slot.

(4) Operating Ticket Issuing Machines

A person shall not operate or attempt to operate a ticket issuing machine except in accordance with the operating instructions appearing on the ticket issuing machine.

6.2 Fees in ticket machine zones

(1) Fees for stopping and parking of vehicles in a ticket machine zone may be determined and imposed by the local government.

(2) A person must not stop or park a vehicle in a ticket machine zone unless the appropriate fee as indicated by a sign on the ticket issuing machine referable to the zone is inserted into the ticket issuing machine.

(3) The payment of the fee referred to in subclause (1) in accordance with subclause (2) entitles a person to stop or park a vehicle in a ticket machine zone for the period shown on the parking ticket, but does not authorise the stopping or parking of the vehicle in a parking space, or part of the zone during any time when stopping or parking in that zone is prohibited –

(a) under this local law;

(b) by the sign on the ticket issuing machine referable to the zone; or

(c) by a sign referable to that space.

6.3 Display of tickets

(1) A person shall not stop or park a vehicle in a ticket machine zone during any permitted period unless –

(a) an unexpired ticket issued by a ticket issuing machine in that ticket machine zone; and

(b) the date and time of issue or expiry, as the case may be, and the number, if any, of the ticket printed on the ticket,

are displayed inside the vehicle and are clearly visible to and able to be read by an authorised person from outside the vehicle at all times while the vehicle remains stopped or parked in the zone.

(2) A reference in this clause to:

(a) **"permitted period"** means the period stated on the ticket issuing machines in the ticket machine zone during which the parking of vehicle is permitted upon the purchase of a parking ticket;

(b) **"unexpired parking ticket"** means a parking ticket on which –

(i) a date and expiry time is printed and that time has not expired;
(ii) a date and time of issue is printed and the period for which that ticket remains valid as stated on the ticket issuing machine from which the ticket was purchased has not expired.

(3) For the purpose of this clause, where more than one parking ticket is displayed bearing the same date and time of issue, the period for each ticket referred to in subclause (2)(b) shall be aggregated and the tickets shall be deemed not to have expired until the expiry of the aggregate of those periods.

6.4 Parking limits

(1) A person shall not stop or park a vehicle in a ticket machine zone during any permitted period for longer than the maximum period.

(2) A reference in this clause to –

(a) **"maximum period"** means the maximum period stated on the ticket issuing machines in the zone during which the continuous parking of a vehicle in the zone is permitted;

(b) **"permitted period"** has the meaning given to it in clause 6.3(2)(a).

6.5 Parking position in ticket machine zones

A person shall not stop or park a vehicle in a ticket machine zone:

(1) on any part of which there are parking stalls set out parallel to a kerb otherwise than –

(a) parallel to that kerb;

(b) as close to the kerb as practicable;

(c) wholly within a parking stall;

(d) headed in the direction of the movement of traffic on the part of the carriageway on which the parking stall is situated;

(2) on any part of which there are parking stalls not set out parallel to a kerb otherwise than wholly within a parking stall.

PART 7 — RESIDENTIAL PARKING PERMITS

7.1 Definitions

In this Part, unless the context otherwise requires –

dwelling unit means premises lawfully used for self contained living quarters;

eligible person where used in relation to an application for a–

(a) residential parking permit means a single house occupier, a unit occupier or a unit owner;

(b) visitor's parking permit means –

(i) a single house occupier;
(ii) a strata company;
(iii) a unit owner of a residential unit which is not a strata lot;

parking facilities parking permit means a permit issued to a person by the local government pursuant to clause 7.3(3);

residential parking permit means a permit issued to a resident by the local government pursuant to clause 7.3(1);

residential unit means a dwelling unit which is part of a building adjacent to a part of a thoroughfare on which thoroughfare the stopping or parking of vehicles is prohibited for more than a specified period and which building contains –

(a) two or more dwelling units with or without any non residential units;

(b) one dwelling unit with one or more non residential units;

single house means a dwelling unit constructed on its own lot and used for self contained living quarters and which is adjacent to a part of a road on which the stopping or parking of vehicles is prohibited for more than a specified period;

single house occupier means an occupier of a single house;

strata company has the meaning given to it in the *Strata Titles Act 1985;*

unit occupier means a person who is an occupier of a residential unit but does not include a unit owner.

unit owner means a person who is an owner of a residential unit.

visitor's parking permit means a permit issued by the local government pursuant to clause 7.3(2).

7.2 Exemption for permit holders

(1) (a) Where on any part of a thoroughfare the stopping or parking of vehicles is prohibited by a sign for more than a specified period or where any part of a

thoroughfare is a metered space, the holder of a valid permit is exempted from such prohibition.

(b) The local government may also issue a permit which exempts the holder from compliance with the requirements of clauses 7(2)(a) and 7(2)(b).

(2) The exemption conferred by subclause (1) shall apply only –

(a) to the part of a thoroughfare specified in the permit;

(b) where the time restriction applicable to that part of the thoroughfare is for a period exceeding 30 minutes;

(c) where the permit displayed is a residential parking permit to the vehicle specified in the residential parking permit;

(d) if the permit is displayed in the vehicle or affixed to the windscreen of the vehicle so as to be clearly visible and able to be read by an authorised person from outside the vehicle;

(e) if the permit is valid.

(3) The exemption conferred by subclause (1) shall not, unless specifically noted on the permit, apply during any period in which the stopping or parking of vehicles is prohibited in the thoroughfare or the part of the thoroughfare specified in the permit.

7.3 Issue of permits

(1) The local government may upon a written application of an eligible person, issue a residential parking permit in the form determined by the local government.

(2) The local government may upon a written application of an eligible person issue, for the occasional use of visitors, a visitor's parking permit in the form determined by the local government;

(3) The local government's power to issue, replace and revoke permits under this Part may be exercised by an authorised officer.

(4) Notwithstanding any other provisions in this local law, the local government may approve the issue of a number of parking facility, residential or visitor's parking permits to any owner or occupier on such terms and conditions as the local government sees fit.

7.4 Discretionary authority

Notwithstanding any other provisions in this local law which restrict the number of residential or visitors' parking permits that may be issued, the local government may approve the issue of one additional residential parking permit or one additional visitor's parking permits to any occupier on such terms and conditions as the local government sees fit.

7.5 Validity of permit

Every residential parking permit or visitor's parking permit as the case may be shall cease to be valid upon –

(a) the expiry of a period of twelve months or lesser term as determined by the local government from and including the date on which it is issued;

(b) the holder of the permit ceasing to be an eligible person;

(c) the revocation of the permit by the local government pursuant to clause 7.6;

(d) the replacement of any permit by a new permit issued by the local government pursuant to clause 7.3.

7.6 Revocation of a permit

(1) The local government may at any time give an eligible person to whom a permit was issued pursuant to the provisions of this local law notice requiring that person to notify the local government of any reason why that permit should not be revoked.

(2) The local government shall give notice referred to subclause (1) in the form determined by the local government by serving the notice on the eligible person to whom the permit was issued.

(3) If within seven (7) days after the date of receipt of the notice referred to in subclause (2) the eligible person to whom the permit was issued –

(a) fails to give the local government notice in writing of any reason why the permit should not be revoked; or

(b) gives the local government notice in writing of any reasons why the permit should not be revoked;

then the local government may in its absolute discretion revoke that permit.

(4) For the purpose of subclause (3) the date of receipt of the notice shall be the date the notice was served.

(5) The local government shall give notice of the revocation in the form determined by the local government by serving the notice on the eligible person to whom the permit was issued.

7.7 Removal of permit from vehicle

The holder of a residential parking permit shall forthwith upon that permit being revoked or ceasing to be valid remove the permit from the vehicle in which it is displayed or to which it is affixed.

7.8 Replacement of permit

(1) The local government may upon a written application of an eligible person and upon payment of the fee referred to in subclause (2), if any, issue a permit to replace a residential parking permit or visitor's parking permit which is lost, destroyed or stolen.

(2) The local government may determine and impose a fee for the issue of a replacement permit pursuant to this clause.

(3) Notwithstanding subclause (2), no fee shall be payable for the issue of a replacement permit if evidence is produced in writing to the satisfaction of the local government –

(a) that the vehicle in which the permit is displayed has been disposed of;

(b) that the vehicle's windscreen in which the permit is displayed has been replaced; or

(c) which the local government considers warrants the waiving of the fee.

7.9 Display of residential or visitor's parking permits

A person shall not stop or park a vehicle in an area set aside for persons or vehicles of a particular class during any permitted period unless a valid permit is displayed inside the vehicle and is clearly visible to and able to be read by an authorised person from outside the vehicle at all times while the vehicle remains stopped or parked in the zone.

PART 8 — MISCELLANEOUS

8.1 Authorised persons

No offence under this local law is committed by an authorised person while carrying out his or her duties as an authorised person.

8.2 Necessary power

An authorised person has all necessary powers for the purpose of performing or observing all of the functions conferred on him or her under the Act and this local law.

8.3 Authorised person to be obeyed

A person who is given a direction by an authorised person or a member of the WA Police Force under this local law, or in relation to a contravention of this local law, shall comply with that direction.

8.4 Persons may be directed to leave local government property

An authorised person may direct a person to leave local government property or a local government building where the authorised person reasonably suspects that the person has contravened a provision of this local law.

8.5 Marking of tyres

(1) For the purposes of ascertaining whether or not a parked vehicle has been or may be parked in contravention of any provision of this local law an authorised person may mark the tyres of a vehicle parked in a parking facility with chalk or any other non-indelible substance.

(2) A person shall not remove or interfere with any such mark referred to in subclause (1) so that the purpose of affixing that mark is or may be defeated.

8.6 Removal of notices on vehicle

A person, other than the driver of the vehicle or a person acting under the direction of the driver of the vehicle or an authorised person, shall not remove from the vehicle any notice put on the vehicle by an authorised person.

8.7 Special purpose and emergency vehicles

Notwithstanding anything to the contrary in this local law, the driver of –

(a) a special purpose vehicle may, only in the course of his or her duties and when it is expedient and safe to do so, stop, or park the vehicle in any place, at any time; and

(b) an emergency vehicle may, in the course of his or her duties and when it is expedient and safe to do so or where he or she honestly and reasonably believes that it is expedient and safe to do so, stop, or park the vehicle at any place, at any time.

8.8 Vehicles not to obstruct a reserve, verge or thoroughfare

(1) A person shall not leave a vehicle, or any part of a vehicle, in a reserve, verge or thoroughfare so that it obstructs the use of any part of that reserve, verge or thoroughfare without the permission of the local government or unless authorised under any written law.

(2) A person will not contravene subclause (1) where the vehicle is left for a period not exceeding 24 hours or is permitted to do so by the local government, unless the vehicle is causing an obstruction or may cause a danger to the public or is jeopardising or may jeopardise the safety of a person.

(3) A vehicle found to be in contravention of sub-clause (2) may be impounded by an authorised officer.

(4) The impounding of vehicles and other goods under sub-clause (3) shall be carried out in accordance with sections 3.37 and 3.48 of the Act and Regulation 29 of the *Local Government (Functions and General) Regulations 1996*.

8.9 Damage to parking stations and facilities

A person shall not, and shall not attempt to, remove, damage, deface, misuse or interfere with any part of a parking station or parking facility.

8.10 Local government may lock parking stations

At the expiration of the hours of operation of a parking station, the local government, whether or not any vehicle remains parked in a parking station, may lock the parking station or otherwise prevent the movement of any vehicle within or to or from the parking station.

PART 9 — PENALTIES

9.1 Offences and penalties

(1) Any person who fails to do anything required or directed to be done under this local law, or who does anything which under this local law that person is prohibited from doing, commits an offence.

(2) A person who commits an offence under this local law is liable on conviction to a penalty not less than $250 and not exceeding $5,000, and if the offence is of a continuing nature, to a further penalty not exceeding a fine of $500 in respect of each day or part of a day during which the offence has continued.

(3) An offence against any provision of this local law is a prescribed offence for the purposes of section 9.16(1) of the Act.

(4) The amount appearing in the final column of Schedule 2 directly opposite a clause specified in that Schedule is the modified penalty for an offence against that clause.

9.2 Forms of notices:

For the purposes of this local law –

(a) where a vehicle is involved in the commission of an offence, the form of the notice referred to in section 9.13 of the Act is that of Form 1 in Schedule 1 of the *Local Government (Functions and General) Regulations 1996*;

(b) the form of the infringement notice given under section 9.16 of the Act is that of Form 2 in Schedule 1 of the *Local Government (Functions and General) Regulations 1996*; and

(c) the form of the notice referred to in section 9.20 of the Act is that of Form 3 in Schedule 1 of the *Local Government (Functions and General) Regulations 1996*.

Schedule 1 – Parking region

[cl. 1.5(1)]

Local Government Act 1995
City of Kwinana Parking and Parking Facilities Local Law 2018

PARKING REGION

The parking region is the whole of the district, but excludes the following portions of the district:

(1) the approach and departure prohibition areas of all existing and future traffic control signal installations as determined by the Commissioner of Main Roads;

(2) prohibition areas applicable to all existing and future bridges and subways as determined by the Commissioner of Main Roads;

(3) any road which comes under the control of the Commissioner of Main Roads unless the control of parking and parking facilities on that road is carried out subject to the control and direction of the Commissioner of Main Roads or has been delegated by the Commissioner to the local government.

Schedule 2 – Prescribed offences

[cl.9.1(4)]

Local Government Act 1995

City of Kwinana Parking and Parking Facilities Local Law 2018

Offences and Modified Penalties

ITEM NO.	CLAUSE NO.	NATURE OF OFFENCE	MODIFIED PENALTY $
1.	2.2(1)	Failure to comply with signs	**50**
2.	2.3(a)	Unauthorised display, marking, setting up, exhibiting of a sign	**125**
3.	2.3(b)	Unauthorised removal, defacing or misuse of a sign	**70**
4.	2.3(c)	Unauthorised affixing anything to a sign	**60**
5.	3.2(1)(a)	Failure to park parallel to and as close to the kerb as practicable in a parking stall	**60**
6.	3.2(1)(b)	Failure to park wholly within parking stall	**60**
7.	3.2(1)(c)	Failure to park in the direction of the movement of traffic in a parking stall	**60**
8.	3.2(4)	Failure to park wholly within parking area	**50**
9.	3.3(1)(a)	Causing obstruction in parking station	**125**
10.	3.3(1)(b)	Parking contrary to sign in parking station	**50**
11.	3.3(1)(c)	Parking contrary to directions of authorised person	**150**
12.	3.3(1)(d)	Parking or attempting to park a vehicle in a parking stall occupied by another vehicle	**50**
13.	3.3(2)(a)	Park in a stall other than in a stall marked M/C	**85**
14.	4.1(1)(a)	Parking by vehicles of a different class	**85**
15.	4.1(1)(b)	Parking by persons of a different class	**85**
16.	4.1(1)(c)	Parking during prohibited period	**85**
17	4.1(1)(d)	Exceeding the length of time specified by a sign	**85**
18.	4.1(3)(a)	Parking in no parking area	**85**
19.	4.1(3)(b)	Parking contrary to signs or limitations	**50**
20.	4.1(3)(c)	Parking vehicle in motorcycle only area	**50**
21.	4.1(4)	Parking without permission in an area designated for ‘Authorised Vehicles Only’	**85**
22	4.1A(2)(a)	Stopping a vehicle in a parking area for people with disabilities without the vehicle displaying a disability parking permit.	**300**
23	4.1A(2)(b)	Stopping a vehicle in a parking area for people with disabilities when neither the driver nor a passenger of that vehicle is a person with a current Australian Disability Parking Permit	**300**
24.	4.2(1)(a)	Failure to park on the left of two-way carriageway	**60**

ITEM NO.	CLAUSE NO.	NATURE OF OFFENCE	MODIFIED PENALTY $
25.	4.2(1)(b)	Failure to park on boundary of one-way carriageway	**60**
26.	4.2(1)(a) or 4.2(1)(b)	Parking against the flow of traffic	**60**
27.	4.2(1)(c)	Parking when distance from farther boundary less than 3 metres	**100**
28.	4.2(1)(d)	Parking closer than 1 metre from another vehicle	**50**
29.	4.2(1)(e)	Parking in a cul-de-sac so as to obstruct the turning of a vehicle within the cul-de-sac	**100**
30.	4.2(1)(f)	Parking in a laneway	**100**
31.	4.2(1)(g)	Causing obstruction to a vehicle on the carriageway	**125**
32.	4.3(a)	Failure to park parallel	**50**
33.	4.3(b)	Failure to park at approximate right angle	**50**
34.	4.4(1)	Failure to park at an appropriate angle	**50**
35.	4.5(2)(a)	Parking between any other stationary vehicle or vehicles and the centre of the carriageway (Double parking)	**125**
36.	4.5(2)(b)	Parking on or adjacent to a median strip	**60**
37.	4.5(2)(c)	Denying access to private drive or right of way	**125**
38.	4.5(2)(d)	Parking beside excavation or obstruction so as to obstruct traffic	**125**
39.	4.5(2)(e)	Parking within 10 metres of traffic island	**60**
40.	4.5(2)(f)	Parking on or overhanging footpath/pedestrian crossing	**150**
41.	4.5(2)(g)	Parking closer than 3 metres to double longitudinal lines	**125**
42.	4.5(2)(h)	Parking on intersection	**150**
43.	4.5(2)(i)	Parking within 1 metre of fire hydrant or fire plug	**50**
44.	4.5(2)(j)	Parking within 3 metres of public letter box	**50**
45.	4.5(2)(k)	Parking within 10 metres of intersection	**60**
46.	4.5(3)(a) or (b)	Parking vehicle within 10 metres of departure side of bus stop, children's crossing or pedestrian crossing	**50**
47.	4.5(4)(a) or (b)	Parking vehicle within 20 metres of approach side of bus stop, children's crossing or pedestrian crossing	**50**
48.	4.5(5)	Parking vehicle within 20 metres of approach side or departure side of railway level crossing	**50**
49.	4.6	Parking contrary to direction of authorised person	**150**
50.	4.7(1), (2) or (3)	Moving vehicle to avoid time limitation	**85**
51.	4.8(a)	Parking in thoroughfare for purpose of sale	**125**
52.	4.8(b)	Parking unlicensed vehicle in thoroughfare	**100**
53.	4.8(c)	Parking an unattached trailer/caravan on a thoroughfare	**100**

ITEM NO.	CLAUSE NO.	NATURE OF OFFENCE	MODIFIED PENALTY $
54.	4.8(d)	Parking in thoroughfare for purpose of repairs	**125**
55.	4.9(3)	Parking on land not in accordance with consent	**125**
56.	4.10	Driving or parking on a reserve	**125**
57.	4.11(1)	Parking on a verge	**60**
58.	4.13(1)(a)	Failure to display an unexpired parking ticket	**60**
59.	4.13(2)(a)	Deface, alter, add to, erase, obliterate or otherwise interfere with a parking ticket	**150**
60.	4.13(2)(b)	Display a defaced, altered obliterated or otherwise interfered with parking ticket	**150**
61.	4.13(2)(c)	Produce a defaced, altered obliterated or otherwise interfered with parking ticket	**150**
62.	4.13(4)	Motorcycle not parking wholly within a marked parking stall	**100**
63.	4.13(6)(b)	Stopping or parking a vehicle in any parking station or part of a parking station which has been set aside under this local law at the times or within such period specified pursuant to this local law unless the vehicle is carrying at least one other person	**100**
64.	4.13(6)(c)	Entering any parking station or part of a parking station which has been set aside under this local law at the times or within such period specified pursuant to this local law unless that person is the driver of or passenger in a vehicle carrying at least one other person.	**100**
65.	5.1(1)	Stopping contrary to a no stopping sign	**125**
66.	5.1(2)	Parking contrary to a no parking sign	**125**
67.	5.1(3)	Stopping within continuous yellow lines	**125**
68.	5.2	Stopping unlawfully in a loading zone	**85**
69.	5.3	Stopping unlawfully in a taxi zone or bus zone	**100**
70.	5.4	Stopping unlawfully in a mail zone	**70**
71.	5.5	Stopping in a zone contrary to a sign	**50**
72.	5.6	Stopping in a shared zone	**50**
73.	5.7(1)	Double parking	**125**
74.	5.8	Stopping near an obstruction	**125**
75.	5.9	Stopping on a bridge or tunnel	**100**
76	5.10	Stopping on crests/curves etc	**100**
77.	5.11	Stopping near fire hydrant	**70**
78.	5.12(1)	Stopping near bus stop	**85**
79.	5.13	Stopping on path, median strip or traffic island	**125**
80.	5.14(1)	Stopping on a verge	**60**
81.	5.15	Obstructing path, a driveway etc	**125**

ITEM NO.	CLAUSE NO.	NATURE OF OFFENCE	MODIFIED PENALTY $
82.	5.16	Stopping near letter box	**50**
83.	5.17	Stopping a commercial vehicle on a thoroughfare without or in contravention of a permit	**85**
84.	5.18	Stopping in bicycle parking area	**60**
85.	5.19	Stopping in motorcycle parking area	**60**
86.	5.20	Stopping or parking in a stall set up as an eating area	**85**
87.	5.21	Stopping or parking contrary to requirements of a permit	**60**
88.	5.22	Stopping or parking a vehicle (other than a bicycle or motorcycle) in a parking stall approved for motorcycles	**60**
89.	6.1(1)	Damaging or interfering with ticket issuing machine	**150**
90.	6.1(2)	Affixing a board, sign, placard or notice or marking any ticket issuing machine	**60**
91.	6.1(3)	Inserting other than a coin in a ticket issuing machine	**50**
92.	6.1(4)	Operating a ticket issuing machine contrary to instructions	**50**
93.	6.2(2)	Failure to pay appropriate fee	**60**
94.	6.3(1)(a)	Failure to display an unexpired parking ticket	**60**
95.	6.3(1)(b)	Failure to display a valid parking ticket	**60**
96.	6.4(1)	Stopping or parking for longer than the maximum period	**60**
97.	6.5(1)(a)	Failure to stop or park parallel to the kerb in a ticket machine zone	**60**
98.	6.5(1)(b)	Failure to stop or park as close to the kerb as practicable in a ticket machine zone	**60**
99.	6.5(1)(c)	Failure to stop or park wholly within a parking stall in a ticket machine zone	**60**
100.	6.5(1)(d)	Failure to stop or park in direction of movement of traffic in a ticket machine zone	**50**
101.	7.9	Failure to display a valid permit	**85**
102.	8.3	Failure to comply with a lawful direction of an authorised person	**150**
103.	8.4	Failure to leave local government property when lawfully directed to do so by an authorised person	**150**
104.	8.5(2)	Removing or interfering with a lawful mark on a tyre	**125**
105.	8.6	Removing a notice on a vehicle	**125**
106.	8.8(1)	Leaving a vehicle in a public place or thoroughfare so as to cause an obstruction	**125**
107.	8.9	Attempting to or removing, damaging, defacing, misusing or interfering with any part of a parking station or parking facility	**150**
108.		All other offences not specified	**85**

Dated this day of 20

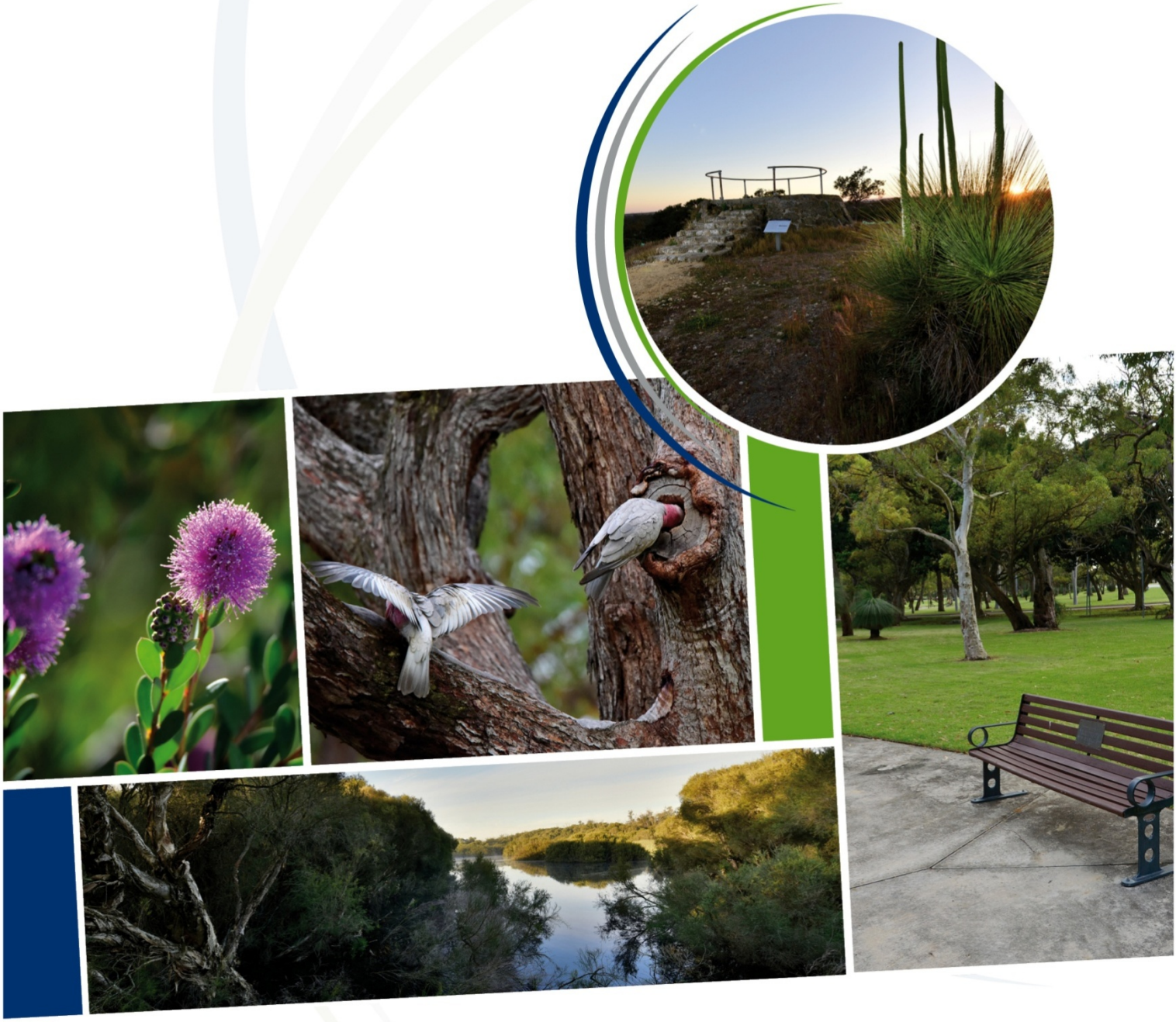
The Common Seal of the)
City of Kwinana was hereunto)
affixed in the presence of :)

Carol Adams	Joanne Abbiss
Mayor	Chief Executive Officer

ATTACHMENT B

City of Kwinana

City of Kwinana
Parking and Parking Facilities Local Law 2018



Local Government Act 1995

City of Kwinana

PARKING AND PARKING FACILITIES LOCAL LAW 2018~~0~~

Contents

To be included – does not form part of local law.

ATTACHMENT B

Local Government Act 1995

City of Kwinana

PARKING AND PARKING FACILITIES LOCAL LAW 20180

Under the powers conferred by the *Local Government Act 1995* and under all other powers enabling it, the City ~~*Town*~~ of Kwinana resolved on [insert date] ~~15 December 2010~~ to adopt the following local law.

PART 1 — PRELIMINARY

1.1 Citation

This local law may be cited as the City ~~*Town*~~ *of Kwinana Parking and Parking Facilities Local Law 2018~~0~~.*

1.2 Commencement

This local law comes into operation 14 days after the date of its publication in the *Government Gazette.*

1.3 Purpose and effect

(1) The purpose of this local law is to regulate the parking or standing of vehicles in all or specified thoroughfares and reserves under the care, control and management of the local government and to provide for the management and operation of parking facilities.

(2) The effect of this local law is that a person parking a vehicle within the parking region is to comply with the provisions of this local law.

1.4 Repeal

The *Town of Kwinana Parking Local Law 2000* published in the *Government Gazette* on 11 January 2011 ~~29 November 2000~~ is repealed.

1.5 Application

(1) Subject to subclause (2), this local law applies to the par~~*1.8*~~king region as described in Schedule 1.

(2) (a) The local government may enter into an agreement in writing with the owner or occupier of a parking facility or a parking station that is not owned or occupied by the local government for the application of this local law to the facility or station.

(b) The agreement referred to in subclause (2)(a) may be made on such terms and conditions as the parties may agree.

(3) This local law does not apply to a parking facility or a parking station that is not occupied by the local government, unless the local government and the owner or occupier of that facility or station have agreed in writing that this local law will apply to that facility or station.

(4) Where a parking facility or a parking station is identified in a register maintained by the local government ~~Schedule 6~~, the facility or station shall be deemed to be a facility or station to which this local law applies.

(5) The provisions of Parts 3, 4 and 5 do not apply to a bicycle parked at a bicycle rail or bicycle rack.

1.6 Interpretation

(1) In **this** local law unless the context requires otherwise –

~~***ACROD sticker*** has the meaning given to it by the ~~*Local Government (Parking for Disabled Persons) Regulations 1998;*~~~~

Act means the *Local Government Act 1995*;

Australian Standard means an Australian Standard published by Standards Australia and as amended from time to time;

Proposed amendment by DLGSC

attended parking station means a parking station attended by an officer of the local government and in respect of which fees for the parking of a vehicle are payable immediately prior to the removal of the vehicle from the station;

authorised person means a person appointed by the local government under section 9.10 of the Act, to perform any of the functions of an authorised person under this local law;

authorised vehicle means a vehicle authorised by the local government, the Chief Executive Officer or an authorised person or by any written law to park on a thoroughfare or parking facility;

bicycle has the meaning given to it by the *Code*;

bicycle path has the meaning given to it by the *Code*;

bus has the meaning given to it by the *Code*;

bus embayment has the meaning given to it by the *Code*;

bus stop has the meaning given to it by the *Code*;

bus zone has the meaning given to it by the *Code*;

caravan means a vehicle that is fitted or designed to allow human habitation and which is drawn by another vehicle, or which is capable of self-propulsion;

carriageway means a portion of thoroughfare that is improved, designed or ordinarily used for vehicular traffic and includes the shoulders, and areas, including embayments, at the side or centre of the carriageway, used for the stopping or parking of vehicles; and where a thoroughfare has two or more of those portions divided by a median strip, the expression means each of those portions, separately;

centre in relation to a carriageway, means a line or a series of lines, marks or other indications –

(a) for a two-way carriageway – placed so as to delineate vehicular traffic travelling in different directions; or

(b) in the absence of any such lines, marks or other indications – the middle of the main, travelled portion of the carriageway;

Chief Executive Officer means the Chief Executive Officer of the local government;

children's crossing has the meaning given to it by the *Code*;

Code means the *Road Traffic Code 2000*;

coin means any coin which is legal tender pursuant to the *Currency Act 1965* (Commonwealth);

~~***commercial vehicle*** means a motor vehicle constructed for the conveyance of goods or merchandise, or for the conveyance of materials used in any trade, business, industry or work whatsoever, other than a motor vehicle for the conveyance of passengers, and includes any motor vehicle that is designed primarily for the carriage of persons, but which has been fitted or adapted for the conveyance of the goods, merchandise or materials referred to, and is in fact used for that purpose;~~

commercial vehicle means a vehicle whether licenced or not, that has a gross vehicle mass of greater than 4.5 tonnes and/or which is greater than 7 metres in length and 2.4 metres in height, including –

(a) a utility, van, truck, tractor, bus or earthmoving equipment; and

(b) a vehicle that is, or is designed to be an attachment to a vehicle referred to in paragraph (a);

costs of the local government include its administrative costs;

cul-de-sac means a carriageway closed at one end that has the same entry and exit point;

disability parking permit has the meaning given to it by the *Local Government (Parking for People with Disabilities) Regulations 2014;*

This term replaces the obsolete term "ACROD sticker"

display means to place in a prominent place inside the vehicle on the front passenger's side, preferably on the dashboard, in order that the text may readily be seen and read from outside of the vehicle;

Clarification of how to display a ticket so that it can be read from outside the vehicle.

district means the district of the local government;

driver means any person driving or having ~~in~~ control of a vehicle;

eating area means an area in which tables, chairs and other structures are provided for purpose of the supply of food and beverages to a member of the public or the consumption of food and beverages by a member of the public;

edge line for a carriageway, means a line marked along the carriageway at or near the far left or the far right of the carriageway;

emergency vehicle has the meaning given to it by the *Code*;

fire hydrant means an upright pipe with a spout, nozzle or other outlet for drawing water from a main or service pipe in case of fire or other emergency;

footpath has the meaning given to it by the *Code*;

GTM means 'gross trailer mass' as given to it by the *Code*;

GVM means 'gross vehicle mass' as given to it by the *Code*;

kerb means any structure, mark, marking or device to delineate or indicate the edge of a carriageway;

laneway means a narrow carriageway generally situated at the rear of a lot, the purpose of which is to service the lots adjacent to it and not as a general thoroughfare for through traffic;

loading zone means a parking stall which is set aside for use by commercial vehicles if there is a sign referable to that stall marked 'Loading Zone';

local government means the ~~Town~~ City of Kwinana;

mail zone has the meaning given to it by the *Code*;

median strip has the meaning given to it by the *Code*;

metered space means a section or part of a metered zone that is controlled by a parking meter and that is marked or defined in any way to indicate where a vehicle may be parked on payment of a fee or charge;

metered zone means any road or reserve, or part of any road or reserve, in which parking meters regulate the stopping or parking of vehicles;

motorcycle has the meaning given to it by the *Code*;

motor vehicle means a self-propelled vehicle that is not operated on rails, and includes a trailer, semi-trailer or caravan while attached to the vehicle, but does not include a power assisted pedal cycle;

no parking area means a portion of a carriageway to which a no parking sign applies or an area to which a no parking sign applies;

no parking sign means a sign with the words 'no parking' in red letters on a white background, or the letter 'P' within a red annulus and a red diagonal line across it on a white background;

no stopping area means a portion of a carriageway to which a no stopping sign applies or an area to which a no stopping sign applies;

no stopping sign means a sign with the words 'no stopping' or 'no standing' in red letters on a white background or the letter 'S' within a red annulus and a red diagonal line across it on a white background;

obstruct means to prevent or impede or to make difficult the normal passage of any vehicle, wheelchair, perambulator or pedestrian and obstruction shall have a corresponding meaning;

occupier has the meaning given to it by the *Act*;

~~***omnibus*** has the same meaning given to it in the *Road Traffic Act*;~~

Obsolete term, not used in the local law.

owner -

(a) where used in relation to a vehicle licensed under the *Road Traffic Act 1974* means the person in whose name the vehicle has been registered under the *Road Traffic Act 1974*;

(b) where used in relation to any other vehicle, means the person who owns, or is entitled to possession of that vehicle; and

(c) where used in relation to land, has the meaning given to it by the *Act*;

park in relation to a vehicle, means to permit a vehicle, whether attended or not by any person, to remain stationary except for the purpose of –

(a) avoiding conflict with other traffic; or

(b) complying with the provisions of any law; or

(c) taking up or setting down persons or goods (maximum of 2 minutes);

parking area means a portion of a carriageway to which a permissive parking sign applies or ~~an area~~ a parking facility managed by the local government to which a permissive parking sign applies;

Definition clarified to exclude parking areas that are not local government property and which the local government does not have any jurisdiction, eg shopping centres unless a management agreement has been formalised with the owner of such a site.

parking facilities includes land, buildings, shelters, road reserve, parking area, metered zone, ticket machine zone, parking bay, parking station, attended parking station, parking stalls and other facilities open to the public generally for the parking of vehicles whether or not a fee is charged, and includes any signs, notices and facilities used in connection with the parking of vehicles;

parking region means the whole of the district except for those areas, roads, bridges and subways under the control and direction of the Commissioner of Main Roads;

parking stall means a section or part of a thoroughfare or of a parking station which is marked or defined by painted lines, metallic studs, coloured bricks or pavers or similar devices for the purpose of indicating where a vehicle may be parked, but does not include a metered space;

parking station means any land, or structure provided for the purpose of accommodating vehicles;

parking ticket means a ticket which is issued from a ticket issuing machine and which authorises the parking of a vehicle in a parking stall or a parking station or part of a parking station;

pedestrian crossing has the meaning given to it by the *Code*;

permit means a permit issued under this local law;

~~***public place*** means any place to which the public has access whether or not that place is on private property;~~

Obsolete term, removed from this local law

reserve means any land –

(a) which belongs to the local government;

(b) of which the local government is the management body under the *Land Administration Act 1997*; or

(c) which is an 'otherwise unvested facility' within section 3.53 of the *Act*;

residential street means a thoroughfare where the majority of properties abutting the thoroughfare are used for residential purposes;

residential zone means land within the residential zone specified within the City ~~Town~~ of Kwinana's ~~local~~ town planning scheme dealing with zoning;

right of way means a portion of land that is –

(a) shown and marked "Right of Way" or "ROW", or coloured or marked in any other way to signify that the portion of land is a right of way, on any plan or diagram deposited with the Registrar of Titles that is subject to the provisions of section 167A of the *Transfer of Land Act 1893*;

(b) shown on a diagram or plan of survey relating to a subdivision that is created as a right of way and vested in the Crown under section 152 of the *Planning and Development Act 2005*; and

(c) shown and marked as a right of way on a map or plan deposited with the Registrar of Titles and transferred to the Crown under the *Transfer of Land Act 1893*,

but does not include:

(a) private driveways; and

(b) a right of way created by a deed of easement between two or more parties;

Road Traffic Act means the *Road Traffic Act 1974*;

Schedule means a Schedule to this local law;

shared zone has the meaning given to it by the *Code*;

sign includes a traffic sign, inscription, road marking, mark, structure or device on which may be shown words, numbers, expressions or symbols, and which is placed on or near a thoroughfare or within a parking station or reserve for the purpose of prohibiting, regulating, guiding, directing or restricting the parking or stopping of vehicles;

special purpose vehicle has the meaning given to it by the *Code*;

special residential zone means land within the special residential zone specified within the City ~~Town~~ of Kwinana's ~~local~~ town planning scheme dealing with zoning;

Standards Australia means Standards Australia Limited ACN 087 326 690;

stop in relation to a vehicle means to stop a vehicle and permit it to remain stationary, except for the purposes of avoiding conflict with other traffic or of complying with the provisions of any law;

symbol includes, but is not limited to, any symbol specified by the current Australian Standard 1742.11~~-1999~~ and any symbol specified from time to time by Standards Australia for use in the regulation of parking;

tare weight in relation to a vehicle, means the weight of the vehicle without any passengers or load;

taxi means a taxi within the meaning of ~~the *Taxi Act 1994* or a taxi car in~~ section 47Z of the *Transport Co-ordination Act 1966*;

Revised legislation change.

taxi zone has the meaning given to it by the *Code*;

ticket issuing machine means a machine or device which is installed in a parking facility and which upon the insertion of coins or a token, pass, card, key or device issues a parking ticket;

ticket machine zone means a parking facility in which ticket issuing machines are installed but does not include a parking station;

thoroughfare has the meaning given to it by the *Act*;

town planning schemes are local planning schemes as defined in the *Planning and Development Act 2005* and mean~~s~~ the Town of Kwinana Town Planning Schemes No 2 and No 3 or any subsequently adopted local planning scheme of the City of Kwinana;

The City's Town Planning Schemes remain consistent with section 68 of the Planning and Development Act 2005, in regard to the naming of local planning schemes, where it states –

68. Town planning schemes under repealed Act, effect of
(1) Any town planning scheme in force under the Town Planning and Development Act 1928 on the day on which this section comes into operation —
(a) continues in force as a local planning scheme under this Act; and
(b) has effect as if it were enacted by this Act.

traffic island has the meaning given to it by the *Code*;

trailer means any vehicle without motive power of its own, designed for attachment to a motor vehicle for the purpose of being towed including a trailerable vessel, but does not include the rear portion of an articulated vehicle, or a side car;

trailerable vessel means a monohull or multi-hull boat which can be transported on the road on the same trailer used to launch and retrieve it;

Included definition to explain text in the local law.

~~**tourist bus** means any omnibus which is used, hired or chartered for any purpose and includes a charter bus but does not include a public bus;~~

~~**truck** means a vehicle which as a load capacity exceeding 1000 kilograms;~~

unattended in relation to a vehicle, means that the driver has left the vehicle so that the driver is more than 3 metres from the closest point of the vehicle;

vehicle has the meaning of every conveyance, whether licensed or not, a vessel or aircraft, and every object capable of being propelled or drawn including trailers and caravans, on wheels or tracks, or by any means;

~~given to it by the *Road Traffic Act*.~~

Revised definition.

verge means the portion of a thoroughfare which lies between the boundary of a carriageway and the adjacent property line but does not include a footpath.

(2~~1~~) For the purposes of the application of the definitions “no parking area” and “parking area” an arrow inscribed on a sign erected at an angle to the boundary of the carriageway is deemed to be pointing in the direction in which it would point, if the signs were turned at an angle of less than 90 degrees until parallel with the boundary.

(3~~2~~) A reference to a word or expression inscribed on a sign includes a reference to a symbol depicting the word or expression.

(4~~3~~) A reference to a parking station, ticket machine zone or metered zone includes a reference to part of the parking station, ticket machine zone or metered zone.

(5~~4~~) Unless the context otherwise requires, where a term is used, but not defined in this local law and –

(a) it is defined in the *Act*, it shall have the meaning given to it in the *Act*; and

(b) it is defined in the *Road Traffic Act* or in the *Code*, it shall have the meaning given to it in the *Road Traffic Act* or the *Code*.

1.7 Classes of vehicles

For the purpose of this local law, vehicles are divided into the following classes –

(a) buses;

(b) commercial ~~motor~~ vehicles;

(c) motorcycles and bicycles;

(d) taxis; ~~and~~

(e) trailers and caravans (a trailerable vessel is included in this class to the extent that it is located upon a trailer); and

(f ~~e~~) all other vehicles.

Revision of clause to include revised classes that are more in keeping with contemporary requirements

1.8 Powers of the local government

The local government may, by resolution, prohibit or regulate by signs or otherwise, the stopping or parking of any vehicle or any class of vehicles in any part of the parking region, but must do so consistently with the provisions of this local law.

The word 'resolution' reinstated as recommended by DLGSC.

1.9 Determination of fees, charges and costs

All fees, charges and costs referred to in this local law shall be determined and imposed by the local government from time to time in accordance with sections 6.16 to 6.20 of the *Act*.

1.10 Relationship with other laws

In the event of any inconsistency with any Act, Regulation or local planning scheme, the provisions of those Acts, Regulations or local planning schemes are to prevail.

New standard clause added to validate relationship of this local law with other legislation.

PART 2 — SIGNS

2.1 Erection of signs

The local government may erect a sign for the purposes of this local law on any land, building or other structure within the parking region.

2.2 Compliance with signs

(1) A person shall comply with the direction on every sign displayed, marked, placed, or erected pursuant to this local law.

(2) An inscription or symbol on a sign operates and has effect according to its meaning ~~tenor~~ and a person contravening the direction on a sign commits an offence under this local law.

2.3 Unauthorised signs and defacing of signs

A person shall not without the approval of the local government –

(a) display, mark, set up or exhibit a sign purporting to be or resembling a sign marked, set up or exhibited by the local government under this local law;

(b) remove, deface or misuse a sign or property, set up or exhibited by the local government under this local law or attempt to do any such act; or

(c) affix a board, sign, placard, notice or other thing to or paint or write upon any part of a sign set up or exhibited by the local government under this local law.

2.4 General provisions about signs

(1) A sign marked, erected, set up, established or displayed on or near a thoroughfare or in a parking station is, in the absence of evidence to the contrary to be deemed to be a sign marked, erected, set up, established or displayed under the authority of this local law.

(2) The first three letters of any day of the week when used on a sign indicate that day of the week.

(3) For the purpose of this local law, the local government may use Australian Standard AS 1742.11~~-1999~~, as a guide for the development or marking of signs, but is not bound to do so and, where it does use it as a guide may var y any of the provisions of Australian Standard AS 1742.11~~-1999~~ as it sees fit.

2.5 Application of this local law to pre-existing signs ~~and private properties~~

~~(1)~~ A sign that –

(a) was erected by the local government or the Commissioner of Main Roads prior to the coming into operation of this local law; and

(b) relates to the parking of vehicles within the parking region,

shall be deemed for the purposes of this local law to have been erected by the local government under the authority of this local law.

~~(2) A sign that was erected on a private property prior to the coming into operation of this local law, and that stated or stated to the effect that there was no unauthorised parking and that the local law repealed under clause 1.5.4 (the 'repealed local law') applied to the private property, shall be deemed for the purposes of this local law to have been erected under the authority of this local law and to refer to this local law instead of the repealed local law.~~

~~(3) An inscription or symbol on a sign referred to in subclause (1) or (2) operates and has effect according to its tenor.~~

~~(4) Where prior to the coming into operation of this local law, a private property was registered with the local government for the purpose of enforcing clause 67 of the repealed local law, that registration and any terms or conditions attaching to that registration shall continue to have effect for the purpose of enforcing clause 4.9(2) of this local law.~~

Subclauses (2), (3) and (4) are considered obsolete and no longer required.

2.6 Part of thoroughfare to which sign applies

Where under this local law the parking of vehicles in a thoroughfare is controlled by a sign, the sign shall be read as applying to that part of the thoroughfare which –

(a) lies beyond the sign;

(b) lies between the sign and the next sign beyond that sign; and

(c) is on that side of the thoroughfare nearest to the sign.

PART 3 — PARKING STALLS AND PARKING STATIONS

3.1 Determination of parking stalls and parking stations

(1) The local government may by resolution constitute, determine and vary and also indicate by signs –

(a) parking stalls;

(b) parking stations;

(c) permitted time and conditions of parking in parking stalls and parking stations which may vary with the locality;

(d) permitted classes of vehicles which may park in parking stalls and parking stations;

(e) permitted classes of persons who may park in specified parking stalls or parking stations; and

(f) the manner of parking in parking stalls and parking stations.

(2) Where the local government makes a determination under subclause (1) it shall erect signs to give effect to the determination.

3.2 Vehicles to be within parking stall on thoroughfare

(1) Subject to subclauses (2), (3) and (4), a person shall not park a vehicle in a parking stall in a thoroughfare otherwise than –

(a) parallel to and as close to the kerb as is practicable;

(b) wholly within the stall; and

(c) headed in the direction of the movement of traffic on the side of the thoroughfare in which the stall is situated.

(2) Subject to subclause (3) where a parking stall in a thoroughfare is set out otherwise than parallel to the kerb, then a person must park a vehicle in that stall wholly within it.

(3) If a vehicle is too long or too wide to fit completely within a single parking stall then the person parking the vehicle shall do so within the minimum number of parking stalls needed to park that vehicle, but shall not park outside an area marked with stalls.

(4) A person shall not park a vehicle partly within and partly outside a parking area.

3.3 Parking prohibitions and restrictions

(1) A person shall not –

(a) stop or park a vehicle in a parking station so as to obstruct any entrance, exit, carriageway, passage or thoroughfare of the parking station;

(b) except with the permission of the local government or an authorised person park a vehicle on any part of a parking station contrary to a sign referable to that part;

(c) permit a vehicle to park on any part of a parking station, if an authorised person directs the driver of such vehicle to move the vehicle from such part or from the parking station; or

(d) park or attempt to park a vehicle in a parking stall in which another vehicle is parked but this paragraph does not prevent the parking of a motorcycle and a bicycle together in a stall marked "M/C'", if the bicycle is parked in accordance with subclause (2).

(2) No person shall park any bicycle –

(a) in a parking stall other than in a stall marked "M/C"; and

(b) in such stall other than against the kerb,

unless it is parked at a bicycle rail or in a bicycle rack.

(3) Notwithstanding the provisions of subclause (1)(b) a driver may park a vehicle in a parking stall or station (except in a parking area for people with disabilities) for twice the period of time permitted by the sign, provided that –

(a) the driver's vehicle displays ~~an ACROD sticker~~ a disability parking permit; and

(b) a person with disabilities to which that ~~ACROD sticker~~ disability parking permit relates is either the driver of, or a passenger in the vehicle.

PART 4 — PARKING GENERALLY

4.1 Restrictions on parking in particular areas

(1) Subject to subclause (2), a person shall not park a vehicle in a thoroughfare or part of a thoroughfare, or part of a parking station –

(a) if by a sign it is set apart for the parking of vehicles of a different class;

(b) if by a sign it is set apart for the parking of vehicles by persons of a different class; ~~or~~

(c) during any period when the parking of vehicles is prohibited by a sign; or

(d) by exceeding the length of time specified by a sign.

Sub-clause included to control parking by length of time (timed parking).

(2) (a) In subclause(2)(b) **driver** means a driver where –

(i) the driver's vehicle displays ~~an ACROD sticker~~ a disability parking permit; and

(ii) a disabled person to which the ~~ACROD sticker~~ disability parking permit relates is either the driver of the vehicle or a passenger in the vehicle.

(b) A driver may park a vehicle in a thoroughfare or a part of a thoroughfare or part of a parking station, except in a thoroughfare or a part of a thoroughfare or part of a parking station to which a disabled parking sign relates, for twice the period of time permitted by a sign referable to the thoroughfare or the part of the thoroughfare or the part of the parking station.

(3) A person shall not park a vehicle –

(a) in a no parking area;

(b) in a parking area, except in accordance with both the signs associated with the parking area and with this local law;

(c) in a stall marked "M/C" unless it is a motorcycle without a sidecar or a trailer, or it is a bicycle.

(4) A person shall not, without the prior permission of the local government, or an authorised person, park a vehicle in an area designated by a sign stating "Authorised Vehicles Only".

4.1A Stopping in a parking area for people with disabilities

(1) In this clause, unless the contrary intention appears –

authorised vehicle means a vehicle —

(a) used by the holder of a disability parking permit; and

(b) identified in accordance with regulation 6 of the *Local Government (Parking for People with Disabilities) Regulations 2014*;

disability parking permit means a current document issued by the National Disability Service (ACN 008 445 485), consisting of —

(a) an Australian Disability Parking Permit; and

(b) an ACROD Parking Program Card;

(2) A vehicle shall not stop in a parking area for people with disabilities unless –

(a) the vehicle displays an ACROD Program Card; and

(b) either the driver or a passenger of that vehicle possess a current Australian Disability Parking Permit.

(3) In this clause, a parking area for people with disabilities is a parking stall –

(a) to which a parking control sign of the kind referred to in regulation 3 paragraphs (i) and (k) of the definition of that term in the *Road Traffic Code 2000* applies; and

(b) a people with disabilities symbol (as depicted in the *Road Traffic Code 2000* regulation 171(2)), clearly marked on the ground within the limits of the permit parking.

4.2 Parking vehicle on a carriageway

(1) A person parking a vehicle on a carriageway other than in a parking stall shall park it so that it complies with the requirements of clause 4.8 and –

Inclusion of wording to provide clarity to the intent of this clause.

(a) in the case of a two-way carriageway, so that it is as near as practicable to and parallel with, the left boundary of the carriageway and headed in the direction of the movement of traffic on the side of the thoroughfare on which the vehicle is parked;

(b) in the case of a one-way carriageway, so that it is as near as practicable to and parallel with either boundary of the carriageway and headed in the direction of the movement of traffic on the side of the thoroughfare on which the vehicle is parked;

(c) so that at least 3 metres of the width of the carriageway lies between the vehicle and the farther boundary of the carriageway, or any continuous line or median strip, or between the vehicle and a vehicle parked on the farther side of the carriageway;

(d) so that the front and the rear of the vehicle respectively is not less than 1 metre from any other vehicle, except a motorcycle without a trailer, or a bicycle parked in accordance with this local law; and

(e) in a cul-de-sac so as to not obstruct the turning of vehicles within the cul-de-sac;

(f) in a laneway so as to not obstruct any vehicle on the carriageway; and

Sub-clauses (e) and (f) included to address issues of vehicles parking in cul-de-sacs and in laneways and causing obstructions to service and emergency services vehicles.

(~~e~~ g) so that it does not obstruct any vehicle on the carriageway;

unless otherwise indicated by a sign.

(2) In this clause, **continuous dividing line** means –

(a) a single continuous dividing line only;

(b) a single continuous dividing line to the left or right of a broken dividing line; or

(c) 2 parallel continuous dividing lines.

(3) (a) The driver of any vehicle standing on any carriageway in any park or reserve shall place and keep the vehicle ~~same~~ close to and parallel with the road

edge, kerb or footpath on the left of the ~~such~~ vehicle, except where channels or other obstructions prevent this from being done;

Rewording to give proper indication of what 'same' is, ie, 'the 'vehicle'.

(b) Subclause (3)(a) shall not apply to a vehicle parked in an area where the parking bays have been marked other than parallel to the road edge.

4.3 When parallel and right-angled parking apply

Where a sign associated with a parking area is not inscribed with the words *"angle parking"* (or with an equivalent symbol depicting this purpose), then unless a sign associated with the parking area indicates, or marks on the carriageway indicate, that vehicles have to park in a different position, where the parking area is –

(a) adjacent to the boundary of a carriageway, a person parking a vehicle in the parking area shall park it as near as practicable to and parallel with that boundary; and

(b) at or near the centre of the carriageway, a person parking a vehicle in that parking area shall park it at approximately right angles to the centre of the carriageway.

4.4 When angle parking applies

(1) Where a sign associated with a parking area is inscribed with the words *"angle parking"* (or with an equivalent symbol depicting this purpose), a person parking a vehicle in the area shall park the vehicle at an angle of approximately 45 degrees to the centre of the carriageway unless otherwise indicated by the inscription on the parking sign or by marks on the carriageway.

(2) This clause does not apply to –

~~(a) a passenger vehicle or a commercial vehicle with a mass including any load, of over three tonnes; or~~

(a) a commercial vehicle; or

~~(b) a person parking either a motorcycle without a trailer or a bicycle; or~~

(b) any vehicle when it is being loaded or unloaded immediately with passengers, goods, merchandise or materials collected from or delivered to the premises.

Clause reworded consistent with new definitions and to allow some larger vehicles with the ability to use a space to unload if more convenient and not obstructing other vehicles.

4.5 General prohibitions on parking

(1) (a) This clause does not apply to a vehicle parked in a parking stall.

(b) Subclauses (2)(c), (e) and (g) do not apply to a vehicle which parks in a bus embayment.

(2) Subject to any law relating to intersections with traffic control signals a person shall not park a vehicle on a thoroughfare so that any portion of the vehicle is –

(a) between any other stationary vehicle or vehicles and the centre of the carriageway (double parking);

(b) on or adjacent to a median strip;

(c) obstructing a right of way, private driveway or carriageway or so close as to deny a vehicle reasonable access to or egress from the right of way, private driveway or carriageway;

(d) alongside or opposite any excavation, works, hoarding, scaffolding or obstruction on the carriageway, if the vehicle would obstruct traffic;

(e) on or within 10 metres of any portion of a carriageway bounded by a traffic island;

(f) either wholly or partially on or overhanging any footpath or pedestrian crossing;

(g) between the boundaries of a carriageway and any double longitudinal line consisting of two continuous lines or between a double longitudinal line consisting of a continuous line and a broken or dotted line and the boundary of a carriageway nearer to the continuous line, unless there is a distance of at least 3 metres clear between the vehicle and the double longitudinal line;

(h) on an intersection, except adjacent to a carriageway boundary that is not broken by an intersecting carriageway;

(i) within 1 metre of a fire hydrant or fire plug, or of any sign or mark indicating the existence of a fire hydrant or fire plug;

(j) within 3 metres of a public letter pillar box, unless the vehicle is being used for the purposes of collecting postal articles from the pillar box; or

(k) within 10 metres of the commencement of the change of direction of the curb of a road at an intersecting carriageway on either the approach or departure side; ~~nearer property line of any thoroughfare intersecting the thoroughfare on which the vehicle is parked;~~

unless a sign indicates otherwise.

General rewording of subclause to clarify text and also in (k) to better explain the meaning

(3) A person shall not park a vehicle so that any portion of the vehicle is within 10 metres of the departure side of –

(a) a sign inscribed with the words “Bus Stop” or “Hail Bus Here” (or with equivalent symbols depicting these purposes) unless the vehicle is a bus stopped to take up or set down passengers; or

(b) a children’s crossing or pedestrian crossing.

(4) A person shall not park a vehicle so that any portion of the vehicle is within 20 metres of the approach side of –

(a) a sign inscribed with the words “Bus Stop” or “Hail Bus Here” (or with equivalent symbols depicting these purposes) unless the vehicle is a bus stopped to take up or set down passengers;

(b) a children’s crossing or pedestrian crossing.

(5) A person shall not park a vehicle so that any portion of the vehicle is within 20 metres of either the approach side or the departure side of the nearest rail of a railway level crossing.

4.6 Authorised person may order vehicle on thoroughfare to be moved

The driver of a vehicle shall not park a vehicle on any part of a thoroughfare in contravention of this local law after an authorised person has directed the driver to move it.

4.7 No movement of vehicles to avoid time limitation

(1) Where the parking of vehicles in a parking facility is permitted for a limited time, a person shall not move a vehicle within the parking facility so that the total time of parking exceeds the maximum time allowed for parking in the parking facility.

(2) Where the parking of vehicles in a thoroughfare is permitted for a limited time, a person shall not move a vehicle along that thoroughfare so that the total time of parking exceeds the maximum time permitted, unless the vehicle has first been removed from the thoroughfare for at least two hours.

(3) Where parking in a thoroughfare is restricted as to time and a vehicle has been parked in that thoroughfare a person shall not park that vehicle again in that thoroughfare unless there is between the place where the vehicle had been parked and the place where the vehicle is subsequently parked another thoroughfare that meets or intersects that thoroughfare.

4.8 No parking of vehicles exposed for sale and in other circumstances

A person shall not park a vehicle on any part of a thoroughfare –

(a) for the purpose of exposing it for sale;

(b) if that vehicle is not licensed under the *Road Traffic Act 1974*;

(c) if that vehicle is a trailer or a caravan unattached to a motor vehicle; or

(d) for the purpose of effecting repairs to it, nor dismantle or construct it, other than to effect the minimum repairs necessary to enable the vehicle to be moved to a place other than a thoroughfare.

Inclusion of text to clarify what is not allowed.

4.9 Parking on private land

(1) In this clause a reference to **“private land”** does not include land –

(a) which belongs to the local government;

(b) of which the local government is the management body under the *Land Administration Act 1997*;

(c) which is an 'otherwise unvested facility' within section 3.53 of the *Act*;

(d) which is the subject of an agreement referred to in clause 1.5(2); or

(e) which is identified in ~~Schedule 6.~~ a register of parking stations maintained by the local government in accordance with clause 1.5.

(2) Parking on private land other than land identified in sub-clause (1) is dealt with in the town planning schemes.

(3) Unless otherwise permitted by law, a person shall not park a vehicle on land identified in sub-clause (1) without the consent of the local government.

~~(2) A person shall not park a vehicle on land without the consent of the owner or occupier of the land on which the vehicle is parked.~~

~~(3) Where the owner or occupier of the land, by a sign referable to that land or otherwise, consents to the parking of vehicles of a specified class or classes on the land for a limited period, a person shall not park a vehicle on the land otherwise than in accordance with the consent.~~

Clarification of what 'land' it is referring to and a change to subclause (1)(e) to reflect the removal of the Schedules from the local law. Removal of the sub-clauses to private land as unless as dealt with by the Planning Scheme, parking on private land is a civil issue.

4.10 Parking on reserves

No person other than an employee or approved contractor of the local government in the course of his or her duties or a person authorised by the local government shall drive or park a vehicle upon or over any portion of a reserve other than upon an area specifically set aside for that purpose.

4.11 Parking on verges

(1) Unless otherwise permitted by clause 7.3, a ~~A~~ person shall not –

(a) park any vehicle (commercial or otherwise); or

(b) park a ~~commercial vehicle or bus, or a~~ trailer or caravan unattached to a motor vehicle; or

(c) park a vehicle during any period when parking of vehicles on that verge is prohibited by a sign adjacent and referable to that verge,

so that any portion of it is on a verge.

(2) Subclause (1)(a) does not apply to;

(a) the person if he or she is the owner or occupier of the premises adjacent to that verge, or is a person authorised by the occupier of those premises to park the vehicle so that any portion of it is on the verge; or

(b)~~(3) Subclause (1)(b) does not apply to~~ a ~~commercial~~ vehicle when it is being loaded or unloaded immediately ~~reasonable expedition~~ with goods, merchandise or materials collected from or delivered to the premises adjacent to the portion of the verge on which the ~~commercial~~ vehicle is parked. Provided that the person is authorised by the occupier of those premises and no obstruction is caused to the passage of any vehicle or person using a carriageway or a footpath; or~~.~~

(c) a commercial vehicle associated with building works being carried out on the premises at that time and place.

(3) Subclause 2(a) does not allow for or include the parking of commercial vehicles.

Rewording of text to reflect revised definitions and expectations regarding commercial vehicles with changes to the Town Planning Scheme requirements for commercial vehicles.

4.12 Suspension of parking limitations for urgent, essential or official duties

(1) Where by a sign the parking of vehicles is permitted for a limited time on a portion of a thoroughfare or parking facility, the local government or an authorised person may, subject to the *Code*, permit a person to park a vehicle in that portion of the thoroughfare or parking facility for longer than the permitted time in order that the person may carry out urgent, essential or official duties.

(2) Where permission is granted under subclause (1), the local government or an authorised person may prohibit the use by any other vehicle of that portion of the thoroughfare or parking facility to which the permission relates, for the duration of that permission.

4.13 Parking in a parking station

(1) Display of Tickets—

(a) Subject to subclause (2) a person shall not stop or park a vehicle in any part of a parking station equipped with a ticket issuing machine or a parking facility during any permitted period unless:

(i) an unexpired parking ticket or unexpired parking tickets applicable to that part of the parking station and issued on that day; and

(ii) the date and time of issue or expiry of the ticket, as the case may be, and the number of the ticket, if any, printed thereon, are displayed inside the vehicle and clearly visible to and able to be read by an authorised person from outside the vehicle at all times while the vehicle remains stopped or parked in that part of the parking station.

(b) For the purposes of subclause (1), a parking ticket issued in respect of any parking station or any part of a parking station which has been set aside under this local law shall be applicable only to that parking station or that part of that parking station, as the case may be.

(c) A reference in this clause to:

(i) **permitted period** means the period stated on the ticket issuing machines in the parking station during which the parking of vehicle is permitted upon the purchase of a parking ticket;

(ii) **unexpired parking ticket** means a parking ticket on which:

(a) a date and expiry time is printed and that time has not expired; or

(b) a date and time of issue is printed and the period for which that ticket remains valid as stated on the ticket issuing machine from which the ticket was purchased has not expired.

(2) Use of Parking Tickets—

A person shall not—

(a) deface, alter, add to, erase, obliterate or otherwise interfere with a parking ticket or any information, printing or imprint thereon;

(b) park a vehicle in a parking station or parking facility if there is displayed in that vehicle so as to be visible from outside the vehicle a parking ticket which has been defaced, altered, added to, erased, obliterated or otherwise interfered with; or

(c) produce to an authorised person or the local government to accept payment of parking fees, a parking ticket which is, or any information, printing or imprint on which is defaced, altered, added to, erased, obliterated or otherwise interfered with.

(3) Fees for Motorcycles in Parking Stations—

(a) A fee payable for the parking of a motorcycle and the period of application of the fee in a parking station may be determined and imposed by the local government.

(b) The local government shall not be obliged to accept payment of any fee referred to in this clause.

(4) Parking Position for Motorcycles—

A person shall not stop or park a motorcycle in a parking station equipped with a ticket issuing machine unless—

(a) wholly within a parking stall marked with the symbol *"M/C"* or otherwise designated as being set aside for the parking of motorcycles;

(b) that person has paid to the local government the fee; and

(c) during the period for which the fee is applicable.

(5) Set aside Parking Stations for Multiple Occupants—

The local government in respect of any period or time may by the use of signs set aside any parking station or any part of a parking station and prohibit entry thereto by vehicles other than vehicles carrying in addition to the driver at least one other person.

(6) Parking Restrictions for Vehicles with Multiple Occupants—

(a) The local government may determine and impose a fee payable for the parking of a vehicle in any parking station or part of a parking station at any time or for specified times.

(b) A person shall not stop or park a vehicle in any parking station or part of a parking station which has been set aside under this local law at the times or within such period specified pursuant to this local law unless the vehicle is carrying at least one other person.

(c) A person shall not enter any parking station or part of a parking station which has been set aside under this local law at the times or within such period specified pursuant to this local law unless that person is the driver of or passenger in a vehicle carrying at least one other person.

~~**4.14 Vehicles prohibited in the residential and special residential zones**~~

~~(1) No person shall park for more than 4 hours consecutively within parking facilities in the residential and special residential zones -~~

~~(a) more than one commercial vehicle;~~

~~(b) any vehicle which, due to its size or load, is not capable of being completely housed within a garage or building approved by council; or~~

~~(c) a vehicle which, together with its load, exceeds 3 metres in height;~~

~~(2) No person shall, within the residential and special residential zones -~~

~~(a) repair, service or clean a commercial vehicle unless such work is carried out whilst the vehicle is completely housed within a garage or building approved by council; or~~

~~(b) park or allow to remain stationary a commercial vehicle of a load capacity exceeding 2 tonnesor aloow the vehicle to remain stationary.~~

~~(3) Sub-clauses (1) and (2) does not apply to —~~

~~(a) a commercial vehicle when it is being loaded or unloaded with reasonable expedition with goods, merchandise or materials collected from or delivered to the premises; or~~

~~(b) a commercial vehicle associated with building works being carried out on the premises.~~

This clause will be deleted as the intent is included within clauses 4.8, 4.11 and 5.17.

PART 5 — PARKING AND STOPPING

Division 1 — Parking and stopping generally

5.1 No stopping and no parking signs, and yellow edge lines

(1) No stopping—

A driver shall not stop on a part of a carriageway, or in an area, to which a no stopping sign applies.

(2) No parking—

A driver shall not stop on a part of a carriageway or in an area to which a no parking sign applies, unless the driver is –

(a) dropping off, or picking up, passengers or goods;

(b) does not leave the vehicle unattended; and

(c) completes the dropping off, or picking up, of the passengers or goods within 2 minutes of stopping and drives on.

(3) No stopping on a carriageway with yellow edge lines—

A driver shall not stop at the side of a carriageway marked with a continuous yellow edge line.

Division 2 — Stopping in zones for particular vehicles

5.2 Stopping in a loading zone

A person shall not stop a vehicle in a loading zone unless it is –

(a) a motor vehicle used for commercial or trade purposes engaged in the picking up or setting down of goods; or

(b) a motor vehicle taking up or setting down passengers,

but, in any event, shall not remain in that loading zone:

(c) for longer than a time indicated on the "*loading zone*" sign; or

(d) longer than 30 minutes (if no time is indicated on the sign).

5.3 Stopping in a taxi zone or a bus zone

(1) A driver shall not stop in a taxi zone, unless the driver is driving a taxi.

(2) A driver shall not stop in a bus zone unless the driver is driving a public bus, or a bus of a type that is permitted to stop at the bus zone by information on or with the "*bus zone*" sign applying to the bus zone.

5.4 Stopping in a mail zone

A person shall not stop a vehicle in a mail zone.

5.5 Other limitations in zones

A person shall not stop a vehicle in a zone to which a sign applies if stopping the vehicle would be contrary to any limitation in respect to classes of persons or vehicles, or specific activities allowed, as indicated by additional words on a sign that applies to the zone.

Division 3 — Other places where stopping is restricted

5.6 Stopping in a shared zone

A driver shall not stop in a shared zone unless –

(a) the driver stops at a place on a part of a carriageway, or in an area, to which a sign applies and the driver is permitted to stop at that place by the sign;

(b) the driver stops in a parking bay and the driver is permitted to stop in the parking bay under this local law;

(c) the driver is dropping off, or picking up, passengers or goods; or

(d) the driver is engaged in door-to-door delivery or collection of goods, or in the collection of waste or garbage.

5.7 Double parking

(1) A driver shall not stop a vehicle so that any portion of the vehicle is between any other stopped vehicle and the centre of the carriageway.

(2) This clause does not apply to –

(a) a driver stopped in traffic; or

(b) a driver angle parking on the side of the carriageway or in a median strip parking area, in accordance with this local law.

5.8 Stopping near an obstruction

A driver shall not stop on a carriageway near an obstruction on the carriageway in a position that further obstructs traffic on the carriageway.

5.9 Stopping on a bridge or in a tunnel, etc

(1) A driver shall not stop a vehicle on a bridge, causeway, ramp or similar structure unless –

(a) the carriageway is at least as wide on the structure as it is on each of the approaches and a sign does not prohibit stopping or parking; or

(b) the driver stops at a place on a part of a carriageway, or in an area, to which a sign applies and the driver is permitted to stop at that place by the sign.

(2) A driver shall not stop a vehicle in a tunnel or underpass unless –

(a) the carriageway is at least as wide in the tunnel or underpass as it is on each of the approaches and a traffic sign does not prohibit stopping or parking; or

(b) the driver of a motor vehicle stops at a bus stop, or in a bus zone or parking area marked on the carriageway, for the purpose of setting down or taking up passengers.

5.10 Stopping on crests, curves, etc

(1) Subject to subclause (2), a driver shall not stop a vehicle on, or partly on, a carriageway, in any position where it is not visible to the driver of an overtaking vehicle, from a distance of 50 metres within a built-up area, and from a distance of 150 metres outside a built-up area.

(2) A driver may stop on a crest or curve on a carriageway that is not in a built-up area if the driver stops at a place on the carriageway, or in an area, to which a sign applies and the driver is permitted to stop at that place by the sign.

5.11 Stopping near a fire hydrant etc

A driver shall not stop a vehicle so that any portion of the vehicle is within one metre of a fire hydrant or fire plug, or of any sign or mark indicating the existence of a fire hydrant or fire plug, unless –

(a) the driver is driving a public bus, and the driver stops in a bus zone or at a bus stop and does not leave the bus unattended; or

(b) the driver is driving a taxi, and the driver stops in a taxi zone and does not leave the taxi unattended.

5.12 Stopping at or near a bus stop

(1) A driver shall not stop a vehicle so that any portion of the vehicle is within 20 metres of the approach side of a bus stop, or within 10 metres of the departure side of a bus stop, unless –

(a) the vehicle is a public bus stopped to take up or set down passengers; or

(b) the driver stops at a place on a part of a carriageway, or in an area, to which a sign applies and the driver is permitted to stop at that place by the sign.

(2) In this clause –

(a) distances are measured in the direction in which the driver is driving; and

(b) a trailer attached to a public bus is deemed to be a part of the public bus.

5.13 Stopping on a path, median strip, or traffic island

The driver of a vehicle (other than a bicycle or an animal) shall not stop so that any portion of the vehicle is on a traffic island or median strip, unless the driver stops in an area, to which a sign applies and the driver is permitted to stop at that place by the sign.

~~**5.14 Stopping on verge**~~

~~(1) A person shall not –~~

~~(a) stop a vehicle (other than a bicycle);~~

~~(b) stop a commercial vehicle or bus, or a trailer or caravan unattached to a motor vehicle; or~~

~~(c) stop a vehicle during any period when the stopping of vehicles on that verge is prohibited by a sign adjacent and referable to that verge,~~

~~so that any portion of it is on a verge.~~

~~(2) Subclause (1)(a) does not apply to the person if he or she is the owner or occupier of the premises adjacent to that verge, or is a person authorised by the occupier of those premises to stop the vehicle so that any portion of it is on the verge.~~

~~(3) Subclause (1)(b) does not apply to a commercial vehicle when it is being loaded or unloaded with reasonable expedition with goods, merchandise or materials collected from or delivered to the premises adjacent to the portion of the verge on which the commercial vehicle is parked, provided no obstruction is caused to the passage of any vehicle or person using a carriageway or a footpath.~~

5.14 Stopping on verges

(1) Unless otherwise permitted by clause 7.3, a person shall not –

(a) stop any vehicle (commercial or otherwise) ; or

(b) stop a trailer or caravan unattached to a motor vehicle; or

(c) stop a vehicle during any period when stopping of vehicles on that verge is prohibited by a sign adjacent and referable to that verge,

so that any portion of it is on a verge.

(2) Subclause (1)(a) does not apply to;

(a) the person if he or she is the owner or occupier of the premises adjacent to that verge, or is a person authorised by the occupier of those premises to stop the vehicle so that any portion of it is on the verge; or

(b) a vehicle when it is being loaded or unloaded immediately with goods, merchandise or materials collected from or delivered to the premises adjacent to the portion of the verge on which the vehicle is stopped provided that the person is authorised by the occupier of those premises and no obstruction is caused to the passage of any vehicle or person using a carriageway or a footpath; or

(c) a commercial vehicle associated with building works being carried out on the premises at that place.

(3) Subclause 2(a) does not allow for or include the stopping of commercial vehicles for a period of longer than 4 hours.

This clause rewritten to align with clause 4.11.

5.15 Obstructing access to and from a path, driveway, etc

(1) A driver shall not stop a vehicle so that any portion of the vehicle is in front of a path, in a position that obstructs access by vehicles or pedestrians to or from that path, unless –

(a) the driver is dropping off, or picking up, passengers; or

(b) the driver stops in a parking stall and the driver is permitted to stop in the parking stall under this local law.

(2) A driver shall not stop a vehicle on or across a driveway or other way of access for vehicles travelling to or from adjacent land, unless –

(a) the driver is dropping off, or picking up, passengers; or

(b) the driver stops in a parking stall and the driver is permitted to stop in the parking stall under this local law.

5.16 Stopping near a public letter box

A driver shall not stop a vehicle so that any portion of the vehicle is within 3 metres of a public letter box, unless the driver –

(a) is dropping off, or picking up, passengers or mail; or

(b) stops at a place on a part of a carriageway, or in an area, to which a sign applies and the driver is permitted to stop at that place by the sign.

5.17 Stopping on a thoroughfare ~~carriageway~~ – commercial ~~heavy and long~~ vehicles
Subject to any clause to the contrary or sign referable to the thoroughfare, a person shall not stop ~~park~~ a commercial vehicle;

(a) on a thoroughfare ~~carriageway~~ in a built-up area, for any period exceeding 4 ~~2~~ hours, unless actively engaged in the picking up or setting down of goods; or

(b) on a thoroughfare ~~carriageway~~ outside a built-up area, except on the shoulder of the carriageway, or in a truck bay or other area set aside for the parking of such vehicles; or ~~unless~~

c) on a thoroughfare in a residential or special residential zoned area between the hours of 6.00pm one day and 6.00am the following day; unless

a permit has been issued in accordance with clause 5.21 of this local law.

Wording included to allow a permit to be issued by the local government if required. The purpose of the change of the terminology to 'commercial' is to capture the parking of such vehicles in residential areas where those vehicles that will not fit onto suburban lots are not simply parked on the street thereby detracting from the amenity of the area. Carriageway had been amended to thoroughfare to capture the entire road reserve.

5.18 Stopping on a carriageway with a bicycle parking sign
The driver of a vehicle (other than a bicycle) shall not stop on a part of a carriageway to which a "bicycle parking" sign applies, unless the driver is dropping off, or picking up, passengers.

5.19 Stopping on a carriageway with motorcycle parking sign
The driver of a motorvehicle shall not stop on a part of a carriageway, or in an area, to which a **"motorcycle parking"** sign applies, or an area marked **"M/C"** unless –

(a) the vehicle is a motorcycle; or

(b) the driver is dropping off, or picking up, passengers.

5.20 Eating areas in parking stalls
A person shall not stop or park a vehicle in a parking stall which has been authorised in writing by the local government, to be set up or conducted as an eating area and which is designated by signs as such at that time.

5.21 Permits in parking facilities
(1) The local government or authorised person may, whether upon payment of a fee or not, issue a ~~written temporary parking permission~~ Parking Facilities Permit which allows a specific vehicle or class of vehicle to stop or park –

Clarification of name of permit and better flexibility to determine allowance of permit.

(a) in a specified kerbside area;

(b) in a car park which is controlled by a sign, in contravention of the restriction specified on that sign; or

(c) in any other place under the control of the local government.

(2) A permit issued under subclause (1) may –

(a) authorise the stopping or parking of the vehicle continuously for a specified period or periods between specified times or from time to time during a specified period; and

(b) be revoked or suspended at any time by the local government or an authorised person before the expiration of any time or period specified in the permit.

(3) A person shall not stop or park a vehicle in respect of which a permit has been issued pursuant to subclause (2) –

(a) except at the times or during the period specified in the permit;

(b) for any purpose other than the purpose for which the permit was issued; or

(c) at any time after the cancellation, withdrawal or suspension of the permit.

(4) Further conditions may be imposed in accordance with subclause (1) by the local government in relation to the issuing of such a permit.

Subclause (4) included to give the local government more flexibility in issuing a permit.

5.22 Motorcycle stalls

(1) A person shall not stop or park a vehicle other than a bicycle or a motorcycle to which no side car or side-box is attached in a parking stall –

(a) marked with the symbol "M/C"; or

(b) in which the parking of bicycles or motorcycles is permitted by a sign referable to that parking stall.

(2) A person shall not stop or park a bicycle or motorcycle in a parking stall marked with the symbol "M/C" –

(a) for longer than the maximum period permitted for parking in that parking stall by a sign referable to that parking stall or metered space;

(b) if there is no sign referable to that parking stall than for longer than the maximum period during which a vehicle may stop or be parked as specified on any sign referable to any parking stall adjacent thereto; or

(c) otherwise than wholly within the stall.

PART 6 — TICKET ISSUING MACHINES AND ZONES

6.1 Ticket issuing machines

(1) Damage to Ticket Issuing Machines

A person shall not or attempt to remove, damage, deface, misuse or interfere with any ticket issuing machine.

(2) Signs on Ticket Issuing Machines

A person shall not, without the permission of the local government, affix any board, sign, placard, notice, cover or other thing to or paint, mark or write upon any ticket issuing machine.

(3) Use of Coins in Ticket Issuing Machines

A person shall not insert or cause to be inserted or attempt to insert into a coin slot of a ticket issuing machine any thing other than a coin appropriate to that slot.

(4) Operating Ticket Issuing Machines

A person shall not operate or attempt to operate a ticket issuing machine except in accordance with the operating instructions appearing on the ticket issuing machine.

6.2 Fees in ticket machine zones

(1) Fees for stopping and parking of vehicles in a ticket machine zone may be determined and imposed by the local government.

(2) A person must not stop or park a vehicle in a ticket machine zone unless the appropriate fee as indicated by a sign on the ticket issuing machine referable to the zone is inserted into the ticket issuing machine.

(3) The payment of the fee referred to in subclause (1) in accordance with subclause (2) entitles a person to stop or park a vehicle in a ticket machine zone for the period shown on the parking ticket, but does not authorise the stopping or parking of the vehicle in a parking space, or part of the zone during any time when stopping or parking in that zone is prohibited –

(a) under this local law;

(b) by the sign on the ticket issuing machine referable to the zone; or

(c) by a sign referable to that space.

6.3 Display of tickets

(1) A person shall not stop or park a vehicle in a ticket machine zone during any permitted period unless –

(a) an unexpired ticket issued by a ticket issuing machine in that ticket machine zone; and

(b) the date and time of issue or expiry, as the case may be, and the number, if any, of the ticket printed on the ticket,

are displayed inside the vehicle and are clearly visible to and able to be read by an authorised person from outside the vehicle at all times while the vehicle remains stopped or parked in the zone.

(2) A reference in this clause to:

(a) **"permitted period"** means the period stated on the ticket issuing machines in the ticket machine zone during which the parking of vehicle is permitted upon the purchase of a parking ticket;

(b) **"unexpired parking ticket"** means a parking ticket on which –

(i) a date and expiry time is printed and that time has not expired;
(ii) a date and time of issue is printed and the period for which that ticket remains valid as stated on the ticket issuing machine from which the ticket was purchased has not expired.

(3) For the purpose of this clause, where more than one parking ticket is displayed bearing the same date and time of issue, the period for each ticket referred to in subclause (2)(b) shall be aggregated and the tickets shall be deemed not to have expired until the expiry of the aggregate of those periods.

6.4 Parking limits

(1) A person shall not stop or park a vehicle in a ticket machine zone during any permitted period for longer than the maximum period.

(2) A reference in this clause to –

(a) **"maximum period"** means the maximum period stated on the ticket issuing machines in the zone during which the continuous parking of a vehicle in the zone is permitted;

(b) **"permitted period"** has the meaning given to it in clause 6.3(2)(a).

6.5 Parking position in ticket machine zones

A person shall not stop or park a vehicle in a ticket machine zone:

(1) on any part of which there are parking stalls set out parallel to a kerb otherwise than –

(a) parallel to that kerb;

(b) as close to the kerb as practicable;

(c) wholly within a parking stall;

(d) headed in the direction of the movement of traffic on the part of the carriageway on which the parking stall is situated;

(2) on any part of which there are parking stalls not set out parallel to a kerb otherwise than wholly within a parking stall.

PART 7 — RESIDENTIAL PARKING PERMITS

7.1 Definitions

In this Part, unless the context otherwise requires –

dwelling unit means premises lawfully used for self contained living quarters;

eligible person where used in relation to an application for a–

(a) residential parking permit means a single house occupier, a unit occupier or a unit owner;

(b) visitor's parking permit means –

(i) a single house occupier;
(ii) a strata company;
(iii) a unit owner of a residential unit which is not a strata lot;

parking facilities parking permit means a permit issued to a person by the local government pursuant to clause 7.3(3);

residential parking permit means a permit issued to a resident by the local government pursuant to clause 7.3(1);

residential unit means a dwelling unit which is part of a building adjacent to a part of a thoroughfare on which thoroughfare the stopping or parking of vehicles is prohibited for more than a specified period and which building contains –

(a) two or more dwelling units with or without any non residential units;

(b) one dwelling unit with one or more non residential units;

single house means a dwelling unit constructed on its own lot and used for self contained living quarters and which is adjacent to a part of a road on which the Stopping or parking of vehicles is prohibited for more than a specified period;

single house occupier means an occupier of a single house;

strata company has the meaning given to it in the *Strata Titles Act 1985;*

unit occupier means a person who is an occupier of a residential unit but does not include a unit owner.

unit owner means a person who is an owner of a residential unit.

visitor's parking permit means a permit issued by the local government pursuant to clause 7.3(2).

7.2 Exemption for permit holders

(1) (a) Where on any part of a thoroughfare the stopping or parking of vehicles is prohibited by a sign for more than a specified period or where any part of a thoroughfare is a metered space, the holder of a valid permit is exempted from such prohibition.

(b) The local government may also issue a permit which exempts the holder from compliance with the requirements of clauses 7(2)(a) and 7(2)(b).

(2) The exemption conferred by subclause (1) shall apply only –

(a) to the part of a thoroughfare specified in the permit;

(b) where the time restriction applicable to that part of the thoroughfare is for a period exceeding 30 minutes;

(c) where the permit displayed is a residential parking permit to the vehicle specified in the residential parking permit;

(d) if the permit is displayed in the vehicle or affixed to the windscreen of the vehicle so as to be clearly visible and able to be read by an authorised person from outside the vehicle;

(e) if the permit is valid.

(3) The exemption conferred by subclause (1) shall not, unless specifically noted on the permit, apply during any period in which the stopping or parking of vehicles is prohibited in the thoroughfare or the part of the thoroughfare specified in the permit.

7.3 Issue of permits

(1) The local government may upon a written application of an eligible person, issue a residential parking permit in the form determined by the local government. ~~in Item 1 Schedule 7.~~

(2) The local government may upon a written application of an eligible person issue, for the occasional use of visitors, a visitor's parking permit in the form determined by the local government; ~~in Item 1 Schedule 7.~~

(3) The local government's power to issue, replace and revoke permits under this Part may be exercised by an authorised officer.

(4) Notwithstanding any other provisions in this local law, the local government may approve the issue of a number of parking facility, residential or visitor's parking permits to any owner or occupier on such terms and conditions as the local government sees fit.

7.4 Discretionary authority

Notwithstanding any other provisions in this local law which restrict the number of residential or visitors' parking permits that may be issued, the local government may approve the issue of one additional residential parking permit or one additional visitor's parking permits to any occupier on such terms and conditions as the local government sees fit.

7.5 Validity of permit

Every residential parking permit or visitor's parking permit as the case may be shall cease to be valid upon –

(a) the expiry of a period of twelve months or lesser term as determined by the local government from and including the date on which it is issued;

(b) the holder of the permit ceasing to be an eligible person;

(c) the revocation of the permit by the local government pursuant to clause 7.6;

(d) the replacement of any permit by a new permit issued by the local government pursuant to clause 7.3.

7.6 Revocation of a permit

(1) The local government may at any time give an eligible person to whom a permit was issued pursuant to the provisions of this local law notice requiring that person to notify the local government of any reason why that permit should not be revoked.

(2) The local government shall give notice referred to subclause (1) in the form ~~in Item 3(a) of Schedule 8~~ determined by the local government by serving the notice on the eligible person to whom the permit was issued.

(3) If within seven (7) days after the date of receipt of the notice referred to in subclause (2) the eligible person to whom the permit was issued –

(a) fails to give the local government notice in writing of any reason why the permit should not be revoked; or

(b) gives the local government notice in writing of any reasons why the permit should not be revoked;

then the local government may in its absolute discretion revoke that permit.

(4) For the purpose of subclause (3) the date of receipt of the notice shall be the date the notice was served.

(5) The local government shall give notice of the revocation in the form ~~in Item 3(a) of Schedule 8~~ determined by the local government by serving the notice on the eligible person to whom the permit was issued.

7.7 Removal of permit from vehicle

The holder of a residential parking permit shall forthwith upon that permit being revoked or ceasing to be valid remove the permit from the vehicle in which it is displayed or to which it is affixed.

7.8 Replacement of permit

(1) The local government may upon a written application of an eligible person and upon payment of the fee referred to in subclause (2), if any, issue a permit to replace a residential parking permit or visitor's parking permit which is lost, destroyed or stolen.

(2) The local government may determine and impose a fee for the issue of a replacement permit pursuant to this clause.

(3) Notwithstanding subclause (2), no fee shall be payable for the issue of a replacement permit if evidence is produced in writing to the satisfaction of the local government –

(a) that the vehicle in which the permit is displayed has been disposed of;

(b) that the vehicle's windscreen in which the permit is displayed has been replaced; or

(c) which the local government considers warrants the waiving of the fee.

7.9 Display of residential or visitor's parking permits

A person shall not stop or park a vehicle in an area set aside for persons or vehicles of a particular class during any permitted period unless a valid permit is displayed inside the vehicle and is clearly visible to and able to be read by an authorised person from outside the vehicle at all times while the vehicle remains stopped or parked in the zone.

PART 8 — MISCELLANEOUS

8.1 Authorised persons
No offence under this local law is committed by an authorised person while carrying out his or her duties as an authorised person.

8.2 Necessary power
An authorised person has all necessary powers for the purpose of performing or observing all of the functions conferred on him or her under the Act and this local law.

8.3 Authorised person to be obeyed
A person who is given a direction by an authorised person or a member of the WA Police Force ~~Service~~ under this local law, or in relation to a contravention of this local law, shall comply with that direction.

8.4 Persons may be directed to leave local government property
An authorised person may direct a person to leave local government property or a local government building where the authorised person reasonably suspects that the person has contravened a provision of this local law.

8.5 Marking of tyres
(1) For the purposes of ascertaining whether or not a parked vehicle has been or may be parked in contravention of any provision of this local law an authorised person may mark the tyres of a vehicle parked in a parking facility with chalk or any other non-indelible substance.

(2) A person shall not remove or interfere with any such mark referred to in subclause (1) so that the purpose of affixing that mark is or may be defeated.

8.6 Removal of notices on vehicle
A person, other than the driver of the vehicle or a person acting under the direction of the driver of the vehicle or an authorised person, shall not remove from the vehicle any notice put on the vehicle by an authorised person.

8.7 Special purpose and emergency vehicles
Notwithstanding anything to the contrary in this local law, the driver of –

(a) a special purpose vehicle may, only in the course of his or her duties and when it is expedient and safe to do so, stop, or park the vehicle in any place, at any time; and

(b) an emergency vehicle may, in the course of his or her duties and when it is expedient and safe to do so or where he or she honestly and reasonably believes that it is expedient and safe to do so, stop, or park the vehicle at any place, at any time.

8.8 Vehicles not to obstruct a reserve, verge ~~public place~~ or thoroughfare

(1) A person shall not leave a vehicle, or any part of a vehicle, in a reserve, verge or thoroughfare ~~public place~~ so that it obstructs the use of any part of that reserve, verge ~~public place~~ or thoroughfare without the permission of the local government or unless authorised under any written law.

(2) A person will not contravene subclause (1) where the vehicle is left for a period not exceeding 24 ~~24~~ hours or is permitted to do so by the local government, unless the

vehicle is causing an obstruction or may cause a danger to the public or is jeopardising or may jeopardise the safety of a person.

(3) A vehicle found to be in contravention of sub-clause (2) may be impounded by an authorised officer.

(4) The impounding of vehicles and other goods under sub-clause (3) shall be carried out in accordance with sections 3.37 and 3.48 of the Act and Regulation 29 of the *Local Government (Functions and General) Regulations 1996*.

This small change is included to allow a discretion by the local government to allow vehicles such as those owned by FIFO workers or even people who have gone on holiday for a few days, to allow there vehicles to be left parked on a thoroughfare. It alleviates some spiteful complaints by some residents that neighbours where leaving cars parked for more than 24 hours and gives authorised officers the ability to impound vehicles causing an obstruction or a danger.

8.9 Damage to parking stations and facilities

A person shall not, and shall not attempt to, remove, damage, deface, misuse or interfere with any part of a parking station or parking facility.

8.10 Local government may lock parking stations

At the expiration of the hours of operation of a parking station, the local government, whether or not any vehicle remains parked in a parking station, may lock the parking station or otherwise prevent the movement of any vehicle within or to or from the parking station.

PART 9 — PENALTIES

9.1 Offences and penalties

(1) Any person who fails to do anything required or directed to be done under this local law, or who does anything which under this local law that person is prohibited from doing, commits an offence.

(2) A person who commits an offence under this local law is liable on conviction to a penalty not less than $250 and not exceeding $5,000, and if the offence is of a continuing nature, to a further penalty not exceeding a fine of $500 in respect of each day or part of a day during which the offence has continued.

(3) An offence against any provision of this local law is a prescribed offence for the purposes of section 9.16(1) of the Act.

(4) The amount appearing in the final column of Schedule 2 directly opposite a clause specified in that Schedule is the modified penalty for an offence against that clause.

9.2 Forms of notices:

For the purposes of this local law –

(a) where a vehicle is involved in the commission of an offence, the form of the notice referred to in section 9.13 of the Act is that of Form 1 in Schedule 1 of the *Local Government (Functions and General) Regulations 1996*;

(b) the form of the infringement notice given under section 9.16 of the Act is that of Form 2 in Schedule 1 of the *Local Government (Functions and General) Regulations 1996*; and

(c) the form of the notice referred to in section 9.20 of the Act is that of Form 3 in -Schedule 1 *Local Government (Functions and General) Regulations 1996*.

~~**9.2 Form of notices**~~

~~For the purposes of this local law the form of the –~~

~~(a) notice to the owner of a vehicle referred to in section 9.13 of the Act is that of the form in Schedule 3;~~

~~(b) infringement notice referred to in section 9.17 of the Act is that of the form in Schedule 4;and~~

~~(c) withdrawal of infringement notice referred to in section 9.20 of the Act is that of the form in Schedule 5.~~

Clause amended as recommended by DLGSC

Schedule 1 – Parking region

[cl. 1.5(1)]

Local Government Act 1995
~~Town~~ City of Kwinana Parking and Parking Facilities Local Law ~~2010~~ 2018

PARKING REGION

The parking region is the whole of the district, but excludes the following portions of the district:

(1) the approach and departure prohibition areas of all existing and future traffic control signal installations as determined by the Commissioner of Main Roads;

(2) prohibition areas applicable to all existing and future bridges and subways as determined by the Commissioner of Main Roads;

(3) any road which comes under the control of the Commissioner of Main Roads unless the control of parking and parking facilities on that road is carried out subject to the control and direction of the Commissioner of Main Roads or has been delegated by the Commissioner to the local government.

Schedule 2 – Prescribed offences

[cl.9.1(4)]

Local Government Act 1995

~~Town~~ City of Kwinana Parking and Parking Facilities Local Law ~~2010~~ 2018

Offences and Modified Penalties

ITEM NO.	CLAUSE NO.	NATURE OF OFFENCE	MODIFIED PENALTY $
1.	2.2(1)~~, (2)~~	Failure to comply with signs	**50**
2.	2.3(a)	Unauthorised display, marking, setting up, exhibiting of a sign	**125**
3.	2.3(b)	Unauthorised removal, defacing or misuse of a sign	**70**
4.	2.3(c)	Unauthorised affixing anything to a sign	**60**
5.	3.2(1)(a)	Failure to park parallel to and as close to the kerb as practicable in a parking stall	**60**
6.	3.2(1)(b)	Failure to park wholly within parking stall	**60**
7.	3.2(1)(c)	Failure to park in the direction of the movement of traffic in a parking stall	**60**
8.	3.2(4)	Failure to park wholly within parking area	**50**
9.	3.3(1)(a)	Causing obstruction in parking station	**125**
10.	3.3(1)(b)	Parking contrary to sign in parking station	**50**
11.	3.3(1)(c)	Parking contrary to directions of authorised person	**150**
12.	3.3(1)(d)	Parking or attempting to park a vehicle in a parking stall occupied by another vehicle	**50**
13.	3.3(2)(a)	Park in a stall other than in a stall marked M/C	**85**
~~13~~ 14.	4.1(1)(a)	Parking by vehicles of a different class	**85**
~~14~~ 15.	4.1(1)(b)	Parking by persons of a different class	**85**
~~15~~ 16.	4.1(1)(c)	Parking during prohibited period	**85**
17	4.1(1)(d)	Exceeding the length of time specified by a sign	**85**
~~16~~ 18.	4.1(3)(a)	Parking in no parking area	**85**
~~17~~ 19.	4.1(3)(b)	Parking contrary to signs or limitations	**50**
~~18~~ 20.	4.1(3)(c)	Parking vehicle in motorcycle only area	**50**
~~19~~ 21.	4.1(4 ~~5~~)	Parking without permission in an area designated for 'Authorised Vehicles Only'	**85**
22	4.1A(2)(a)	Stopping a vehicle in a parking area for people with disabilities without the vehicle displaying a disability parking permit.	**300**
23	4.1A(2)(b)	Stopping a vehicle in a parking area for people with disabilities when neither the driver nor a passenger of that vehicle is a person with a current Australian Disability Parking Permit	**300**
~~20~~ 24.	4.2(1)(a)	Failure to park on the left of two-way carriageway	**60**
~~21~~ 25.	4.2(1)(b)	Failure to park on boundary of one-way carriageway	**60**

ITEM NO.	CLAUSE NO.	NATURE OF OFFENCE	MODIFIED PENALTY $
~~22~~ 26.	4.2(1)(a) or 4.2(1)(b)	Parking against the flow of traffic	**60**
~~23~~ 27.	4.2(1)(c)	Parking when distance from farther boundary less than 3 metres	**100**
~~24~~ 28.	4.2(1)(d)	Parking closer than 1 metre from another vehicle	**50**
29.	4.2(1)(e)	Parking in a cul-de-sac so as to obstruct the turning of a vehicle within the cul-de-sac	**100**
30.	4.2(1)(f)	Parking in a laneway	**100**
~~25~~ 31.	4.2(1)(g~~e~~)	Causing obstruction to a vehicle on the carriageway	**125**
32.	4.3(a)	Failure to park parallel	**50**
~~26~~ 33.	4.3(b)	Failure to park at approximate right angle	**50**
~~27~~ 34.	4.4(1~~2~~)	Failure to park at an appropriate angle	**50**
~~28~~ 35.	4.5(2)(a)	Parking between any other stationary vehicle or vehicles and the centre of the carriageway (Double parking)	**125**
~~29~~ 36.	4.5(2)(b)	Parking on or adjacent to a median strip	**60**
~~30~~ 37.	4.5(2)(c)	Denying access to private drive or right of way	**125**
~~31~~ 38.	4.5(2)(d)	Parking beside excavation or obstruction so as to obstruct traffic	**125**
~~32~~ 39.	4.5(2)(e)	Parking within 10 metres of traffic island	**60**
~~33~~ 40.	4.5(2)(f)	Parking on or overhanging footpath/pedestrian crossing	**150**
~~34~~ 41.	4.5(2)(g)	Parking closer than 3 metres to double longitudinal lines	**125**
~~35~~ 42.	4.5(2)(h)	Parking on intersection	**150**
~~36~~ 43.	4.5(2)(i)	Parking within 1 metre of fire hydrant or fire plug	**50**
~~37~~ 44.	4.5(2)(j)	Parking within 3 metres of public letter box	**50**
~~38~~ 45.	4.5(2)(k)	Parking within 10 metres of intersection	**60**
~~39~~ 46.	4.5(3)(a) or (b)	Parking vehicle within 10 metres of departure side of bus stop, children's crossing or pedestrian crossing	**50**
~~40~~ 47.	4.5(4)(a) or (b)	Parking vehicle within 20 metres of approach side of bus stop, children's crossing or pedestrian crossing	**50**
~~41~~ 48.	4.5(5)	Parking vehicle within 20 metres of approach side or departure side of railway level crossing	**50**
~~42~~ 49.	4.6	Parking contrary to direction of authorised person	**150**
~~43~~ 50.	4.7(1), (2) or (3)	Moving vehicle to avoid time limitation	**85**
~~44~~ 51.	4.8(a)	Parking in thoroughfare for purpose of sale	**125**
~~45~~ 52.	4.8(b)	Parking unlicensed vehicle in thoroughfare	**100**
~~46~~ 53.	4.8(c)	Parking an unattached trailer/caravan on a thoroughfare	**100**
~~47~~ 54.	4.8(d)	Parking in thoroughfare for purpose of repairs	**125**
~~48.~~	~~4.9(2)~~	~~Parking on land that is not a parking facility without consent~~	~~**125**~~

ITEM NO.	CLAUSE NO.	NATURE OF OFFENCE	MODIFIED PENALTY $
~~49~~ 55.	4.9(3)	Parking on land not in accordance with consent	**125**
~~50~~ 56.	4.10	Driving or parking on a reserve	**125**
~~51~~ 57.	4.11(1)	Parking on a verge	**60**
~~52~~ 58.	4.13(1)(a)	Failure to display an unexpired parking ticket	**60**
~~53~~ 59.	4.13(2)(a)	Deface, alter, add to, erase, obliterate or otherwise interfere with a parking ticket	**150**
~~54~~ 60.	4.13(2)(b)	Display a defaced, altered obliterated or otherwise interfered with parking ticket	**150**
~~53~~ 61.	4.13(2)(c)	Produce a defaced, altered obliterated or otherwise interfered with parking ticket	**150**
62.	4.13(4)	Motorcycle not parking wholly within a marked parking stall	**100**
63.	4.13(6)(b)	Stopping or parking a vehicle in any parking station or part of a parking station which has been set aside under this local law at the times or within such period specified pursuant to this local law unless the vehicle is carrying at least one other person	**100**
64.	4.13(6)(c)	Entering any parking station or part of a parking station which has been set aside under this local law at the times or within such period specified pursuant to this local law unless that person is the driver of or passenger in a vehicle carrying at least one other person.	**100**
~~56.~~	~~4.14(1)(a)~~	~~Parking more than one commercial vehicle in excess of 4 hours in a Residential or Special Residential Zone~~	~~**60**~~
~~57.~~	~~4.14(1)(a)~~	~~Parking more than one commercial vehicle in in excess of 4 hours in a Residential or Special Residential Zone.~~	~~**85**~~
~~58.~~	~~4.14(1)(c)~~	~~Parking vehicle over 3m in height in excess of 4 hours in a Residential or Special Residential Zone~~	~~**85**~~
~~59.~~	~~4.14(2)~~	~~Repairing, servicing or cleaning commercial vehicle other than in a garage or building in a Residential or Special Residential Zone~~	~~**85**~~
~~60.~~	~~4.14(3)~~	~~Parking commercial vehicle exceeding 2 tonnes load capacity in a Residential or Special Residential Zone.~~	~~**125**~~
~~61~~.65.	5.1(1)	Stopping contrary to a no stopping sign	**125**
~~62~~ 66.	5.1(2)	Parking contrary to a no parking sign	**125**
~~63~~ 67.	5.1(3)	Stopping within continuous yellow lines	**125**
~~64~~ 68.	5.2	Stopping unlawfully in a loading zone	**85**
~~65~~ 69.	5.3	Stopping unlawfully in a taxi zone or bus zone	**100**
~~66~~ 70.	5.4	Stopping unlawfully in a mail zone	**70**
~~67~~ 71.	5.5	Stopping in a zone contrary to a sign	**50**
~~68~~ 72.	5.6	Stopping in a shared zone	**50**
~~69~~ 73.	5.7(1)	Double parking	**125**
~~70~~ 74.	5.8	Stopping near an obstruction	**125**

ITEM NO.	CLAUSE NO.	NATURE OF OFFENCE	MODIFIED PENALTY $
~~71~~ 75.	5.9	Stopping on a bridge or tunnel	**100**
~~72~~ 76	5.10	Stopping on crests/curves etc	**100**
~~73~~ 77.	5.11	Stopping near fire hydrant	**70**
~~74~~ 78.	5.12(1)	Stopping near bus stop	**85**
~~75~~ 79.	5.13	Stopping on path, median strip or traffic island	**125**
80.	5.14(1)	Stopping on a verge	**60**
~~77~~ 81.	5.15	Obstructing path, a driveway etc	**125**
~~78~~ 82.	5.16	Stopping near letter box	**50**
~~79~~ 83.	5.17	Stopping ~~heavy or long vehicles on~~ a commercial vehicle on a thoroughfare without or in contravention of a permit	**85**
~~80~~ 84.	5.18	Stopping in bicycle parking area	**60**
~~81~~ 85.	5.19	Stopping in motorcycle parking area	**60**
~~82~~ 86.	5.20	Stopping or parking in a stall set up as an eating area	**85**
~~83~~ 87.	5.21	Stopping or parking contrary to requirements of a permit	**60**
~~84~~ 88.	5.22	Stopping or parking a vehicle (other than a bicycle or motorcycle) in a parking stall approved for motorcycles	**60**
~~85~~ 89.	6.1(1)	Damaging or interfering with ticket issuing machine	**150**
~~86~~ 90.	6.1(2)	Affixing a board, sign, placard or notice or marking any ticket issuing machine	**60**
91.	6.1(3)	Inserting other than a coin in a ticket issuing machine	**50**
92.	6.1(4)	Operating a ticket issuing machine contrary to instructions	**50**
~~89~~ 93.	6.2(2)	Failure to pay appropriate fee	**60**
~~90~~ 94.	6.3(1)(a)	Failure to display an unexpired parking ticket	**60**
~~91~~ 95.	6.3(1)(b)	Failure to display a valid parking ticket	**60**
~~92~~ 96.	6.4(1)	Stopping or parking for longer than the maximum period	**60**
~~93~~ 97.	6.5(1)(a)	Failure to stop or park parallel to the kerb in a ticket machine zone	**60**
~~94~~ 98.	6.5(1)(b)	Failure to stop or park as close to the kerb as practicable in a ticket machine zone	**60**
~~95~~ 99.	6.5(1)(c)	Failure to stop or park wholly within a parking stall in a ticket machine zone	**60**
~~96~~ 100.	6.5(1)(d)	Failure to stop or park in direction of movement of traffic in a ticket machine zone	**50**
~~97~~ 101.	7.9	Failure to display a valid permit	**85**
~~98~~ 102.	8.3	Failure to comply with a lawful direction of an authorised person	**150**
~~99~~ 103.	8.4	Failure to leave local government property when lawfully directed to do so by an authorised person	**150**

ITEM NO.	CLAUSE NO.	NATURE OF OFFENCE	MODIFIED PENALTY $
~~100~~ 104.	8.5(2)	Removing or interfering with a lawful mark on a tyre	**125**
~~101~~ 105.	8.6	Removing a notice on a vehicle	**125**
~~102~~ 106.	8.8(1)	Leaving a vehicle in a public place or thoroughfare so as to cause an obstruction	**125**
~~103~~ 107.	8.9	Attempting to or removing, damaging, defacing, misusing or interfering with any part of a parking station or parking facility	**150**
~~104~~ 108.		All other offences not specified	**85**

~~**Schedule 3 – Notice to vehicle owner**~~

~~[cl. 9.2(a)]~~

~~Local Government Act 1995~~
~~Town of Kwinana Parking and Parking Facilities Local Law 2010~~

~~**NOTICE TO OWNER OF VEHICLE INVOLVED IN OFFENCE**~~

~~Date ..... / ..... / .....~~

~~To: [1] .....~~
~~of: [2] .....~~
~~It is alleged that on ..... / ..... / ..... at [3] .....~~
~~at [4] ..... your vehicle:~~

~~make: ..... ;~~

~~model: ..... ;~~

~~registration: ..... ,~~

~~was involved in the commission of the following offence – .....~~
~~.....~~
~~.....~~
~~.....~~
~~.....~~

~~contrary to clause ..... of the Town of Kwinana Parking and Parking Facilities Local Law 2010.~~

~~You are required under section 9.13 of the *Local Government Act 1995* to identify the person who was the driver or person in charge of the vehicle at the time when the offence is alleged to have been committed.~~
~~If you do not prove otherwise, you will be deemed to have committed the offence unless:~~
~~(a) within 28 days after being served with this notice:~~
~~(i) you inform the Chief Executive Officer or another authorised officer of the local government as to the identity and address of the person who was the driver or~~

person in charge of the vehicle at the time the offence is alleged to have been committed; or

(ii) you satisfy the Chief Executive Officer that the vehicle had been stolen, or was being unlawfully used, at the time the offence is alleged to have been committed; or

(b) you were given an infringement notice for the alleged offence and the modified penalty specified in it is paid within 28 days after the notice was given or such further time as is allowed.

[5] .....

[6] .....

Insert:

[1] Name of owner or 'the owner'
[2] Address of owner (not required if owner not named)
[3] Time of alleged offence
[4] Location of alleged offence
[5] Signature of authorised person
[6] Name and title of authorised person giving notice

Schedule 4 – Infringement notice

[cl 9.2(b)]

Local Government Act 1995
Town of Kwinana Parking and Parking Facilities Local Law 2010

NOTICE OF INFRINGEMENT

Serial No .....

Date ..... / ..... / .....

To: [1] .....

of: [2] .....

It is alleged that on ..... / ..... / ..... at [3] .....

at [4] .....

in respect of vehicle:

make: ..... ;

model: ..... ;

registration: ..... ,

you committed the following offence:

.....

.....

.....

contrary to clause ..... of the Town of Kwinana Parking and Parking Facilities Local Law 2010.

The modified penalty for the offence is $ .....

If you do not wish to have a complaint of the alleged offence heard and determined by a court, the amount of the modified penalty may be paid to an authorised person at [5] ..... within a period of 28 days after the giving of this notice.

If you take no action this infringement notice may be registered with the Fines Enforcement Registry after which your driver's licence or any vehicle licence held by you may be suspended. If the matter is registered with the Registry additional costs will also be payable by you.

If the above address is not your current address, or if you change your address, it is important that you advise us immediately. Failure to do so may result in your driver's licence or any vehicle licence you hold being suspended without your knowledge.

[6] .....

[7] .....

Insert:
[1] Name of alleged offender or 'the owner'
[2] Address of alleged offender
[3] Time of alleged offence
[4] Location of alleged offence
[5] Place where modified penalty may be paid
[6] Signature of authorised person
[7] Name and title of authorised person giving notice

Schedule 5 – Infringement withdrawal notice

[cl. 9.2(c)]

Local Government Act 1995
Town of Kwinana Parking and Parking Facilities Local Law 2010

WITHDRAWAL OF INFRINGEMENT NOTICE

Serial No .....

Date ..... / ..... / .....

To: [1] .....

of: [2] .....

Infringement Notice No. ..... dated ..... / ..... / .....

in respect of vehicle:

make: ..... ;

model: ..... ;

registration: ..... ,

for the alleged offence of .....

.....

.....

.....

has been withdrawn.

The modified penalty of $ .....

- has been paid and a refund is enclosed.*
- has not been paid and should not be paid.*

* Delete whichever is inapplicable.

[3] .....

[4] .....

Insert:
[1] Name of alleged offender to whom infringement notice was given or 'the owner'
[2] Address of alleged offender.
[3] Signature of authorised person
[4] Name and title of authorised person giving notice

Schedule 6 – Parking Station

[cl. 1.5(4) & 4.9(1)(e)]

Local Government Act 1995
Town of Kwinana Parking and Parking Facilities Local Law 2010

PARKING STATIONS UNDER CARE, CONTROL & MANAGEMENT OF THE TOWN OF KWINANA

NO.	DESCRIPTION	NIGHT/DAY PARKING	DAYS & HOURS OF OPERATION
1	Kwinana Hub Shopping Centre being part lot 3 bounded by Gilmore, Chisham and Challenger Avenues, Town Centre, Kwinana.	DAY PARKING	Monday to Sunday, 8 a.m to 8 p.m inclusive

Schedule 7 – Parking Permits

[cl. 7.3(1)&(2)]

Local Government Act 1995
Town of Kwinana Parking and Parking Facilities Local Law 2010

ITEM 1 - RESIDENTIAL PARKING PERMIT

Local Government Act 1995
Town of Kwinana
Parking and Parking Facilities Local Law 2010

PERMIT No.....

Vehicle Make/Type: .....Registration No:.....

Exempted Road/Metered Space: .....

..... Expiry Date: .....

For the Town of Kwinana

~~ITEM 2 - VISITOR'S PARKING PERMIT~~

~~Local Government Act 1995~~
~~Town of Kwinana~~
~~Parking and Parking Facilities Local Law 2010~~

~~PERMIT No.~~

~~RESIDENTIAL PARKING PERMIT VISITOR'S PARKING PERMIT~~

~~Exempted Road: .....~~

~~Name of Person to Whom Exemption Issued: .....~~

~~..... Expiry Date: .....~~

~~For the Town of Kwinana~~

Schedule 8 – Revoking of permits

[cl. 7.6(2)&(5)]

Local Government Act 1995
Town of Kwinana Parking and Parking Facilities Local Law 2010

ITEM 3(a) NOTICE OF INTENT TO REVOKE PERMIT

Notice of Intention to Revoke Permit

Take notice that within seven days from the ..... day of ..... the person to whom (Residential Parking Permit/Visitors Parking Permit)* No ..... was issued is required to give the local government notice in writing of any reason why that permit should not be revoked. If no written notice is received by the local government within that time, local government may revoke that permit.

.....
for Town of Kwinana

.....
Date of Service

* Delete whichever is inapplicable

Local Government Act 1995
Town of Kwinana Parking and Parking Facilities Local Law 2010

ITEM 3(b) NOTICE OF REVOCATION OF PERMIT

ITEM 3(b)
Notice of Revocation of Permit

Take notice that from and including the ..... day of ..... (Residential Parking Permit/Visitor's Parking Permit)* No ..... is revoked and invalid.

.....
for Town of Kwinana

* Delete whichever is inapplicable

Dated this day of 20

The Common Seal of the)
City of Kwinana was hereunto)
affixed in the presence of :)

Carol Adams	Joanne Abbiss
Mayor	Chief Executive Officer

LG305

LOCAL GOVERNMENT ACT 1995

Town of Kwinana

Parking and Parking Facilities Local Law 2010

Under the powers conferred by the *Local Government Act 1995*, and under all other powers enabling it, the Town of Kwinana resolved on 15 December 2010 to adopt the following local law.

Preamble

The principal local law *Town of Vincent Parking and Parking Facilities Local Law 2007* as published in the *Government Gazette* on 21 November 2007, including the amendments as published in the *Government Gazette* on 5 August 2008 and on 27 February 2009, is adopted as the local law of the Town of Kwinana with the modifications as set out below.

1. Preliminary

Delete the words "Town of Vincent" wherever they appear in this local law and insert "Town of Kwinana" instead.

2. Part 1 amended

2.1 Delete clause 1.1 and insert—

1.1 Citation

This local law is the *Town of Kwinana Parking and Parking Facilities Local Law 2010*.

2.2 In clause 1.2(1) delete "objective" and insert "purpose", and delete clause 1.2 heading and insert—

1.2 Purpose and effect

2.3 Delete clause 1.4 and insert—

The Town of Kwinana Parking Local Law 2000 published in the *Government Gazette* on 29 November 2000 is repealed.

2.4 In clause 1.5 delete subclauses (1) and (4) and insert respectively—

(1) Subject to subclause (2), this local law applies to the parking region as described in Schedule 1.

(4) Where a parking facility or a parking station is identified in Schedule 6, the facility or station shall be deemed to be a facility or station to which this local law applies.

2.5 In clause 1.6 delete the definitions "authorised person" and "parking region", and insert the following definitions in alphabetical order—

"authorised person" means a person appointed by the local government under section 9.10 or the Act, to perform any of the functions of an authorised person under this local law;

"parking region" means the whole of the district except for those areas, roads, bridges and subways under the control and direction of the Commissioner of Main Roads;

"costs" of the local government include its administrative costs;

"residential zone" means land within the residential zone specified within the Town of Kwinana's local planning scheme dealing with zoning;

"special residential zone" means land within the special residential zone specified within the Town of Kwinana's local planning scheme dealing with zoning;

3. Part 3 amended

3.1 In clause 3.1 designate the first subclause"(1)" and insert new subclause (2)—

(2) Where the local government makes a determination under subclause (1) it shall erect signs to give effect to the determination.

4. Part 4 amended

4.1 In clause 4.1 delete subclause (4).

4.2 In clause 4.1 re-designate subclause "(5)" to "(4)".

4.3 In clause 4.9(1)(e) delete "Schedule 7" and insert "Schedule 6".

4.4 Delete clause 4.14 and its heading and insert—

4.14 Vehicles prohibited in the residential and special residential zones

(1) No person shall park for more than 4 hours consecutively within the residential and special residential zones—

(a) more than one commercial vehicle;

(b) any vehicle which, due to its size or load, is not capable of being completely housed within a garage or building approved by council; or

(c) a vehicle which, together with its load, exceeds 3 metres in height.

(2) No person shall, within the residential and special residential zones—

(a) repair, service or clean a commercial vehicle unless such work is carried out whilst the vehicle is completely housed within a garage or building approved by council; or

(b) park or allow to remain stationary a commercial vehicle of a load capacity exceeding 2 tonnes or allow the vehicle to remain stationary.

(3) Subclauses (1) and (2) do not apply to—

(a) a commercial vehicle when it is being loaded or unloaded with reasonable expedition with goods, merchandise or materials collected from or delivered to the premises; or

(b) a commercial vehicle associated with building works being carried out on the premises.

5. Part 5 amended

5.1 Delete clause 5.17 and its heading and insert—

5.17 Stopping on a carriageway—heavy and long vehicles

Subject to any clause to the contrary or sign referable to the carriageway, a person shall not park a vehicle or any combination of vehicles, that, together with any projection on, or load carried by, the vehicle or combination of vehicles, is eight metres or more in length or exceeds a GVM of 4.5 tonnes—

(a) on a carriageway in a built-up area, for any period exceeding 2 hours, unless engaged in the picking up or setting down of goods; or

(b) on a carriageway outside a built-up area, except on the shoulder of the carriageway, or in a truck bay or other area set aside for the parking of such vehicles.

6. Part 7 amended

6.1 In clauses 7.3(1) and 7.3(2) delete "Schedule 8" and insert "Schedule 7".

6.2 In clause 7.6 delete subclauses (2) and (5) and insert respectively—

(2) The local government shall give notice referred to in subclause (1) in the form of Item 3(a) of Schedule 8 by serving the notice on the eligible person to whom the permit was issued.

(5) The local government shall give notice of the revocation in the form of Item 3(b) of Schedule 8 by serving the notice on the eligible person to whom the permit was issued.

7. Part 9 amended

7.1 In clause 9.2 delete paragraphs (a) and (c) and insert respectively—

(a) notice to the owner of a vehicle involved in an offence referred to in section 9.13 of the Act is that of the form in Schedule 3;

(c) withdrawal of infringement notice referred to in section 9.20 of the Act is that of the form in Schedule 5.

8. Schedules amended

8.1 Delete Schedules 1 to 9 and insert—

_____

Schedule 1—Parking region

[cl. 1.5(1)]

LOCAL GOVERNMENT ACT 1995

Town of Kwinana Parking and Parking Facilities Local Law 2010

PARKING REGION

The parking region is the whole of the district, but excludes the following portions of the district—

1. the approach and departure prohibition areas of all existing and future traffic control signal installations as determined by the Commissioner of Main Roads;

2. prohibition areas applicable to all existing and future bridges and subways as determined by the Commissioner of Main Roads;

3. any road which comes under the control of the Commissioner of Main Roads unless the control of parking and parking facilities on that road is carried out subject to the control and direction of the Commissioner of Main Roads or has been delegated by the Commissioner to the local government.

_____

Schedule 2—Prescribed offences

[cl.9.1(4)]

LOCAL GOVERNMENT ACT 1995

Town of Kwinana Parking and Parking Facilities Local Law 2010

OFFENCES AND MODIFIED PENALTIES

Item No.	Clause No.	Nature of Offence	Modified Penalty $
1.	2.2(1), (2)	Failure to comply with signs	50
2.	2.3(a)	Unauthorised display, marking, setting up, exhibiting of a sign	125
3.	2.3(b)	Unauthorised removal, defacing or misuse of a sign	70
4.	2.3(c)	Unauthorised affixing anything to a sign	60
5.	3.2(1)(a)	Failure to park parallel to and as close to the kerb as practicable in a parking stall	60
6.	3.2(1)(b)	Failure to park wholly within parking stall	60
7.	3.2(1)(C)	Failure to park in the direction of the movement of traffic in a parking stall	60
8.	3.2(4)	Failure to park wholly within parking area	50
9.	3.3(1)(a)	Causing obstruction in parking station	125
10.	3.3(1)(b)	Parking contrary to sign in parking station	50
11.	3.3(1)(C)	Parking contrary to directions of authorised person	150
12.	3.3(1)(d)	Parking or attempting to park a vehicle in a parking stall occupied by another vehicle	50
13.	4.1(1)(a)	Parking by vehicles of a different class	85
14.	4.1(1)(b)	Parking by persons of a different class	85
15.	4.1(1)(C)	Parking during prohibited period	85
16.	4.1(3)(a)	Parking in no parking area	85
17.	4.1(3)(b)	Parking contrary to signs or limitations	50
18.	4.1(3)(C)	Parking vehicle in motorcycle only area	50
19.	4.1(5)	Parking without permission in an area designated for ‘Authorised Vehicles Only'	85
20.	4.2(1)(a)	Failure to park on the left of two-way carriageway	60

21.	4.2(1)(b)	Failure to park on boundary of one-way carriageway	60
22.	4.2(1)(a) or 4.2(1)(b)	Parking against the flow of traffic	60
23.	4.2(1)(c)	Parking when distance from farther boundary less than 3 metres	100
24.	4.2(1)(d)	Parking closer than 1 metre from another vehicle	50
25.	4.2(1)(e)	Causing obstruction	125
26.	4.3(b)	Failure to park at approximate right angle	50
27.	4.4(2)	Failure to park at an appropriate angle	50
28.	4.5(2)(a)	Double parking	125
29.	4.5(2)(b)	Parking on or adjacent to a median strip	60
30.	4.5(2)(c)	Denying access to private drive or right of way	125
31.	4.5(2)(d)	Parking beside excavation or obstruction so as to obstruct traffic	125
32.	4.5(2)(e)	Parking within 10 metres of traffic island	60
33.	4.5(2)(f)	Parking on footpath/pedestrian crossing	150
34.	4.5(2)(g)	Parking closer than 3 metres to double longitudinal lines	125
35.	4.5(2)(h)	Parking on intersection	150
36.	4.5(2)(i)	Parking within 1 metre of fire hydrant or fire plug	50
37.	4.5(2)(j)	Parking within 3 metres of public letter box	50
38.	4.5(2)(k)	Parking within 10 metres of intersection	60
39.	4.5(3)(a) or (b)	Parking vehicle within 10 metres of departure side of bus stop, children's crossing or pedestrian crossing	50
40.	4.5(4)(a) or (b)	Parking vehicle within 20 metres of approach side of bus stop, children's crossing or pedestrian crossing	50
41.	4.5(5)	Parking vehicle within 20 metres of approach side or departure side of railway level crossing	50
42.	4.6	Parking contrary to direction of authorised person	150
43.	4.7(1), (2) or (3)	Moving vehicle to avoid time limitation	85
44.	4.8(a)	Parking in thoroughfare for purpose of sale	125
45.	4.8(b)	Parking unlicensed vehicle in thoroughfare	100
46.	4.8(C)	Parking a trailer/caravan on a thoroughfare	100
47.	4.8(d)	Parking in thoroughfare for purpose of repairs	125
48.	4.9(2)	Parking on land that is not a parking facility without consent	125

49.	4.9(3)	Parking on land not in accordance with consent	125
50.	4.10	Driving or parking on a reserve	125
51.	4.11	Parking on a verge	60
52.	4.13(1)	Failure to display an unexpired parking ticket	60
53.	4.13(2)(a)	Deface, alter, add to, erase, obliterate or otherwise interfere with a parking ticket	150
54.	4.13(2)(b)	Display a defaced, altered obliterated or otherwise interfered with parking ticket	150
55.	4.13(2)(c)	Produce a defaced, altered obliterated or otherwise interfered with parking ticket	150
56.	4.14(1)(a)	Parking more than one commercial vehicle in excess of 4 hours in a Residential or Special Residential Zone	60
57.	4.14(1)(b)	Parking oversize vehicle in excess of 4 hours in a Residential or Special Residential Zone	85
58.	4.14(1)(c)	Parking vehicle over 3m in height in excess of 4 hours in a Residential or Special Residential Zone	85
59.	4.14(2)	Repairing, servicing or cleaning commercial vehicle other than in a garage or building in a Residential or Special Residential Zone	85
60.	4.14(3)	Parking commercial vehicle exceeding 2 tonnes load capacity in a Residential or Special Residential Zone.	125
61.	5.1(1)	Stopping contrary to a no stopping sign	125
62.	5.1(2)	Parking contrary to a no parking sign	85
63.	5.1(3)	Stopping within continuous yellow lines	125
64.	5.2	Stopping unlawfully in a loading zone	85
65.	5.3	Stopping unlawfully in a taxi zone or bus zone	100
66.	5.4	Stopping unlawfully in a mail zone	70
67.	5.5	Stopping in a zone contrary to a sign	50
68.	5.6	Stopping in a shared zone	50
69.	5.7(1)	Double parking	125
70.	5.8	Stopping near an obstruction	125
71.	5.9	Stopping on a bridge or tunnel	100
72.	5.10	Stopping on crests/curves etc	100
73.	5.11	Stopping near fire hydrant	70
74.	5.12(1)	Stopping near bus stop	85
75.	5.13	Stopping on path, median strip or traffic island	125
76.	5.14(1)	Stopping on verge	60

77.	5.15	Obstructing path, a driveway etc	125
78.	5.16	Stopping near letter box	50
79.	5.17	Stopping heavy or long vehicles on carriageway	85
80.	5.18	Stopping in bicycle parking area	60
81.	5.19	Stopping in motorcycle parking area	60
82.	5.20	Stopping or parking in a stall set up as an eating area	85
83.	5.21	Stopping or parking contrary to requirements of a permit	60
84.	5.22	Stopping or parking a vehicle (other than a bicycle or motorcycle) in a parking stall approved for motorcycles	60
85.	6.1(1)	Damaging or interfering with ticket issuing machine	150
86.	6.1(2)	Affixing a board, sign, placard or notice or marking any ticket issuing machine	60
87.	6.1(3)	Inserting other than a coin in a ticket issuing machine	50
88.	6.1(4)	Operating a ticket issuing machine contrary to instructions	50
89.	6.2(2)	Failure to pay appropriate fee	60
90.	6.3(1)(a)	Failure to display an unexpired parking ticket	60
91.	6.3(1)(b)	Failure to display a valid parking ticket	60
92.	6.4(1)	Stopping or parking for longer than the maximum period	60
93.	6.5(1)(a)	Failure to stop or park parallel to the kerb in a ticket machine zone	60
94.	6.5(1)(b)	Failure to stop or park as close to the kerb as practicable in a ticket machine zone	60
95.	6.5(1)(c)	Failure to stop or park wholly within a parking stall in a ticket machine zone	60
96.	6.5(1)(d)	Failure to stop or park in direction of movement of traffic in a ticket machine zone	50
97.	7.9	Failure to display a valid permit	85
98.	8.3	Failure to comply with a lawful direction of an authorised person	150
99.	8.4	Failure to leave local government property when lawfully directed to do so by an authorised person	150
100.	8.5(2)	Removing or interfering with a lawful mark on a tyre	150
101.	8.6	Removing a notice on a vehicle	125
102.	8.8(1)	Leaving a vehicle in a public place or thoroughfare so as to cause an obstruction	125

103.	8.9	Attempting to or removing, damaging, defacing, misusing or interfering with any part of a parking station or parking facility	150
104.		All other offences not specified	85

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Schedule 3—Notice to vehicle owner

[cl. 9.2(a)]

LOCAL GOVERNMENT ACT 1995

Town of Kwinana Parking and Parking Facilities Local Law 2010

NOTICE TO OWNER OF VEHICLE INVOLVED IN OFFENCE

Date ..... / ..... / .....

To: [1]

of: [2]

It is alleged that on ..... / ..... / ..... at [3]

at [4] ..... your vehicle—

make: ;

model: ;

registration: ,

was involved in the commission of the following offence—

contrary to clause ..... of the *Town of Kwinana Parking and Parking Facilities Local Law 2010*.

or

[6]

Insert—

ATTACHMENT D

Public Notice – Kwinana Courier – 17 August 2018

City of Kwinana

LOCAL GOVERNMENT ACT 1995
PROPOSED LOCAL LAW

PARKING AND PARKING FACILITIES LOCAL LAW 2018

The City of Kwinana has resolved to review its local law relating to **parking and parking facilities.**

The purpose and effect of the local law relating to parking and parking facilities are follows:

The **purpose** of this local law is to regulate the parking or standing of vehicles in all or specified thoroughfares and reserves under the care, control and management of the local government and to provide for the management and operation of parking facilities

The **effect** of this local law is that a person parking a vehicle within the parking region is to comply with the provisions of this local.

A copy of the proposed local law may be inspected at or obtained from the Council Administration Office, corner Gilmore Avenue and Sulphur Road, Kwinana between the hours of 8.00 am and 5.00 pm Monday to Friday, or viewed online at www.kwinana.wa.gov.au.

Submissions about the proposed local law including the National Competition Policy requirements may be made to:

Chief Executive Officer
City of Kwinana
PO Box 21
Kwinana WA 6167

All submissions must be received by 4.00 pm Tuesday 9 October 2018. For further information please contact the City's Governance Officer on 9439 0412.

Joanne Abbiss
Chief Executive Officer

Public Notice – The West Australian – 17 August 2018

City of Kwinana

LOCAL GOVERNMENT ACT 1995
PROPOSED LOCAL LAW PARKING AND PARKING FACILITIES LOCAL LAW 2018

The City of Kwinana has resolved to review its local law relating to **parking and parking facilities.**

The purpose and effect of the local law relating to parking and parking facilities are follows:

The **purpose** of this local law is to regulate the parking or standing of vehicles in all or specified thoroughfares and reserves under the care, control and management of the local government and to provide for the management and operation of parking facilities

The **effect** of this local law is that a person parking a vehicle within the parking region is to comply with the provisions of this local.

A copy of the proposed local law may be inspected at or obtained from the Council Administration Office, corner Gilmore Avenue and Sulphur Road, Kwinana between the hours of 8.00 am and 5.00 pm Monday to Friday, or viewed online at **www.kwinana.wa.gov.au**. Submissions about the proposed local law including the National Competition Policy requirements may be made to:

Chief Executive Officer
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All submissions must be received by 4.00 pm Tuesday 9 October 2018. For further information please contact the City's Governance Officer on 9439 0412.

Joanne Abbiss
Chief Executive Officer

ATTACHMENT E

Community Submissions

Submission received between, 17 August 2018 – 9 October 2018

Community Submission	City Officer Response
To whom it may concern, I would like to voice my concerns regarding street parking. Street parking is both dangerous and unsightly. There are areas within the City where parking on the street has become an alternative for residents. In the Honeywood Estate, Wandi it is quite common to see empty driveways with cars parked in the street. This is incredibly frustrating for residents having zig zag through cars constantly. It would be great if the local laws had a time limit for street parking, if a household has multiple cars you can expect the residents to leave one car on the street for days and sometimes weeks. Kind regards Haydn	Haydn Drew Cockayne ROCKINGHAM WA 6168 21 August 2018 CRM:8120/18 **Subject: Parking concern raised- Honeywood Estate- Wandi- Residents Parking on the roadways** The City of Kwinana refers to your concerns raised in the below report received, dated August 21st 2018. Please be advised that the City has noted the comments and concerns raised in the report and wishes to advised that the parking of any standard motor vehicle on any road way within the City is permitted. But this is provided there is sufficient space between the side of the vehicle parked and the kerbing on the opposite side of the road (at least 3 metres), there is no signage stating otherwise and or provided the vehicle is not parked in the same location for more than 24 hours at any one time.

	Should any of these not be the case, then you are encouraged to contact the City of Kwinana's City Assist service on 9439 0400 and an authorised officer will be dispatched to deal with the situation. Thank you for contacting the City of Kwinana and raising these concerns and should you require any further clarification in regards to this matter or any other please do not hesitate in contacting the City Assist service via email CityAssist@kwinana.wa.gov.au or on telephone 9439 0400 . Kind regards Kwinana City Assist Team

Submission received between, 25 May 2018 - 26 July 2018 (first consultation)

From: (Officer's Name) (DLGSC)
To: Kwinana Administration
Subject: Department of Local Government - Comment on parking amendments
Date: Tuesday, 17 July 2018 5:19:52 PM

Dear (Officer's name)

This email is regarding the City's proposed amendment to its parking local law. The Department's comments are provided below:

Parking and Parking Facilities Amendment Local Law 2018

1. **Consolidation of local law**

Ordinarily, a person who wants to read the definitive version of the local law must read the local law as gazetted.

Once this amendment has occurred, readers will need to consult five different gazettes to identify what the City's local law currently states (i.e. they'll need to read this most recent amendment along with the City's principal local law, the Town of Vincent's local law and the two amendments the Town made in 2008 and 2009).

The next time the City amends its local law, it would be advisable to repeal the local law and replace it with a single, consolidated document. This means readers will only need to read one gazette.

2. **Principal local law adopted by reference**

The Department notes that the City's principal local law is not a complete local law in itself but rather adopts a Town of Vincent local law by reference.

As a result, the amendments proposed by the City are problematic, since they refer to the clause numbers of the Town of Vincent's local law rather than the clause numbers of the principal local law as gazetted.

For example, clause 9 refers to an amendment of clause 2.2 of the principal local law, but clause 2.2 of the principal local law relates to the modification of clause 1.2 of the Town's local law.

Since the City's principal local law is designed to modify the Vincent local law, the City's proposed amendments can be more easily implemented by:

- Amending the modifications that currently exist in the principal local law; or
- Adding further modifications to the end of the principal local law.

Alternatively the City can:

- Repeal the principal local law and replace it with a new local law that adopts the Town's local law subject to amendments; or
- Repeals the principal local law and replaces it with a new and complete local law.

It is suggested that the City pick one of these options and reformat the draft accordingly.

3. **Australian Standards (clause 1.6 in local law)**

In clause 1.6, it is suggested that the new definition for "Australian Standard" be as follows:

> "***Australian Standard***" means an Australian Standard published by Standards Australia and as amended from time to time;

This will create certainty as to which version of the Standard must be complied with.

Alternatively, if the City wants the Standard to apply as published on a certain date, the phrase "as published on (DATE)" can be used instead of "as amended from time to time".

4. **Clause 7 – Removal of "resolution" (clause 1.8 in local law)**

It is suggested that clause 7 be deleted.

In the past, the Parliament's Delegated Legislation Committee has allowed clauses that permit the local government to change where and when a parking law applies. However, the Committee has only allowed these clauses on the condition that:

(a) The Council must authorise the change by resolution; and

(b) The resolution must be reflected by appropriate signage.

Clause 7 proposes to delete the word "resolution", which could be interpreted to mean that the City can use the power in cause 1.8 without a Council resolution. It is possible that the Committee may object to this change.

5. **Clause 9 (only refers to amendment local law)**

Clause 9 currently refers to amending "tenure" in clause 2.2(1) of the modified Town of Vincent local law.

After considering the Town's original local law, the two amendments the Town made in 2008 and 2009 and the modifications the City made in 2011, it appears this reference should be "2.2(2)". The City may wish to review and confirm whether this is the case.

6. **Form of infringement notices (clause 9.2 in local law)**

Clause 30 inserts a new clause 9.2 providing that notices and infringements can be in the form determined by the local government from time to time.

Under the Act, these notices need to be in the form prescribed in the Functions and General Regulations. It is suggested that the new clause be redrafted to the WALGA template as follows:

9.2 Forms of notices:

For the purposes of this local law -

(a) where a vehicle is involved in the commission of an offence, the form of the notice referred to in section 9.13 of the Act is that of Form 1 in Schedule 1 of the Regulations;

(b) the form of the infringement notice given under section 9.16 of the Act is that of Form 2 in Schedule 1 of the Regulations; and

(c) the form of the notice referred to in section 9.20 of the Act is that of Form 3 in -Schedule 1 of the Regulations.

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7. **Minor edits (only refers to amendment local law)**

The following minor edits are suggested:

- **Clause 12:** Insert a space between "add" and the opening quotation mark.
- **Clause 13:** The reference to "clause 3.31" should be changed to "clause 3.3".
- **Clause 16:** It is suggested that paragraph (b), (c) and (d) be simplified to the following format:

(b) Subclause (1)(e) is renumbered to (1)(g).

(c) After subclause (1)(d) insert:

(e) ……..

(f) ……..

The City should also ensure that all references and cross references in the local law have been reviewed for correctness.

Minister's Directions – pursuant to s 3.12(7) of the *Local Government Act 1995*

Please note: once the City has published a local law in the *Government Gazette*, the City must comply with the requirements of the Minister's *Local Laws Explanatory Memoranda Directions 2010*. The City must, within 10 working days of the Gazettal publication date, forward the signed Explanatory Memoranda material to the Committee at the current address:

Committee Clerk
Joint Standing Committee on Delegated Legislation

Legislative Council Committee Office
GPO Box A11
PERTH WA 6837
Email: delleg@parliament.wa.gov.au
Tel: 9222 7404
Fax: 9222 7805

A copy of the Minister's Directions and Explanatory Memoranda forms can be downloaded from the Department of Local Government and Communities website at www.dlgsc.wa.gov.au. Failure to comply with the Directions may render the local law inoperable.

Please note that my comments:

- have been provided to assist the City with drafting matters in relation to the local law;
- do not constitute legal advice;
- have been provided in good faith for the City's consideration; and
- should not be taken as an approval of content.

The City should ensure that a detailed editorial analysis of the proposed local law has been undertaken and that the content of the local law is in accordance with the City policies and objectives.

Regards

(Officer's Name)

Senior Legislation Officer

Department of Local Government, Sport and Cultural Industries

EXPLANATORY MEMORANDUM

1. ADMINISTERING AUTHORITY

City of Kwinana

2. PUBLICATION OF LOCAL LAW

WA Government Gazette dated [insert date] No. [insert number]

3. TITLE OF LOCAL LAW

City of Kwinana Parking and Parking Facilities Local Law 2018

4. SECTION(S) OF ENABLING ACT(S)

This local law was made under –

Subdivision 2 of Division 2 of Part 3 of the *Local Government Act 1995.*

5. PURPOSE, EFFECT AND JUSTIFICATION

Purpose of the local law:

To make provisions about the regulation of parking or standing of vehicles in all or specified thoroughfares and reserves under the care, control and management of the local government and to provide for the management and operation of parking facilities.

Effect of the local law:

Is that a person parking a vehicle within the parking region is to comply with the provisions of this local

Justification for the local law:

To make changes in formatting and grammar to the current local law, include additional definitions, make changes to references to legislation and standards.

To reflect the expectations of the owners and occupiers of the City of Kwinana in regard to parking within the district.

Make changes so to remain consistent with the Town of Kwinana Town Planning Schemes No 2 and 3.

6. ADDITIONAL INFORMATION

The City of Kwinana adopted an Amendment No 151 to its Town Planning Scheme No 2 and 3 that detailed changes to the definition of a ‘commercial vehicle’. This definition has been reflected in this review to ensure consistency when dealing with vehicle issues on both public and private land.

7. UNUSUAL OR CONTROVERSIAL PROVISIONS

There are no unusual or controversial provisions to this local law.

8. CONSULTATIONS, SUBMISSIONS AND RESPONSES

One public submission was received in regards to the Parking and Parking Facilities Local Law during the consultation period. Mr Haydn Cockayne voiced concerns with regards to street parking within the City.

To whom it may concern,

I would like to voice my concerns regarding street parking. Street parking is both dangerous and unsightly. There are areas within the City where parking on the street has become an alternative for residents. In the Honeywood Estate, Wandi it is quite common to see empty driveways with cars parked in the street. This is incredibly frustrating for residents having zig zag through cars constantly.

It would be great if the local laws had a time limit for street parking, if a household has multiple cars you can expect the residents to leave one car on the street for days and sometimes weeks.

Kind regards
Haydn

9. FEES AND CHARGES, PENALTIES AND MODIFIED PENALTIES

Fees and charges:

ITEM NO.	CLAUSE NO.	NATURE OF OFFENCE	MODIFIED PENALTY $
1.	2.2(1)~~, (2)~~	Failure to comply with signs	**50**
2.	2.3(a)	Unauthorised display, marking, setting up, exhibiting of a sign	**125**
3.	2.3(b)	Unauthorised removal, defacing or misuse of a sign	**70**
4.	2.3(c)	Unauthorised affixing anything to a sign	**60**
5.	3.2(1)(a)	Failure to park parallel to and as close to the kerb as practicable in a parking stall	**60**
6.	3.2(1)(b)	Failure to park wholly within parking stall	**60**
7.	3.2(1)(c)	Failure to park in the direction of the movement of traffic in a parking stall	**60**
8.	3.2(4)	Failure to park wholly within parking area	**50**
9.	3.3(1)(a)	Causing obstruction in parking station	**125**
10.	3.3(1)(b)	Parking contrary to sign in parking station	**50**
11.	3.3(1)(c)	Parking contrary to directions of authorised person	**150**
12.	3.3(1)(d)	Parking or attempting to park a vehicle in a parking stall occupied by another vehicle	**50**
13.	3.3(2)(a)	Park in a stall other than in a stall marked M/C	**85**
~~13~~ 14.	4.1(1)(a)	Parking by vehicles of a different class	**85**
~~14~~ 15.	4.1(1)(b)	Parking by persons of a different class	**85**

ITEM NO.	CLAUSE NO.	NATURE OF OFFENCE	MODIFIED PENALTY $
~~15~~ 16.	4.1(1)(c)	Parking during prohibited period	**85**
17	4.1(1)(d)	Exceeding the length of time specified by a sign	**85**
~~16~~ 18.	4.1(3)(a)	Parking in no parking area	**85**
~~17~~ 19.	4.1(3)(b)	Parking contrary to signs or limitations	**50**
~~18~~ 20.	4.1(3)(c)	Parking vehicle in motorcycle only area	**50**
~~19~~ 21.	4.1(4 ~~5~~)	Parking without permission in an area designated for 'Authorised Vehicles Only'	**85**
22	4.1A(2)(a)	Stopping a vehicle in a parking area for people with disabilities without the vehicle displaying a disability parking permit.	**300**
23	4.1A(2)(b)	Stopping a vehicle in a parking area for people with disabilities when neither the driver nor a passenger of that vehicle is a person with a current Australian Disability Parking Permit	**300**
~~20~~ 24.	4.2(1)(a)	Failure to park on the left of two-way carriageway	**60**
~~21~~ 25.	4.2(1)(b)	Failure to park on boundary of one-way carriageway	**60**
~~22~~ 26.	4.2(1)(a) or 4.2(1)(b)	Parking against the flow of traffic	**60**
~~23~~ 27.	4.2(1)(c)	Parking when distance from farther boundary less than 3 metres	**100**
~~24~~ 28.	4.2(1)(d)	Parking closer than 1 metre from another vehicle	**50**
29.	4.2(1)(e)	Parking in a cul-de-sac so as to obstruct the turning of a vehicle within the cul-de-sac	**100**
30.	4.2(1)(f)	Parking in a laneway	**100**
~~25~~ 31.	4.2(1)(g~~e~~)	Causing obstruction to a vehicle on the carriageway	**125**
32.	4.3(a)	Failure to park parallel	**50**
~~26~~ 33.	4.3(b)	Failure to park at approximate right angle	**50**
~~27~~ 34.	4.4(1~~2~~)	Failure to park at an appropriate angle	**50**
~~28~~ 35.	4.5(2)(a)	Parking between any other stationary vehicle or vehicles and the centre of the carriageway (Double parking)	**125**
~~29~~ 36.	4.5(2)(b)	Parking on or adjacent to a median strip	**60**
~~30~~ 37.	4.5(2)(c)	Denying access to private drive or right of way	**125**
~~31~~ 38.	4.5(2)(d)	Parking beside excavation or obstruction so as to obstruct traffic	**125**
~~32~~ 39.	4.5(2)(e)	Parking within 10 metres of traffic island	**60**
~~33~~ 40.	4.5(2)(f)	Parking on or overhanging footpath/pedestrian crossing	**150**

ITEM NO.	CLAUSE NO.	NATURE OF OFFENCE	MODIFIED PENALTY $
~~34~~ 41.	4.5(2)(g)	Parking closer than 3 metres to double longitudinal lines	**125**
~~35~~ 42.	4.5(2)(h)	Parking on intersection	**150**
~~36~~ 43.	4.5(2)(i)	Parking within 1 metre of fire hydrant or fire plug	**50**
~~37~~ 44.	4.5(2)(j)	Parking within 3 metres of public letter box	**50**
~~38~~ 45.	4.5(2)(k)	Parking within 10 metres of intersection	**60**
~~39~~ 46.	4.5(3)(a) or (b)	Parking vehicle within 10 metres of departure side of bus stop, children's crossing or pedestrian crossing	**50**
~~40~~ 47.	4.5(4)(a) or (b)	Parking vehicle within 20 metres of approach side of bus stop, children's crossing or pedestrian crossing	**50**
~~41~~ 48.	4.5(5)	Parking vehicle within 20 metres of approach side or departure side of railway level crossing	**50**
~~42~~ 49.	4.6	Parking contrary to direction of authorised person	**150**
~~43~~ 50.	4.7(1), (2) or (3)	Moving vehicle to avoid time limitation	**85**
~~44~~ 51.	4.8(a)	Parking in thoroughfare for purpose of sale	**125**
~~45~~ 52.	4.8(b)	Parking unlicensed vehicle in thoroughfare	**100**
~~46~~ 53.	4.8(c)	Parking an unattached trailer/caravan on a thoroughfare	**100**
~~47~~ 54.	4.8(d)	Parking in thoroughfare for purpose of repairs	**125**
~~48.~~	~~4.9(2)~~	~~Parking on land that is not a parking facility without consent~~	~~**125**~~
~~49~~ 55.	4.9(3)	Parking on land not in accordance with consent	**125**
~~50~~ 56.	4.10	Driving or parking on a reserve	**125**
~~51~~ 57.	4.11(1)	Parking on a verge	**60**
~~52~~ 58.	4.13(1)(a)	Failure to display an unexpired parking ticket	**60**
~~53~~ 59.	4.13(2)(a)	Deface, alter, add to, erase, obliterate or otherwise interfere with a parking ticket	**150**
~~54~~ 60.	4.13(2)(b)	Display a defaced, altered obliterated or otherwise interfered with parking ticket	**150**
~~53~~ 61.	4.13(2)(c)	Produce a defaced, altered obliterated or otherwise interfered with parking ticket	**150**
62.	4.13(4)	Motorcycle not parking wholly within a marked parking stall	**100**

ITEM NO.	CLAUSE NO.	NATURE OF OFFENCE	MODIFIED PENALTY $
63.	4.13(6)(b)	Stopping or parking a vehicle in any parking station or part of a parking station which has been set aside under this local law at the times or within such period specified pursuant to this local law unless the vehicle is carrying at least one other person	**100**
64.	4.13(6)(c)	Entering any parking station or part of a parking station which has been set aside under this local law at the times or within such period specified pursuant to this local law unless that person is the driver of or passenger in a vehicle carrying at least one other person.	**100**
~~56.~~	~~4.14(1)(a)~~	~~Parking more than one commercial vehicle in excess of 4 hours in a Residential or Special Residential Zone~~	~~**60**~~
~~57.~~	~~4.14(1)(a)~~	~~Parking more than one commercial vehicle in in excess of 4 hours in a Residential or Special Residential Zone.~~	~~**85**~~
~~58.~~	~~4.14(1)(c)~~	~~Parking vehicle over 3m in height in excess of 4 hours in a Residential or Special Residential Zone~~	~~**85**~~
~~59.~~	~~4.14(2)~~	~~Repairing, servicing or cleaning commercial vehicle other than in a garage or building in a Residential or Special Residential Zone~~	~~**85**~~
~~60.~~	~~4.14(3)~~	~~Parking commercial vehicle exceeding 2 tonnes load capacity in a Residential or Special Residential Zone.~~	~~**125**~~
~~61~~.65.	5.1(1)	Stopping contrary to a no stopping sign	**125**
~~62~~ 66.	5.1(2)	Parking contrary to a no parking sign	**125**
~~63~~ 67.	5.1(3)	Stopping within continuous yellow lines	**125**
~~64~~ 68.	5.2	Stopping unlawfully in a loading zone	**85**
~~65~~ 69.	5.3	Stopping unlawfully in a taxi zone or bus zone	**100**
~~66~~ 70.	5.4	Stopping unlawfully in a mail zone	**70**
~~67~~ 71.	5.5	Stopping in a zone contrary to a sign	**50**
~~68~~ 72.	5.6	Stopping in a shared zone	**50**
~~69~~ 73.	5.7(1)	Double parking	**125**
~~70~~ 74.	5.8	Stopping near an obstruction	**125**
~~71~~ 75.	5.9	Stopping on a bridge or tunnel	**100**
~~72~~ 76	5.10	Stopping on crests/curves etc	**100**
~~73~~ 77.	5.11	Stopping near fire hydrant	**70**
~~74~~ 78.	5.12(1)	Stopping near bus stop	**85**
~~75~~ 79.	5.13	Stopping on path, median strip or traffic island	**125**
80.	5.14(1)	Stopping on a verge	**60**

ITEM NO.	CLAUSE NO.	NATURE OF OFFENCE	MODIFIED PENALTY $
~~77~~ 81.	5.15	Obstructing path, a driveway etc	**125**
~~78~~ 82.	5.16	Stopping near letter box	**50**
~~79~~ 83.	5.17	Stopping ~~heavy or long vehicles on~~ a commercial vehicle on a thoroughfare without or in contravention of a permit	**85**
~~80~~ 84.	5.18	Stopping in bicycle parking area	**60**
~~81~~ 85.	5.19	Stopping in motorcycle parking area	**60**
~~82~~ 86.	5.20	Stopping or parking in a stall set up as an eating area	**85**
~~83~~ 87.	5.21	Stopping or parking contrary to requirements of a permit	**60**
~~84~~ 88.	5.22	Stopping or parking a vehicle (other than a bicycle or motorcycle) in a parking stall approved for motorcycles	**60**
~~85~~ 89.	6.1(1)	Damaging or interfering with ticket issuing machine	**150**
~~86~~ 90.	6.1(2)	Affixing a board, sign, placard or notice or marking any ticket issuing machine	**60**
91.	6.1(3)	Inserting other than a coin in a ticket issuing machine	**50**
92.	6.1(4)	Operating a ticket issuing machine contrary to instructions	**50**
~~89~~ 93.	6.2(2)	Failure to pay appropriate fee	**60**
~~90~~ 94.	6.3(1)(a)	Failure to display an unexpired parking ticket	**60**
~~91~~ 95.	6.3(1)(b)	Failure to display a valid parking ticket	**60**
~~92~~ 96.	6.4(1)	Stopping or parking for longer than the maximum period	**60**
~~93~~ 97.	6.5(1)(a)	Failure to stop or park parallel to the kerb in a ticket machine zone	**60**
~~94~~ 98.	6.5(1)(b)	Failure to stop or park as close to the kerb as practicable in a ticket machine zone	**60**
~~95~~ 99.	6.5(1)(c)	Failure to stop or park wholly within a parking stall in a ticket machine zone	**60**
~~96~~ 100.	6.5(1)(d)	Failure to stop or park in direction of movement of traffic in a ticket machine zone	**50**
~~97~~ 101.	7.9	Failure to display a valid permit	**85**
~~98~~ 102.	8.3	Failure to comply with a lawful direction of an authorised person	**150**
~~99~~ 103.	8.4	Failure to leave local government property when lawfully directed to do so by an authorised person	**150**

ITEM NO.	CLAUSE NO.	NATURE OF OFFENCE	MODIFIED PENALTY $
~~100~~ 104.	8.5(2)	Removing or interfering with a lawful mark on a tyre	**125**
~~101~~ 105.	8.6	Removing a notice on a vehicle	**125**
~~102~~ 106.	8.8(1)	Leaving a vehicle in a public place or thoroughfare so as to cause an obstruction	**125**
~~103~~ 107.	8.9	Attempting to or removing, damaging, defacing, misusing or interfering with any part of a parking station or parking facility	**150**
~~104~~ 108.		All other offences not specified	**85**

Reason for new fees and charges or any increase in fees and charges:

Two specific modified penalties of $300 have also been added and related to parking in areas designated for persons with disabilities.

10. STATUTORY PROCEDURES CHECKLIST

The completed and signed Statutory Procedures Checklist is attached.

11. DISCLAIMER

The Explanatory Memorandum is produced only as an aid to understanding the abovementioned local law and must not be substituted for the local law or gazetted or made available to the public in any manner or circumstance.

12. CONTACT PERSON

The local government's authorised officer for any enquiries about the local law is –

Full Name:	Victoria Patton
Position Title:	Governance Officer
E-mail address:	vicky.patton@kwinana.wa.gov.au
Telephone No.:	(08) 9439 0428
Facsimile No.:	Nil
Mobile No. (if applicable):	Nil

13.

Signature:		
PRINTED NAME:	CAROL ADAMS	JOANNE ABBISS
Public Office:	Mayor	Chief Executive Officer
Administering Authority:	City of Kwinana	

STATUTORY PROCEDURES CHECKLIST

Procedures for making a valid Local Law:
In accordance with *Local Government Act 1995* and *Ministerial Directions*

Please tick ✓ the 2nd column, where applicable, to indicate the procedural steps completed. Insert 'N/A' if the step is not applicable.

Only Box A is to be checked, not Box C, when the CEO of DEC has directed a local government.

A. *Waste Avoidance and Resource Recovery Act 2007* and *Local Government Act 1995*		
61(1)(b)		Under s. 61(1)(b) of the **WARR Act** the CEO of DEC directed a local government to adopt or amend or repeal a waste-related local law– **CEO of DEC's letter of direction: N/A**
3.12(2)		Presiding person gave notice to the meeting of the **purpose** and **effect** of the proposed local law in the prescribed manner: (a) in the agenda of that meeting; and (b) in the minutes of that meeting. **Date of Council meeting: N/A**
3.12(5)		Published the adopted local law in the *Government Gazette.* **Date of Gazette: N/A No. N/A** and Sent copy of adopted/gazetted local law to the Ministers: **Sent to Minister for Local Government: N/A** **Sent to Minister for Environment: N/A**
3.12(6)		Local public notice: (refer s.1.7 under the LG Act) Published in newspaper circulating generally throughout the State. **Name of newspaper: N/A** **Date of publication: N/A Page No.: N/A** *(copy of newspaper notice attached)* **Appeared on Notice Boards (local government offices and every library):** **From: N/A To: N/A**
3.12(7)		Sent EM material to the Joint Standing Committee on Delegated Legislation. **Hard copies sent to JSCDL: N/A** **And either:** • **Electronic copies sent by e-mail to JSCDL: N/A** **or** • **Copies on CD included with hard copies to JSCDL: No**
3.12(8)		If applicable: This local law is **an amendment local law** which amends the text of the principal local law. or This local law is **a repeal local law**.

Procedure in Box B must be completed before the commencement of 3.12 procedures of the LG Act.

B. *Local Government Act 1995* **Section 3.6 Places outside the district (eg: shoreline on public beach)**		
3.6(1)		Governor's approval was first obtained for a local government to make a local law that **applies** outside its district. **Local government's request for approval: N/A** **Notice in *Government Gazette* of Governor's approval:** **Date of Gazette: N/A No. N/A Page No.: N/A**

C. *Local Government Act 1995* *Section 3.12 Procedure for making local laws*		
3.12(2)		Presiding person gave notice to the meeting of the **purpose** and **effect** of the proposed local law in the prescribed manner[1]: (a) in the agenda of that meeting; and (b) in the minutes of that meeting. **Date of Council meeting: 8 August 2018** *(copy of Council minutes attached)*
3.12(3)(a)		State-wide public notice: (refer s.1.8 under this Act) Published in newspaper circulating generally throughout the State. **Name of newspaper: West Australian** **Date of publication: 17 August 2018 Page No.: 67** *(copy of actual newspaper notice attached)*
3.12(3a)		Local public notice: (refer s.1.7 under this Act) Published in a newspaper circulating generally throughout the State, and exhibited on a notice board of the local government's offices and every library in the district. **Name of newspaper: Weekend Courier** **Date of publication: 17 August 2018 Page No.: 27** *(If a different newspaper, copy of actual newspaper notice attached)* **Appeared on Notice Boards (local government offices and every library):** **From: 17 August 2018 To: 9 October 2018**
3.12(3)(b)		Immediately after State-wide local public notice is published: Sent copy of • the proposed local law (in gazette-ready format) **and** • a copy of the State-wide public notice, to the Minister for Local Government[2]. **Sent to Minister for Local Government: 20 August 2018** and, where applicable, same copies sent to another Minister: • Minister for Commerce[3], administering the *Dividing Fences Act 1961* (for fencing local law) or • Minister for Emergency Services, administering the *Bush Fires Act 1954* (for bush fire brigade or fire-break local law) or

[1] Refer to regulation 3 in the *Local Government (Functions and General) Regulations 1996*.

[2] The Minister for Local Government administers the *Cemeteries Act 1986* (for cemetery local laws), the *Dog Act 1976* (for dog local laws) and the *Local Government Act 1995* (for standing orders, local government property, public places, public parking, activities on thoroughfares local laws, etc).

[3] The Minister for Commerce also administers the *Local Government (Miscellaneous Provisions) Act 1960* (Parts VIII, IX & XV only) but no local laws are required these Parts.

C. *Local Government Act 1995* *Section 3.12 Procedure for making local laws*		
		• Minister for Environment, administering the *Waste Avoidance and Resource Recovery Act 2007* (for waste local law) or • Minister for Health, administering the *Health Act 1911* (for health local law and cremation-related cemetery local law) or • Minister for Agriculture and Food, administering the *Agriculture and Related Resources Protection Act 1976* (for pest plant local law) or • Minister for **N/A**, administering the ***N/A***, (for **N/A** local law) **Sent to other Minister for N/A: N/A**

C. *Local Government Act 1995* *Section 3.12 Procedure for making local laws (continued)*		
3.12(4)		**Relevant to: WARR Act and Health Act - procedures prior to adoption:** After last day for submissions, consideration at Council meeting of – • submissions received and • whether to make the local law as proposed (by absolute majority) or • whether to make a local law that was not significantly different from what was proposed (by absolute majority). **Council meeting date: [Insert meeting date & item number]** *(copy of Council minutes attached)* **and** • **gave copy of final version of proposed local law for consent under –** **WARR Act: Consent of CEO of DEC: [Insert date]** **Health Act: Consent of Exec. Director of Public Health: [Insert date]** *(Consent is required prior to local government's actual adoption.)*
3.12(4)		**LG Act - final procedure for actual adoption:** After close of public consultation period of **minimum**[4] 6 weeks, considered any submissions made about the proposed local law – and adopted the local law as proposed (by absolute majority) or adopted a local law that was considered not significantly different from what was proposed (by absolute majority). **Council meeting date: [Insert meeting date & item number]** *(copy of Council minutes attached)*
3.12(5)		Published the adopted local law in the *Government Gazette.* **Date of Gazette: [Insert date] No. [Insert number]** After the adopted local law was published in the *Government Gazette*, sent a signed and sealed copy of the adopted local law to the Minister for Local Government. **Sent to Minister for Local Government: [Insert date of letter]** and where local law was made under legislation other than the *Local Government Act 1995*, sent to the relevant Minister: • Minister for Commerce, administering the *Dividing Fences Act 1961* (for fencing local law) or

[4] The local government cannot adopt the local law before the public consultation period (minimum 6 weeks) has closed. Section 61(f) of the *Interpretation Act 1984* determines the method for calculating the consultation period. Guidance is provided in the *Local Government Operational Guidelines No. 16 on Local Laws,* downloadable from the Department of Local Government's website*:* www.dlg.wa.gov.au.

		• Minister for Emergency Services, administering the *Bush Fires Act 1954* (for bush fire brigade and fire-break local law) or • Minister for Environment, administering the *Waste Avoidance and Resource Recovery Act 2007* (for waste local law) or • Minister for Health, administering the *Health Act 1911* (for health local law and cremation-related cemetery local law) or • Minister for Agriculture and Food, administering the *Agriculture and Related Resources Protection Act 1976* (for pest plant local law) or • Minister for **[Insert text]**, administering the ***[Insert Act]***, (for **[Insert text]** local law) **Sent to other Minister for [Insert text]: [Insert date of letter]**

Cont/...

C. *Local Government Act 1995* *Section 3.12 Procedure for making local laws (continued)*		
3.12(6)		After the local law was published in the Gazette and after a signed and sealed copy of the local law was given to the Minister(s): gave local public notice of gazettal (refer s.1.7 of this Act) Published in a newspaper circulating generally throughout the District, and exhibited on a notice board of the local government's offices and every library in the district. **Name of newspaper: [Insert text]** **Date of publication: [Insert date] Page No.: [Insert number]** *(copy of Newspaper notice attached)* **Appeared on Notice Boards (local government offices and every library):** **From: [Insert date] To: [Insert date]**
3.12(7)		Within 10 working days of the Gazettal date: supplied copies of the local law, Explanatory Memorandum, Statutory Procedures Checklist and other supporting material in accordance with Ministerial Directions, to the WA Parliament's Joint Standing Committee on Delegated Legislation (JSCDL): **Hard copies sent to JSCDL: [Insert date of letter]** **And either:** • **Electronic copies sent by e-mail to JSCDL: [Insert date of e-mail]** **or** • **Copies on CD included with hard copies to JSCDL: [YES / NO]**
3.12(8)		This local law is **an amendment local law** which amends the text of the principal local law.

Signature:
PRINTED NAME: CAROL ADAMS JOANNE ABBISS
Public Office: Mayor Chief Executive Officer
Administering Authority: City of Kwinana

16.5 Request for Variations to the Draft Waste Strategy 2030

DECLARATION OF INTEREST:

There were no declarations of interest declared.

SUMMARY:

On 28 February 2018, Council adopted the City of Kwinana submission on the Waste Avoidance and Resource Recovery (WARR) Strategy Consultation Paper (Attachment A).

As a result of the submission, the Waste Authority, on 10 October 2018 provided the City with an opportunity to review and if necessary request a variation to the Draft Waste Strategy 2030: Western Australia's Waste Strategy (the Draft Strategy), included as Attachment B.

The Draft Strategy has been assessed by City Officers and in some regards is considered an improvement to the current Western Australian Waste Strategy adopted in 2012 as it creates two new objectives: Objective 1 - Avoid and Objective 3 - Protect. These objectives reflect the good work already being undertaken by local governments and seeks to develop further state wide strategies and initiatives to reduce waste generation. The draft targets, strategies and incentives further facilitate improvements in these areas.

However, the targets proposed as part of Objective 2 – Recover are of concern for the City as they:

1. conflict with the previous waste diversion targets to which the City was working towards and have been completely excluded from the draft Strategy;
2. will require all local governments (LGs) to change to a 3-bin food organics and garden organics (FOGO) system removing the freedom of local governments to choose the most appropriate waste strategy for their community; and
3. are based on a definition of residual waste that will require better practice source separation and recycling systems to be in place prior to any energy recovery without a definition for better practice.

Accordingly, a Request for Variation – Draft Waste Strategy 2030: Western Australia's Waste Strategy (Request for Variation) has been submitted to the Waste Authority by City Officers (see Attachment C) to meet the 6 November 2018 deadline. City Officers have advised the Waste Authority that the submission is subject to Council consideration and as such may be subject to amendment.

The Request for Variations is presented to Council for retrospective endorsement.

OFFICER RECOMMENDATION:

That Council endorse the Request for Variation – Draft Waste Strategy 2030: Western Australia's Waste Strategy as detailed in Attachment C.

DISCUSSION:

The City's submission to the Waste Authority Consultation Paper adopted in February 2018 (see Attachment A) covered many areas including:

- Consideration for existing contractual commitments
- Funding for implementation of WARR improvements

- Improvements to the grant process
- Re-distribution of waste levy funds for implementation of WARR programs and improvements
- Removing barriers and restrictions
- Improvement of synergies between the Waste Authority and other Departments of the Department of Water and Environmental Regulation (DWER)
- Establishment of well-researched and clear targets
- Defining order and relationships between Principles, Foundations, Opportunities for Improvement and the Objectives
- The waste hierarchy
- Better practice guidance
- The circular economy
- Support for new technologies
- Facilitating the reuse or recycling of glass bottles

Many of these recommendations have been incorporated into the Draft Strategy, however the method of achieving these changes has not been detailed.

The draft Strategy specifies three objectives and associated targets as summarised below:

Avoid	Recover	Protect
Western Australians generate less waste.	*Western Australians recover more value and resources from waste.*	*Western Australians protect the environment by managing waste responsibly.*
2025 – 10% reduction in waste generation per capita **2030** – 20% reduction in waste generation per capita	**2025** – Increase material recovery to 70% **2030** – Increase material recovery to 75% **2020** – Recover energy only from residual waste	**2030** – No more than 15% of waste generated in Perth and Peel regions is landfilled **2030** – All waste is managed and/or disposed to better practice facilities

The Avoid and Protect objectives and targets are achievable, and seek to improve and complement the services already being provided to the community by local government.

Conversely, the Recover targets are disruptive, are unrealistic in the current environment and have no regard for the City's direction that has been developed and adopted on the basis of the current Waste Strategy targets as below:

Municipal Solid Waste Sector Targets

- 50% diversion from landfill of material presented for collection in the metropolitan region by 30 June 2015 (metropolitan region recovery in 2009/10 was 36%)
- 65% diversion from landfill of material presented for collection in the metropolitan region by 30 June 2020

The draft Strategy proposes new targets based on material recovery, as opposed to diversion of waste from land fill, representing a significantly increased target for local governments to achieve.

16.5 REQUEST FOR VARIATIONS TO THE DRAFT WASTE STRATEGY 2030

RECOVER TARGETS		
2025 – Increase material recovery to 70% 2025 – All local governments in the Perth and Peel regions provide harmonised kerbside collection systems that include FOGO 2030 – Increase material recovery to 75% Recover energy only from residual waste		
Waste generators		**Waste managers***
Community	**Government and industry**	**Waste industry**
2020 – Increase MSW material recovery to 65% in the Perth and Peel regions, 50% in major regional centres 2025 – Increase MSW recovery to 67% in the Perth and Peel regions, 55% in major regional centres 2030 – Increase MSW material recovery to 70% in the Perth and Peel regions, 60% in major regional centres	C&I sector – Increase material recovery to 70% by **2020**, 75% by **2025**, 80% by **2030** C&D sector – Increase material recovery to 75% by **2020**, 77% by **2025**, 80% by **2030**	2030 – All waste facilities adopt resource recovery better practice

Accordingly, the Summary of the City's Request for Variation specifies that the City requests variations to:

1. *Community Targets: Increase MSW material recovery in the Perth and Peel regions*
   It is requested that these targets revert back to reflect the 2020 waste diversion target rather than material recovery targets. If not, it is requested that the target dates for material recovery be increased by 5 years each to reflect the WA context at the moment and provide more realistic targets as follows:
   - ***2020*** *– Increase diversion from landfill of material presented for collection in the metropolitan region to 65%.*
   - ***2025*** *– Increase diversion from landfill of material presented for collection in the metropolitan region to 67%.*
   - ***2030*** *– Increase diversion from landfill of material presented for collection in the metropolitan region to 70%.*

   Or
   - ***2025*** *– Increase MSW materials recovery to 65% in the Perth and Peel regions*
   - ***2030*** *– Increase MSW materials recovery to 67% in the Perth and Peel regions*
   - ***2035*** *– Increase MSW materials recovery to 70% in the Perth and Peel regions*

2. *Target 2025 - all local governments in the Perth and Peel region to change to a harmonised kerbside collection that include food organics and garden organics (FOGO).*
   It is requested that this target be varied to enable local governments to determine their own approach to increasing waste diversion targets set by the State.

3. *The inconsistencies and ambiguity in the Draft Strategy around the definition of residual waste and the associated target date for energy recovery.*
   It is requested that the definition of residual waste be reconsidered following further assessment and definition of what is "better practice".
   It is also requested that the target date for energy recovery from residual waste only be delayed until 2025.

16.5 REQUEST FOR VARIATIONS TO THE DRAFT WASTE STRATEGY 2030

Further to these requests for variation, the City also raises concerns with a number of suggestions and statements made within the Draft Strategy that have not been supported by further evidence or detail. These are highlighted as part of the City's submission as other variations to the Draft Strategy for consideration and action.

The other requested variations for consideration broadly include:

1. The Waste Strategy 2030 Action Plan should be presented for consideration with the draft Strategy.
2. That additional costs associated with changes must be funded through the waste levy and not passed onto the ratepayers.
3. The requirement to consult with local government as a key stakeholder in the development of the Action Plan.
4. The concerns in relation to the acknowledged distance from waste end markets and how this has not been considered in drafting the Recover targets.
5. The recommended changes to the Recover targets.
6. Although it has been acknowledged that there are only a few recycling options available in Australia, unrealistic goals have been set for WA local governments.
7. The assumption that local governments will change to better practice without consideration of whether those practices will result in added costs to the ratepayers.
8. Local markets and solutions will only be considered by local government if they are cost effective.
9. The failure of the draft Strategy to outline how a Circular Economy will be achieved in WA's resource driven economy.
10. The requirement for legislative change and easement of requirements for re-use of construction and demolition waste by local governments.
11. The fact that markets for re-use of processed FOGO are virtually non-existent due to the poor quality of the composted material.
12. Local government has been incorrectly included in the requirement to lead collaboration between State Government agencies.
13. Harmonised kerbside FOGO collections will not result in less contamination as is evidenced by the experience with recyclables.
14. The summary of Energy Recovery does not factor the by products such as fly ash and bottom ash that could also be re-used, nor does it account for the industrial symbiosis from steam, heat and other by-products.
15. The Draft Strategy refers to amendments to the *Waste Avoidance and Resource Recovery Regulations 2008* but does not outline what the amendments will include and how they will support local government.
16. A larger share of the waste levy should be returned to local government to support implementation of strategies that would otherwise be cost prohibitive to implement.

LEGAL/POLICY IMPLICATIONS:

Part 4 – Management Documents of the *Waste Avoidance and Resource Recovery Act 2007* stipulates the process involved in preparing the State Waste Strategy.

Section 40 below explains how the Strategy relates to the City's waste strategy.

40. Waste plans

(1) In this section —
plan for the future means a plan made under the Local Government Act 1995 section 5.56.

(2) A local government may include within its plan for the future a waste plan outlining how, in order to protect human health and the environment, waste services provided by the local government in the relevant district will be managed to achieve consistency with the waste strategy.

FINANCIAL/BUDGET IMPLICATIONS:

There are no budget implications directly related to this report, however there may be financial implications dependent on the form of the final Waste Strategy and the mechanisms the government chooses to use to implement the Strategy.

ASSET MANAGEMENT IMPLICATIONS:

No asset management implications have been identified as a result of this report or recommendation.

ENVIRONMENTAL IMPLICATIONS:

The Request for Variations by the City also raises the concern that a change to a 3-bin FOGO system will result in added transport related and process related carbon emissions that will have a detrimental impact on the environment.

STRATEGIC/SOCIAL IMPLICATIONS:

This proposal will support the achievement of the following outcome and objective detailed in the Corporate Business Plan.

Plan	Outcome	Objective
Corporate Business Plan	Community Services	6.1 Encourage waste minimisation, recovery and recycling as well as ensure appropriate disposal and reuse

COMMUNITY ENGAGEMENT:

Community engagement was not required for this report.

PUBLIC HEALTH IMPLICATIONS

The request for variations to the draft Strategy, seeks to ensure the maintenance of the following determinant of health factors:

Built Environment - Sanitation and Neighbourhood Amenity.

16.5 REQUEST FOR VARIATIONS TO THE DRAFT WASTE STRATEGY 2030

RISK IMPLICATIONS:

The risk implications in relation to this proposal are as follows:

Risk Event	The State legislates for all local governments to comply with the draft Waste Strategy.
Risk Theme	Failure to fulfil statutory regulations or compliance requirements Inadequate supplier/contract management Inadequate environmental management
Risk Effect/Impact	Financial
Risk Assessment Context	Operational
Consequence	Major
Likelihood	Almost certain
Rating (before treatment)	Extreme
Risk Treatment in place	Avoid - remove cause of risk
Response to risk treatment required/in place	Request for a variation to the Draft Strategy 2030 and take other necessary measures to ensure that compliance with the draft Waste Strategy is not compulsory for the City.
Rating (after treatment)	High

COUNCIL DECISION

322

MOVED CR S MILLS **SECONDED CR P FEASEY**

That Council:

1. **endorse the Request for Variation – Draft Waste Strategy 2030: Western Australia's Waste Strategy as detailed in Attachment C.**
2. **authorise the Mayor and Chief Executive Officer to lobby and advocate the City's position with key stakeholders.**

CARRIED
6/2

NOTE – That the officer recommendation be amended to include point 2.

ATTACHMENT A

Draft Submission - Waste Avoidance and Resource Recovery Strategy Consultation Paper

Closing Date: 1 March 2018

The City of Kwinana (the City) is the second fastest growing metropolitan local government in Western Australia, facilitating waste and recycling services for its 40,000+ residents and commercial businesses. The City supports the submission prepared by WALGA and provides the following additional comments: -

In preparing the Waste Avoidance and Resource Recovery (WARR) Strategy, consideration must be given to the findings of the Auditor General's Report of October 2016 on the current Waste Strategy, which highlighted that none of the targets have been met and identified potential improvements in order to drive the new WARR Strategy objectives and targets.

The WARR Strategy must take into account the following issues that affect the City and local governments in general.

- Consideration for existing contractual commitments – The City of Kwinana with the aim of increasing diversion from landfill has entered into a long term contract to supply its waste for conversion to energy. Any changes to the strategy must factor in these long term commitments, which were in accordance with the requirements of meeting the current Waste Strategy diversion target of 65% waste diversion by 2020.
- Funding for implementation of WARR improvements – If new waste initiatives and measures proposed by the City meet the funding requirements of the Waste Authority and will assist in the State achieving its targets, it is recommended that the Authority provide an appropriate level of funding to support such initiatives and measures. As an example – as part of the Better Bins funding program, $30 is provided for each residential property on a 3-bin system. This is insufficient to make the appropriate infrastructure purchases and shifts the costs of implementing such a program on the City and its residents. The City would also have to bear the associated costs of collections and processing of organic materials.
- Improvements to the grant process – Using the same example of the Better Bins funding, local governments that did apply for grants, had to spend a considerable amount of time revising applications and approvals, while the program was constantly refined and amended. On receiving funding, local governments also spent an inordinate amount of time on the reporting requirements. To achieve better results, the Waste Authority should consult with local government to streamline the application and approval process, and remove the excessive amounts of restrictions and auditing that slow down the process of implementing the program.

- Re-distribution of waste levy for implementation of WARR programs and improvements – As per the WALGA submission, 25% of the funds raised through the waste levy must be paid into the WARR Account. In the 2016-17 financial year only $11 million out of the possible $19 million was used for funding programs and initiatives. The Waste Authority needs to review and broaden the scope of the funding programs to ensure that the funds are fully subscribed and effective improvements can be achieved. It is also considered appropriate for the percentage allocation into the WARR account to be increased to at least 50% of the funds raised.
- Removing barriers and restrictions – The City did not apply for the grants for re-use of construction and demolition materials for road-base, which required the creation and implementation of a Policy. While there was a general interest to develop such a Policy and despite the ease of availability of such materials, concerns were raised in relation to the restrictions on the standard required to be able to use recycled construction and demolition materials for road-base. The Waste Authority needs to work through such barriers and create end markets for such products.
- Improvement of synergies between the Waste Authority and other Departments of the Department of Water and Environmental Regulation (DWER) – As per the findings of the Auditor General's Report, there is a lack of clarity between the roles and responsibilities of the Authority and other departments within DWER. In some instances, there are opposing priorities for departments, such as the introduction of suitable waste infrastructure and the environmental impact caused by such infrastructure. The WARR Strategy needs to be adopted as a DWER Strategy, and supported by the whole organisation. In particular, the regulatory part of DWER should work towards achieving approvals for new initiatives that assist in achieving the outcomes of the WARR Strategy.
- Establishment of well-researched and clear targets – The City consistently used the waste diversion targets set in the Waste Strategy to drive change and improvements. The City agrees with the selection of the three objectives to maximise environmental benefit, reduce waste generation and increase recovery. However, future targets should be realistic, in that they are reasonably achievable in the desired timeframe, with more ambitious waste diversion targets being seen as a longer-term goal.
- Defining order and relationships between Principles, Foundations, Opportunities for Improvement and the Objectives – The consultation paper has done well to capture varied Principles, Foundations and Opportunities for Improvement. For the City to be able to plan and work towards any improvements in line with the set Targets, it is essential to be able to relate these back to the Objectives and Targets set in the new WARR Strategy. Further, for the purpose of being able to make applications to the Authority for grants or funding, it is important to identify whether all Principles, Foundations and Opportunities for Improvement have the same level of importance or whether there is an order of importance. Lastly, for the purpose of the WARR Strategy definitions for both Principles and Foundations are recommended. This will help determine what is best included under each heading.
- The Waste Hierarchy – The Waste Hierarchy diagram from the current Waste Strategy is useful when explaining the order of importance for waste management initiatives. It is therefore important to have the diagram included in some form in the new WARR Strategy. The Authority may consider having the Waste Hierarchy as a Foundation rather than a Principle once they are defined.

- Better Practice Guidance – The Better Practice Guidance documents have been useful for the City when they have been prepared following consultation with relevant stakeholders. They are seen as an education tool or if noted as 'Better Practice', as an Opportunity for Improvement, rather than as a Foundation.
- The Circular Economy – As per WALGA's submission, thorough research needs to be conducted before determining if the Circular Economy should be included in the framework of the new WARR Strategy. Regardless of whether it is to be included, there needs to be strong focus on Product Stewardship and the design of products with the end use in mind. This would increase the number of products that get reused or recycled and more importantly would assist in waste avoidance. The WARR Strategy should therefore be strong on incentives for companies doing the right thing and/or disincentives for those that do not follow suit.
- Support for new technologies – The new WARR Strategy should be flexible enough to support new and existing innovative waste disposal, reuse and recycling technologies. In particular, the WARR Strategy should recognise the waste diversion and environmental benefits of Waste-To-Energy, when considered holistically.
- Facilitating the reuse or recycling of glass bottles – The WARR Strategy should specifically address the problem of glass bottle recycling. In particular, the WARR Strategy should target the creation of a glass bottle recycling facility within the State. Consideration should also be given to strategies that promote or require the reuse of glass bottles, rather than the crushing of glass bottles for use in new glass products.

Waste Authority

Waste Strategy 2030

Western Australia's Waste Strategy

DRAFT ONLY

Waste Authority
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Acknowledgements
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This document is available in alternative formats and languages on request to the Waste Authority.

Statutory context
The Waste Authority is charged with promoting better waste management practices in Western Australia under the *Waste Avoidance and Resources Recovery Act 2007*. One of the Authority's functions under the Act is to draft, for the Minister for Environment's approval, a long term waste strategy for the whole of the State for continuous improvement of waste services, waste avoidance and resource recovery, benchmarked against best practice and targets for waste reduction, resource recovery and the diversion of waste from landfill disposal. This strategy takes a ten year and beyond view and must be reviewed at least every five years. This Strategy was approved by the Minister for Environment on xx xx 2018, and replaces Western Australia's inaugural waste strategy, *Creating the Right Environment*, approved and published in 2012.

DRAFT ONLY

Contents

Invitation from the Minister

Western Australia is a spectacularly beautiful place with a vibrant and growing population.

It's because of this that we all have a significant opportunity in terms of how we live our lives and the impact we have on our environment.

We can make a significant impact by acting on the waste we generate and how we manage resources from extraction through to manufacturing, use and disposal.

Right now, Western Australia is close to leading the "wrong lists". National figures from 2014-15 (the latest available as at September 2018) show Western Australia had the highest rate of waste generation per capita[1] in the nation, and the equal third lowest rate of resource recovery – 13 points below the national average.

We have an obligation to our current community and generations to come to generate less waste, extract more from our valuable resources and to better manage the disposal of our waste.

Waste Strategy 2030 rises to address that challenge and the opportunities that better choices and better waste management present.

We will have to work hard to meet the ambitious targets set out in this Strategy and deliver against long-standing issues in the waste community. We won't, for example, be able to meet our 2025 recovery targets without all metropolitan Local Government's adopting a three-bin FOGO system, and I will work with those local governments to achieve this.

I acknowledge that with this comes significant environmental, social, cultural and economic impacts and opportunities associated with improved waste management.

Across Australia, the waste sector contributes more than $10 billion a year to the economy. At the same time, materials worth hundreds of millions of dollars are lost to landfill each year (ABS, 2014).

High-performing waste and recycling systems which see materials recovered, reused and recycled can and do reduce this impact. The creation of a circular economy has the potential to harness the economic value of these materials that would otherwise be lost, and drive investment in infrastructure and jobs.

Reducing the amount of waste disposed of to landfill can also generate significant economic opportunities for the Western Australian community. The National Waste Policy estimates that for each 10,000 tonnes of waste recycled, 9.2 full-time equivalent jobs are created compared to only 2.8 jobs for landfill (Environment Protection and Heritage Council, 2009).

With an increasing population and our current waste management performance, maintaining the status quo is not an option.

But there is an upside; we can make waste work for us – and enjoy the environmental, social, cultural and economic benefits improved waste management can deliver.

Waste is everyone's business – individuals, households, neighbourhoods, community groups, schools, small and big businesses, local governments, waste managers, the State Government and the media.

There's a big challenge ahead of us all and this strategy is about finding a united way forward.

The McGowan Government will continue to show leadership in the waste arena for the benefit of all Western Australians now and into the future.

As WA's Environment Minister, I encourage everyone to act on waste and own your impact – whether it's in your role as a consumer, producer, waste manager or regulator.

We've made good progress in recent years and there's great momentum building.

Let's harness that commitment and energy in the years ahead and work towards a cleaner future for all Western Australians.

Hon Stephen Dawson MLC
Minister for Environment

[1] Dr Joe Pickin and Paul Randell, *Australian National Waste Report 2016*, Department of the Environment and Energy, Energy and Blue Environment Pty Ltd. Figures exclude fly-ash (a by-product of coal-fired power stations)

Introduction by the Chair

Western Australians are consciously reusing, reprocessing, recycling and avoiding waste at an increasing rate. We are generating less waste and recycling more. However, to protect our unique environment from the impacts of waste and litter, and to maximise the benefits of good waste management, more work needs to be done.

Building on and updating the first *Western Australian Waste Strategy: Creating the Right Environment* published in 2012, this strategy introduces significant transformations aimed at Western Australia (WA) becoming a circular economy, with a greater focus on avoidance as well as moving to targets for material recovery and environmental protection in addition to landfill diversion.

A circular economy means transitioning from the current take-make-use and dispose system to a material efficiency approach which aims to keep products, components and materials at their highest utility and value for as long as possible.

In 2014-15, WA's recycling rate was 48 per cent, which is lower than other mainland states.

Waste collection and processing arrangements vary considerably across WA. Long-term planning for waste processing and recycling facilities and local recovery options would benefit resource recovery and promote the most efficient use of resources assisted by economic incentives, modern regulations, compliance and enforcement.

Community engagement, acceptance and awareness is as important as the provision of physical infrastructure and collection systems. Consistency of messaging across homes, workplaces and public areas is a key fundamental that needs to be tailored to local recovery infrastructure and systems.

The waste management sector is in a transitional phase and will require clear direction and guidance going forward that may include more directive approaches over voluntary ones. This could be aligned with careful reinvestment of waste levy funds into programs and alternative delivery methods to support implementation of our waste strategy.

There needs to be commitment by all stakeholders of adopting best practice management and engagement and ensuring transition and waste plans are implemented in a timely manner.

The approach taken in this strategy is founded on working collaboratively across all levels of government, industry, the social enterprise sector and the community, supported by government leading by example in areas such as sustainable procurement, minimum levels of recycled content and underpinned by targets and action plans.

The focus of this strategy, including priorities and targets, is on solid waste. However, the principles and approaches in this strategy apply to waste management across WA, regardless of the type, form or source of waste.

Minimising waste and protecting our environment is important to all West Australians and with this renewed focus I am confident we will move towards a more sustainable, low-waste, circular economy.

I look forward to sharing this journey with you.

Marcus Geisler
Waste Authority Chairman

Key strategy elements

VISION	*Western Australia will become a sustainable, low-waste, circular economy in which human health and the environment are protected from the impacts of waste.*		
OBJECTIVES	**Avoid** *Western Australians generate less waste.*	**Recover** *Western Australians recover more value and resources from waste.*	**Protect** *Western Australians protect the environment by managing waste responsibly.*
TARGETS	◉ **2025** – 10% reduction in waste generation per capita ◉ **2030** – 20% reduction in waste generation per capita	◉ **2025** – Increase material recovery to 70% ◉ **2030** – Increase material recovery to 75% ◉ Recover energy only from residual waste	◉ **2030** – No more than 15% of waste generated in Perth and Peel regions is landfilled. ◉ **2030** – All waste is managed and/or disposed to better practice facilities
HEADLINE STRATEGIES	• Deliver a harmonised kerbside collection system, which includes food organics and garden organics (FOGO), in all Perth and Peel regions by 2025 – provided by local governments with funding support from the state. • Implement local government waste plans, which align local government waste planning processes with the Waste Strategy 2030. • Implement sustainable government procurement practices that encourage greater use of recycled products and support local market development. • Provide funding to promote the recovery of more value and resources from waste with an emphasis on focus materials. • Review the scope and application of the waste levy to ensure it meets the objectives of the Waste Strategy 2030. • Develop state-wide communications to support consistent messaging on waste avoidance, resource recovery and appropriate waste disposal behaviours. • Review and update data collection and reporting systems to allow waste generation, recovery and disposal performance to be assessed in a timely manner. • Undertake a strategic review of Western Australia's waste infrastructure (including landfills) by 2020 to guide future infrastructure development.		

Supporting documents

Other documents which align with or support this strategy *Waste Strategy 2030* include the:

1. Waste Strategy 2030 Action Plan
2. Waste Authority position and guidance statements
3. State Waste Infrastructure Plan
4. Annual Business Plan
5. Waste Data Strategy

Setting the direction

Waste is Australia's most rapidly increasing environmental and economic metric, according to the Australian Bureau of Statistics[2].

Western Australian's per capita waste generation rates are higher compared to other jurisdictions, while our recovery rates are lower. This poor performance partly reflects some of the unique characteristics of WA such as our geographical size, isolation from markets, vast regional and remote areas, and a heavy reliance on mineral and resource industries. Despite this, there are significant opportunities to improve our waste and recycling practices and performance.

The Australian waste sector contributes over $10 billion a year to the economy. Materials worth hundreds of millions of dollars are lost to landfill each year (ABS, 2014). High performing waste and recycling systems in which materials are recovered, reused and recycled can reduce this impact. The creation of a circular economy has the potential to harness the economic value of materials and drive investment in infrastructure and jobs.

Reducing the amount of waste disposed of to landfill can generate significant economic opportunities for the WA community. The *National Waste Policy* estimates that for each 10,000 tonnes of waste recycled, 9.2 full time equivalent jobs are created compared to only 2.8 jobs for landfill (Environment Protection and Heritage Council, 2009).

Most importantly, waste can have a significant impact on the environment and public health through greenhouse gas emissions, pollution, biodiversity loss and resource depletion (Environmental Protection Authority, 2015). Reducing the volume of waste generated is the best way to manage those risks. It is also critical that where waste cannot be recovered it is safely disposed.

The *Waste Avoidance and Resource Recovery Act 2007* requires the development of a long-term waste strategy for the state to drive continuous improvement in waste services, waste avoidance and resource recovery; and set targets for waste reduction, resource recovery and the diversion of waste from landfill.

This new waste strategy sets a direction to guide such decisions and builds on the state's previous *Western Australian Waste Strategy: Creating the Right Environment*.

It has been developed in consultation with the WA community, industry and government and builds on the *Western Australian Waste Avoidance and Resource Recovery Strategy consultation paper*. Stakeholder feedback confirmed an overall desire for WA to do more and improve its waste management performance relative to other Australian jurisdictions.

Given this need, this waste strategy has been developed to set the direction for all Western Australians and guide their decisions with regards to waste. To do this, the waste strategy includes a vision for Western Australians to strive for, which is supported by principles, objectives, targets, priorities and strategies to provide stakeholders with clear guidance on how to align their decision making with the intent of the waste strategy's vision.

The waste strategy will also be supported by an action plan that will outline specific actions to be implemented to achieve the objectives of the strategy. The action plan will be prepared by the Waste Authority in consultation with relevant State Government agencies, for consideration by the Minister for Environment. The waste strategy will be reviewed in five years, while the action plan will be reviewed on a more regular basis.

[2] Pickin and Randell, 2017.

Our starting point

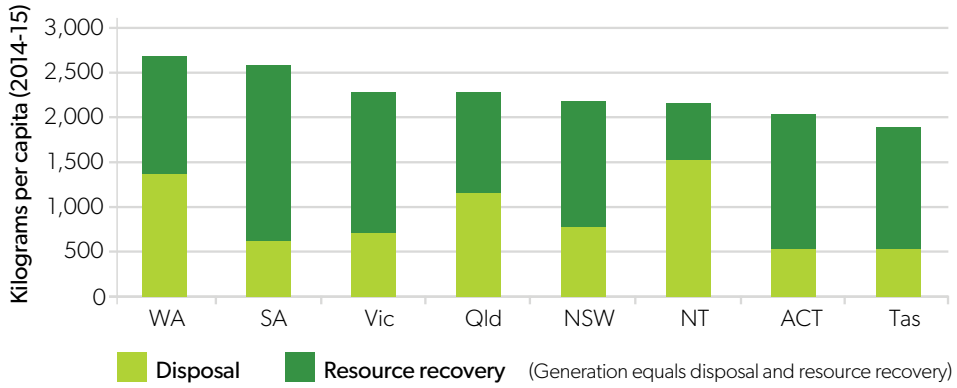
This strategy builds on Western Australia's previous waste strategy *Creating the Right Environment*, which was introduced in 2012 and achieved significant improvements in recycling, reducing waste generation, diverting construction and demolition waste, and better managing commercial and industrial waste.

The achievements were encouraging, but not enough.

In 2014-15 Western Australians:

- generated more waste than people in other Australian states and territories (2,623 kilograms per capita per annum);
- disposed of the second highest amount of waste to landfill (1,358 kilograms per capita per annum); and
- had the equal second lowest rate of resource recovery (48 per cent)[3].

Figure 1: Waste disposal and resource recovery by state (Pickin and Randell, 2017)



Western Australia has some challenging features when it comes to waste management but these cannot be an excuse. Our state is vast and located a considerable distance from waste end-markets, which can impact investment in waste and recycling infrastructure and overall recycling rates. This vastness also means it can be difficult to prevent environmental impacts from waste, through activities such as illegal dumping.

However, we have encouraging waste management results and momentum on which to build. In the nine years to 2014–15, total waste generation in Western Australia increased by about 20 per cent – or an average of 2.1 per cent per year[3]. However, our population also increased over that time and, on a per capita basis, waste generation actually decreased marginally by 0.3 per cent per year.

In terms of waste recovery over the same period, the state's overall picture also improved – waste to landfill declined and resource recovery rose. In particular:

- resource recovery rate increased from 34 per cent to 48 per cent;
- recycling tonnages rose an average of 6.8 per cent;
- the amount of waste disposed of declined by 6 per cent, by tonnage, or an average fall of 0.7 per cent per year; and
- waste disposal in WA dropped by 24 per cent on a per capita basis, or 3 per cent per year on average, which was the nation's largest fall in waste disposal per capita over the period[4].

[3] Pickin and Randell, 2017

[4] ASK Waste Management, 2017

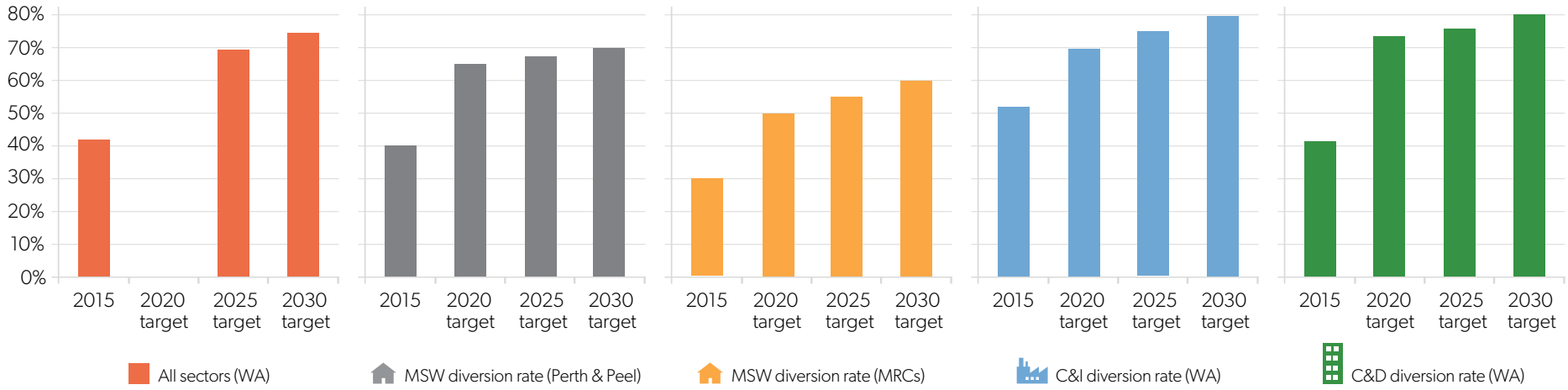
Table 1: Changes in waste generation and landfill in Western Australia, 2010–11 and 2014–15 (ASK Waste Management, 2017)

	2010–11	2014–15	Percentage change
Generation – total	6.53 million tonnes	6.23 million tonnes	↓5%
Generation – per capita	2,764 kilograms	2,437 kilograms	↓12%
Waste to landfill	4.49 million tonnes	3.61 million tonnes	↓20%
Resource recovery	2.04 million tonnes	2.62 million tonnes	↑28%

The 2017 *Recycling Activity Review* commissioned by the Waste Authority reported generally encouraging trends in waste management in Western Australia between 2010–11 and 2014–15. Note: National and State data differ due to hazardous waste being included in national data sets and some overlap in data collection and attribution.

The journey to becoming a circular economy will not be easy and, as shown in Figure 2, there is a substantial gap between our current performance and the performance required to achieve our waste generation and material recovery targets.

Figure 2: Resource recovery performance in 2015–16 and waste strategy targets for 2020, 2025 and 2030 (ASK Waste Management 2017)



Vision

Western Australia will become a sustainable, low-waste, circular economy in which human health and the environment are protected from the impacts of waste.

As Western Australians, we live in a unique environment and we recognise its value and importance. We share a desire to be environmentally sustainable.

To be sustainable means to be a low-waste society. Waste avoidance is a priority, which means we strive to avoid the unnecessary generation of waste.

This waste strategy recognises that some level of waste generation is unavoidable and so encourages a circular economy approach, where any waste that is generated is valued as a resource that can be reused or recycled for the benefit of the Western Australian economy.

A sustainable, circular economy also means we manage waste to protect the environment. Such management needs to occur through the entire life cycle – from design and manufacture, through to use and then disposal options consistent with the waste hierarchy.

Waste Strategy 2030 recognises that individuals, governments and industry all generate waste and can play an important role in avoiding waste, recycling and disposing of waste correctly to protect the environment. The waste industry has an important role to play in terms of maximising the recovery of resources and then managing the disposal of residual waste, or waste that cannot be practically recovered.

Objectives

This strategy includes three objectives to guide the Western Australian community and enable the development of a sustainable, low-waste and circular economy.

These objectives frame the priorities and strategies that will contribute to delivering on the vision:

Objective 1

Avoid

Western Australians generate less waste.

Objective 2

Recover

Western Australians recover more value and resources from waste.

Objective 3

Protect

Western Australians protect the environment by managing waste responsibly.

Targets

Waste Strategy 2030 provides a long-term strategy for the State for continuous improvement of waste management benchmarked against best practice.

It includes targets for waste avoidance, resource recovery and environmental protection, including the diversion of waste disposed to landfill.

Under each objective, high-level targets have been set for the state that are Specific, Measurable, Achievable, Relevant and Time-bound (SMART).

These targets will support our move towards becoming a sustainable, low-waste and circular economy and allow progress to be monitored.

Establishing baseline data is an ongoing challenge in waste management and ensuring data is provided by key sources is an important focus of this strategy.

Improved data collection and analysis will better enable the measurement and evaluation of waste management programs and initiatives. In turn, we will be able to ensure funding and other resources are directed where they are most needed and can be most effective.

For the purposes of this strategy, comparisons are made with 2014–15 national data which represent the latest figures available during the consultation and development of the strategy.

Overall objectives and state targets

Avoid	Recover	Protect
Western Australians generate less waste.	*Western Australians recover more value and resources from waste.*	***Western Australians protect the environment by managing waste responsibly.***
⊙ **2025** – 10% reduction in waste generation per capita ⊙ **2030** – 20% reduction in waste generation per capita	⊙ **2025** – Increase material recovery to 70% ⊙ **2030** – Increase material recovery to 75% ⊙ **2020** – Recover energy only from residual waste	⊙ **2030** – No more than 15% of waste generated in Perth and Peel regions is landfilled ⊙ **2030** – All waste is managed and/or disposed to better practice facilities

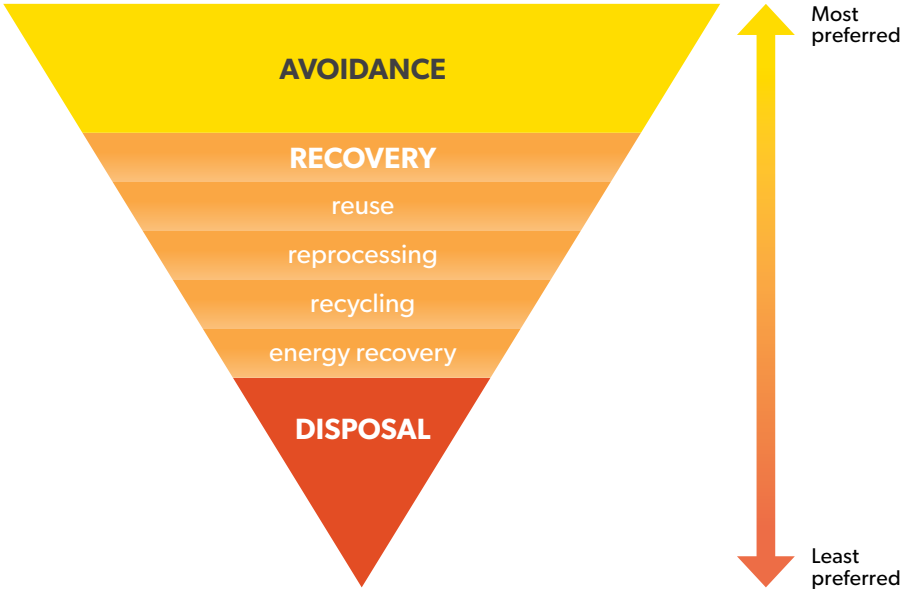
Guiding concepts

Waste hierarchy

Waste Strategy 2030 applies the waste hierarchy, which is a widely accepted decision making tool which is set out in the *Waste Avoidance and Resource Recovery Act 2007*. The waste hierarchy ranks waste management options in order of their general environmental desirability. The waste hierarchy is used alongside other tools (including economic, social and environmental assessment tools) to inform decision making.

Waste avoidance is the most preferred option in the hierarchy.

Figure 1: Waste hierarchy



Resource recovery options recover value from materials, thereby offsetting the environmental impacts of extracting and processing raw materials. Energy recovery is the least preferred recovery option.

Disposal is the least preferred option. Disposal generally recovers the least value from materials and delivers the least environmental benefit.

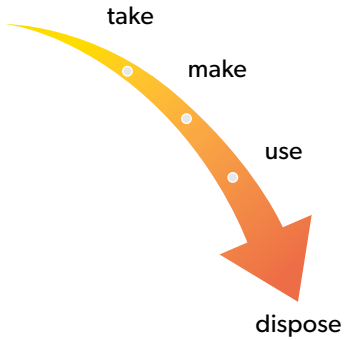
Circular economy

A circular economy builds on long-standing sustainability concepts, including life cycle thinking and resource efficiency, and it complements the waste hierarchy. A circular economy refers to the flow of both materials and energy – it moves away from the linear 'take, make, use and dispose' model to one which keeps materials and energy circulating in the economy for as long as possible.

A circular economy presents opportunities for increased local recycling activity. Local solutions create local jobs, and minimise the costs and impacts of unnecessary transport.

Local solutions are particularly important in a state as large as WA where access to markets is limited, and transport costs and impacts are high. WA has an opportunity to benefit from greater local recycling activity. If local recycling options are not available, solutions within Australia will be preferred.

Figure 3: Current waste approach versus circular economy

Current approach	Circular economy
	
Linear flow of materials – 'take, make, use and dispose' model.	Circular flow of materials – materials sorted and retained in the economy for as long as possible.
Limited use of renewable materials and energy.	Preference for renewable materials and energy.
Significant volumes of materials disposed of and lost to the economy. Loss of embodied materials, energy and water.	Materials recovered as high up the waste hierarchy as possible. Embodied materials, energy and water retained in the economy. Organic materials re-enter and regenerate the environment safely (for example, as compost).
Materials managed locally and globally.	Preference to manage materials locally to reduce the costs and impacts of transport, and to provide local employment and investment opportunities.
Economic value of materials, employment and investment not fully accounted for.	Economic value of materials, employment and investment accounted for.
Limited focus on life cycle thinking.	Products designed and manufactured to minimise environmental impact through whole of life.

Behaviour change – knowledge, enabling infrastructure, incentives

Building on the Western Australian Waste Strategy: *Creating the Right Environment* (2012), *Waste Strategy 2030* aims to change behaviour through a combination of strategies grouped around knowledge, enabling infrastructure and incentives.

Knowledge plays an important role in getting individuals and organisations started on behaviour change, but it is only a start. Knowledge needs to be complemented with the incentives and practical support individuals and organisations need to act on their decision to change behaviours.

Access to appropriate enabling infrastructure is critical in allowing individuals and organisations to engage with waste management options to improve their effectiveness and efficiency. Enabling infrastructure includes the physical facilities necessary to manage waste, as well as the organisational structures of government and legislation applying to individuals and organisations.

Appropriate knowledge and enabling infrastructure can assist in removing barriers to behaviour change, and incentives can provide a driving force for change. Incentives can be positive, such as funding, or negative, such as penalties and compliance actions.

Our principles

Five key principles, aligned with legislation, guide the thinking behind *Waste Strategy 2030* and will drive future decision making.

Shared responsibility and partnership – owning your impact

The state's environmental resources belong to all Western Australians and we all have a role to play in protecting them. The State Government will lead by example by working collaboratively with the community, industry and governments to improve waste management outcomes.

We will support product stewardship and extended producer responsibility as part of our approach to shared responsibility.

Innovation and growth

Western Australia will encourage, embrace and celebrate innovation in all forms that enables and expands our waste management capacity and know-how.

Better practice

Western Australians will pursue better practice approaches in waste management that take into account the full costs, benefits and impacts of waste management decisions. We will stay abreast of national and international best practice and responsibly measure, evaluate and benchmark our own performance against it. When better practice waste management is promoted by State Government, stakeholders will adjust practices to meet or exceed this new benchmark.

Waste as a resource

Western Australians will adopt and implement the waste hierarchy, avoiding the generation of waste where possible, maximising the recovery of waste that is generated, and protecting the environment from the impacts of disposal.

Intergenerational equity

Western Australians will make waste management decisions which ensure the health, diversity and productivity of our environment is maintained or enhanced for the benefit of future generations.

Our approach

Using your influence – owning your impact

As individuals, we make decisions in different roles and have different spheres of influence when avoiding and recovering waste and also when protecting the environment from the impacts of disposal.

In our different spheres of influence we can have a greater or lesser impact on what resources or materials are used, how long they stay in circulation, what waste is generated, what resources are recovered and, ultimately, the method of disposal and the impact that has on our environment.

An individual or single household can make positive choices to contribute to the circular economy. When those same individuals act collectively, in our neighbourhoods, school and community groups, they can make an even greater difference. In their workplaces, making decisions about how they operate and make purchasing choices, for example, that contribute to the circular economy or influence industry and government.

As manufacturers, industry can make significant contributions to the circular economy through shifts to more sustainable design and manufacturing methods, and enabling greater resource recovery. As waste managers, the sector can innovate to improve waste management outcomes and better protect the environment.

Local, State and Commonwealth governments can influence, educate and inform – and can also be significant consumers whose purchasing decisions and procurement policies can have very positive impacts and influence. They have important legislative and regulatory roles and develop and implement strategies. Australia is also part of global action on waste management.

Local solutions and markets

Waste Strategy 2030 places a focus on identifying and prioritising local market solutions for those recyclable materials traditionally exported from the state. Local markets for large volume wastes, such as construction and demolition waste and organic waste lend themselves to being managed close to the source of generation for economic and environmental reasons. This is an example of the circular economy approach in action, supporting local innovation and local jobs.

For other priority materials such as plastics, it is not as straightforward to identify local reuse options across the state that make sense locally. This strategy places an increased focus on promoting procurement decisions that preference local markets and play a role in supporting the development of a remanufacturing industry within Western Australia, along with the employment and investment it can bring to the state.

Attracting investment into local reuse options requires a degree of certainty which has not been present under standard market conditions in Western Australia. This will rely on procurement decisions recognising the benefits that local reprocessing, and the use of products made locally from recycled materials, can offer compared to national or international export options.

Waste generators and waste managers

Waste Strategy 2030 recognises the roles that different individuals and organisations have in generating and managing waste. This strategy recognises entities that are primarily generators of waste (community, local and state government, and industry), and entities that are primarily managers of waste (the waste industry, including private industry and local government).

This approach allows individual strategies to better target certain groups to help avoid, recover and protect the environment from the impacts of waste. For example, community members can make better purchasing decisions with more knowledge and information, and can influence industry in its packaging and production decisions with the choices they make; industry can make decisions about more sustainable design and production of goods; while waste managers can embrace technology and innovation to achieve improved waste management practices.

Waste streams

Consistent with other jurisdictions, solid waste will continue to be categorised for the purpose of measurement and comparison against targets in the following three streams:

- **Municipal solid waste (MSW):** primarily waste collected from households and local governments through waste and recycling collections.
- **Commercial and industrial (C&I) waste:** waste that is produced by institutions and businesses. It includes waste from schools, restaurants, offices, retail and wholesale businesses and industries, including manufacturing.

- **Construction and demolition (C&D) waste**: waste produced by demolition and building activities, including road and rail construction and maintenance, and excavation of land associated with construction activities.

These waste stream descriptions are consistent with the previous Western Australian Waste Strategy (2012), and are consistent with the way Australian jurisdictions categorise and report on waste and recycling performance. The stream descriptions are carried forward to *Waste Strategy 2030* from the previous strategy to maintain continuity and enable waste and recycling data to be effectively benchmarked against other jurisdictions.

National context

Western Australia contributes to national strategies aimed at increasing the recovery of materials from waste, including:

- The *National Waste Policy: Less waste, more resources and the Product Stewardship Act 2011* support national approaches to problem wastes such as televisions, computers, paint, tyres and packaging.
- The Australian Packaging Covenant and the Environment Protection (Used Packaging Material) Measure are national programs aimed at reducing generation and encouraging the reuse and recycling of used packaging materials.

Our roles and responsibilities

Collective responsibility – waste is everybody's business

All Western Australians generate waste, and while there are some businesses that manage our waste for us, we can all take a bit more responsibility for better managing the impacts of our own waste. Whether large or small, waste is generated by households, schools, workplaces, local government authorities, government departments, businesses and industry in large cities and remote towns around our vast state.

As a collective issue, waste demands a collective solution. To achieve this strategy's objectives and targets, a model of collective, shared responsibility and action must be adopted.

State Government will work collaboratively with all stakeholders to guide and develop collective policies and solutions. These solutions will be founded in behavioural change campaigns and leading industry policy and practices – starting from within, through leadership in government activities that minimise waste, such as procurement policies and disposal processes.

For local governments and industry, the collective partnership approach will mean adopting best practice approaches to waste minimisation, resource recovery and appropriate waste management.

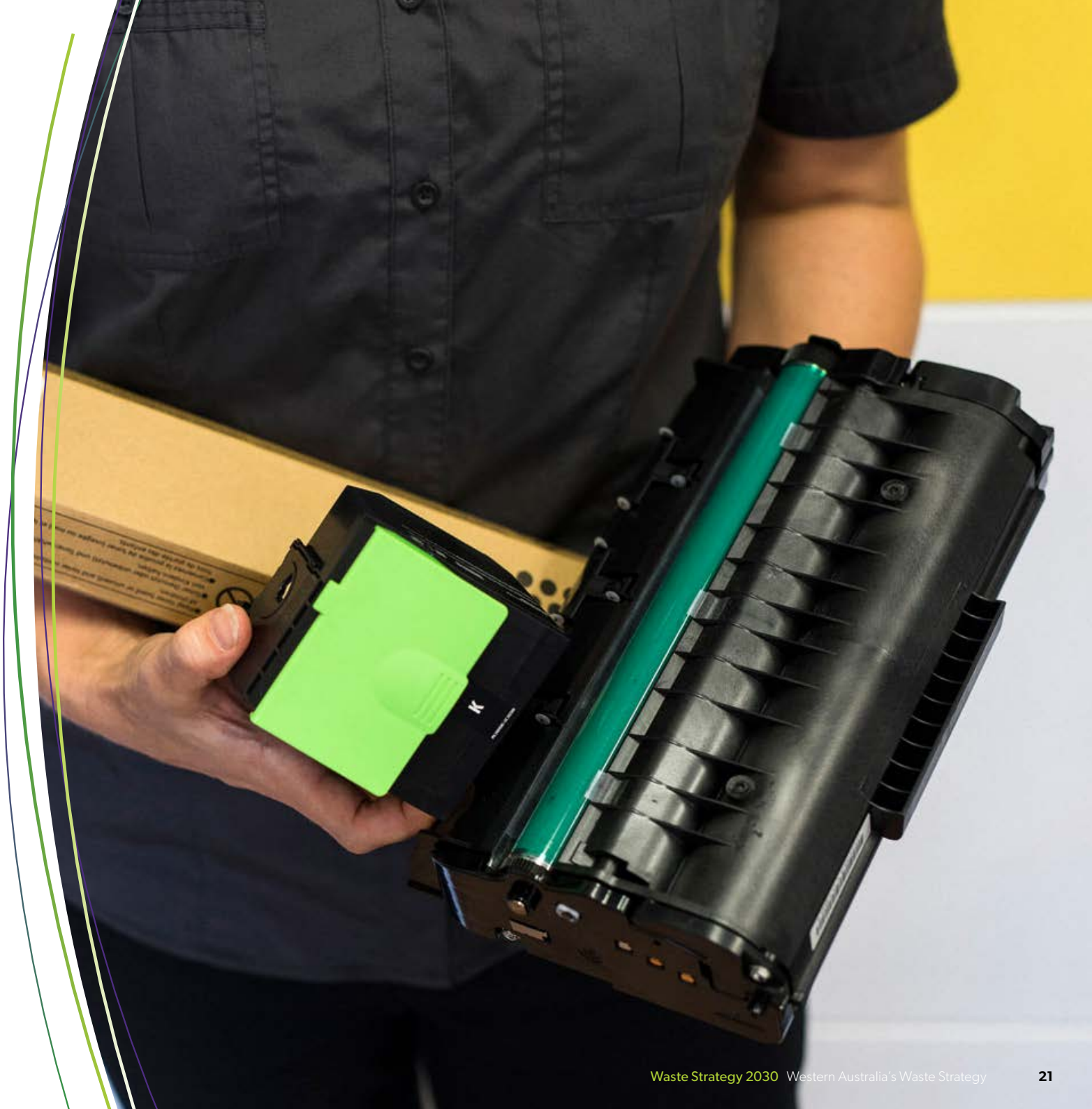
For businesses, it may mean expanding recycling programs or reviewing outdated practices and policies to reduce waste impacts. For waste managers, it will mean embracing innovation, new technologies and best practice performance in waste management. For the Western Australian community, it will mean being informed about the impact different decisions can make on waste contributions and adopting positive waste behaviours.

As every individual and group contributes to the waste problem, everybody will contribute to the solution in a range of different roles and ways:

- **Commonwealth Government** can help influence outcomes through national waste legislation, strategies and policy frameworks that fulfil obligations under international agreements. The Commonwealth Government will continue to manage and monitor compliance with international conventions, administer the *Product Stewardship Act 2011* and related schemes, and work with jurisdictions to identify and address issues that warrant nationally consistent approaches. It will also establish forums for cross jurisdictional collaboration to improve national waste policy outcomes.
- **State Government** can influence outcomes through its policies and programs, but also generates waste through its operations. As the "system steward" State Government will provide waste management leadership. It will influence waste behaviours through legislation, regulation, policies and programs that align with national approaches. Through engagement and collaboration, the government will create an environment that encourages community to adopt positive behaviour change and businesses to invest and innovate in the waste and recycling sector to move Western Australia towards becoming a circular economy. Agencies will also lead by example by committing to actions and targets in this strategy and reporting on their performance to contribute to its delivery.
- **Waste Authority** can influence outcomes through its programs. Established under the *Waste Avoidance and Resource Recovery Act 2007*, the authority will provide waste management advice to Government and waste management leadership to the community. It will lead the delivery of this strategy by coordinating stakeholder commitment and collaboration on strategies, administering the Waste Avoidance and Resource Recovery Account (fund), publishing position statements, and preparing annual business plan objectives, priorities and programs that align with this waste strategy.
- **Local governments and regional councils** are primarily waste managers that provide household waste collection and recycling services, manage and operate landfill sites, and deliver education and awareness programs. Local governments and regional councils will also provide information, infrastructure and incentives that encourage behaviour change and they will plan for the management of waste within their districts. They will identify local, fit-for-purpose solutions that align with this strategy and support a move towards becoming a circular economy. Local governments also generate waste resulting from the range of services provided to the community and can influence purchasing and practices to increase avoidance and recovery and maximise protection of the environment.
- **Business and industry** are primarily waste generators that can make decisions to reduce the generation of waste (e.g. by using reduced packaging) and increase recyclability. The business community often deals with large volumes of waste, as well as

harmful types of waste, which requires responsible management.

- **Waste industry** is primarily the manager of waste and is responsible for waste management services including collection, sorting, processing (i.e. reuse or safe disposal). Waste managers can also play a key role in providing information to the community. The waste industry will be relied on to make informed infrastructure and technology investment decisions that meet waste and recycling market needs and move the state toward becoming a circular economy.
- **Community, individuals and households** are primarily waste generators who make decisions about purchasing and waste disposal. The community has a key role to play to avoid waste and then properly recover and manage waste once it is generated. Decisions by these individuals and groups regarding the purchasing of products or services can have a significant influence on the behaviour of many other entities.



Opportunities and focus materials

Opportunities to avoid and recover waste and protect the environment through its responsible management exist for all materials and arise in many different situations. Even the smallest changes in behaviour at a personal level contribute to overall improvements in waste outcomes.

This strategy also identifies focus materials which will guide an emphasis on actions and measurement going forward. Significant improvements will need to be made for each of these focus materials if we are to meet the targets in Waste Strategy 2030.

Construction and demolition waste

Construction and demolition (C&D) waste makes up around 50 per cent of Western Australia's waste stream, and represents a significant opportunity for waste avoidance and material recovery.

As a waste generator, the construction industry can play a role in avoiding the amount of waste generated – for example through more efficient building processes – while waste managers can maximise recovery of waste that is generated.

Organics: food organics and garden organics

Organic material, including food waste, represents nearly 20 per cent of material recovered for recycling. The National Food Waste Strategy estimates that over 5.3 million tonnes of food that is intended for human consumption is wasted from households and the commercial and industrial sectors each year. Food waste disposed to landfill generates greenhouse gases, reduces landfill capacity, and represents a loss of valuable organic material which could otherwise be recovered for productive use.

Metals: steel, non-ferrous metals, packaging and containers

Metals represent around 20 per cent of material recovered for recycling by weight. Metals are a high value commodity with significant embodied energy. While recovery rates are relatively high compared to other materials, it is important to ensure these materials are only used where necessary and that as much value and embodied energy as possible is recovered from them.

Paper and cardboard: office paper, newspaper and magazines

Paper and cardboard represent around 10 per cent of material recovered for recycling. Paper and cardboard is a high value commodity. When disposed to landfill, paper and cardboard generates greenhouse emissions and represents a loss of economic value.

Glass: packaging and containers

Glass packaging and containers contain significant embodied energy which is lost if disposed to landfill. Glass that is inappropriately disposed (littered or dumped) can also present direct risks and impacts to the environment and human health.

Plastics: packaging and containers

Plastic makes up a significant proportion of packaging materials in our waste stream. There are significant opportunities to avoid plastics, and in particular, single use plastics. Plastic is a high value commodity, particularly where contamination rates are low. Disposal to landfill represents an economic loss, and inappropriate disposal into the environment (litter and dumping) can result in significant harm to the environment and wildlife.

Textiles: clothing and other fabric-based materials

Textiles contain valuable materials and significant embodied energy. When disposed to landfill or illegally dumped, textiles represent a loss of resources and can negatively impact the environment.

Hazardous waste

Hazardous waste is described as unwanted products that are corrosive, flammable, toxic or reactive and present a potential risk to human health and the environment. Hazardous waste represents only a small percentage of the total waste stream, however it presents significant risks if not well managed. Opportunities exist to avoid hazardous waste through consumer purchasing decisions, and collect hazardous waste for recovery or safe disposal using best practice service infrastructure.

Our objectives, targets and strategies

Objective 1: Avoid

Western Australians generate less waste

The waste hierarchy places waste avoidance at the forefront of approaches for managing waste. This waste strategy reflects that priority and recognises that reducing the amount of waste generated in our state requires significant and sustained behaviour change by government, industry and households if this objective is to be achieved.

National data indicate that Western Australians currently generate more waste per capita than the national average and that generation per capita has remained static between 2010–11 and 2014–15. This is in spite of past efforts to reduce waste generation and it suggests that reducing our generation rate will be very challenging.

This waste strategy first aims to close the gap between our current generation rate and the national average. Given our unique characteristics relative to other jurisdictions (particularly in relation to our geography and economy), reducing our generation of waste to this level will be challenging, but is achievable. Once achieved, our per capita generation rates can then be benchmarked against the nation's best performing jurisdictions.

Waste avoidance is driven in a large part by purchasing behaviour; it relies on high levels of awareness and motivation by consumers, both individuals and organisations, about how to reduce the impacts of purchasing decisions.

Education and incentives are critical to increase awareness of waste avoidance and to support waste avoidance behaviours.

Waste avoidance can also be pursued through the product design and manufacturing phase. Industry has an opportunity to reduce the amount of material used in products to avoid generating waste, often in response to consumer demand. For example, there are significant opportunities across the packaging sector to avoid some wastes altogether or to minimise their use.

AVOID TARGETS		
◎ 2025 – Reduction in waste generation per capita by 10% *(from 2014/15 generation rate)* ◎ 2030 – Reduction in waste generation per capita by 20% *(from 2014/15 generation rate)*		
Waste generators		**Waste managers***
Community	**Government and industry**	**Waste industry**
◎ **2025** – Reduction in MSW generation per capita by 5% ◎ **2030** – Reduction in MSW generation per capita by 10%	◎ Reduction in C&D waste generation per capita by 15% by **2025**, 30% by 2030 ◎ Reduction in C&I waste generation per capita by 5% by **2025**, 10% by **2030**	◎ **2030** – All waste is managed and/or disposed using better practice approaches

* Includes local government, private industry and state entities.

Focus materials

Achieving the avoidance targets will require an emphasis on the waste materials that, by weight, currently make up more than 90 per cent of the waste Western Australian's generate:

- **Construction and demolition materials:** concrete, asphalt, rubble, bricks, sand and clean fill
- **Organics:** food organics and garden organics
- **Metals:** steel, non-ferrous metals, packaging and containers
- **Paper and cardboard:** office paper, newspaper and magazines
- **Glass:** packaging and containers
- **Plastics:** packaging and containers
- **Textiles:** clothing and other fabric-based materials

Table 2: Avoid strategies

			Strategy application					
			Waste generators				Waste managers*	
	Strategy description	**Lead stakeholder**	**Community**	**Local government**	**State Government**	**Industry**	**Waste industry**	**#**
KNOWLEDGE	Coordinate consistent state-wide engagement and education on waste avoidance behaviours with an emphasis on focus materials.	State Government	✓	✓	✓	✓	✓	1
	Investigate, develop and publish, in collaboration with stakeholders, locally relevant actions for reducing waste generation with an emphasis on focus materials.	Waste Authority	✓	✓		✓	✓	2
	Lead collaboration between State Government agencies on actions that reduce the waste generation with an emphasis on focus materials.	State Government		✓	✓			3
	Coordinate communications and education that leads to food organics and garden organics waste reduction behaviour change.	Waste Authority	✓	✓	✓	✓	✓	4
	Collaborate with decision-makers and opinion leaders to explore opportunities arising from circular economy approaches and communicate them publicly.	Waste Authority		✓	✓	✓	✓	5
ENABLING INFRASTRUCTURE	Develop mechanisms and platforms that enable the community to adopt avoidance behaviours, and explore reuse and low-waste alternatives.	State Government	✓	✓	✓			6
INCENTIVES	Provide support to community, government and industry initiatives that lead to waste avoidance and contribute to waste strategy targets with an emphasis on focus materials.	State Government	✓	✓	✓	✓	✓	7
	Introduce regulations to prevent unnecessary waste generation.	State Government	✓	✓	✓	✓		8

* Includes local government, private industry and state entities.

Objective 2: Recover

Western Australians recover more value and resources from waste

Where waste generation is unavoidable, efforts should be made to recover more value and resources from waste. Consistent with the waste hierarchy and circular economy approaches, material recovery is preferred over energy recovery. Energy recovery is preferable to landfill disposal but should only be applied to residual waste once better practice source separation approaches have been exhausted.

Waste Strategy 2030 supports the recovery of more valuable resources from the waste stream by applying a combination of strategies relating to knowledge, enabling infrastructure and incentives to encourage behaviour change by waste generators and waste managers.

RECOVER TARGETS

- 2025 – Increase material recovery to 70%
- 2025 – All local governments in the Perth and Peel regions provide harmonised kerbside collection systems that include FOGO
- 2030 – Increase material recovery to 75%
- Recover energy only from residual waste

Waste generators		Waste managers*
Community	**Government and industry**	**Waste industry**
2020 – Increase MSW material recovery to 65% in the Perth and Peel regions, 50% in major regional centres **2025** – Increase MSW recovery to 67% in the Perth and Peel regions, 55% in major regional centres **2030** – Increase MSW material recovery to 70% in the Perth and Peel regions, 60% in major regional centres	C&I sector – Increase material recovery to 70% by **2020**, 75% by **2025**, 80% by **2030** C&D sector – Increase material recovery to 75% by **2020**, 77% by **2025**, 80% by **2030**	**2030** – All waste facilities adopt resource recovery better practice

* Includes local government, private industry and state entities.

Focus materials

In working towards these targets, this strategy focuses on the reuse, reprocessing and recycling of the following materials that present the greatest potential for increased recovery:

- **Construction and demolition materials:** concrete, asphalt, rubble, bricks, sand and clean fill
- **Organics:** food organics and garden organics (FOGO)
- **Metals:** steel, non-ferrous metals, packaging and containers
- **Paper and cardboard:** office paper, newspaper and magazines
- **Plastics:** packaging and containers

These focus materials reflect overall state priorities, however, it will be appropriate to consider local circumstances to increase recovery in different parts of Western Australia, and particularly between metropolitan and non-metropolitan areas. *Waste Strategy 2030* encourages the adoption of solutions that reflect local circumstances and contribute to the overarching targets.

Just as local approaches based on local circumstances can lead to unique solutions, consistent services where similar conditions exist can lead to more efficient service delivery. Consistency in the provision of kerbside services to households in urbanised areas is an example of where consistent systems, including three bin food organics and garden organics (FOGO) systems, can improve messaging to the community about how to recycle effectively and lead to better practice outcomes across large urbanised populations. Consistent collections also provide opportunities for service providers to establish processing options for clean and consistent streams of materials, which can reduce costs and improve product quality and therefore access to markets.

Energy recovery

Resource recovery includes the recovery of energy from waste. However, energy recovery is considered to be the least preferred of all resource recovery options in the waste hierarchy as it merely releases the energy embodied but does not preserve the material for reuse. For this reason, the waste strategy identifies that only residual waste (waste which remains following the application of better practice source separation and recycling systems) is to be used for energy recovery. The targets in this strategy reflect the outcomes of better practice approaches applied to the MSW, C&I and C&D waste streams. Where recovery systems applied to these streams are achieving target levels, the remaining materials are considered to be residual wastes for the purpose of this strategy.

Table 3: Recover strategies

			Strategy application					
			Waste generators				Waste managers*	
	Strategy description	**Lead stakeholder**	**Community**	**Local government**	**State Government**	**Industry**	**Waste industry**	**#**
KNOWLEDGE	Investigate options to recover and promote related local markets through State Government procurement actions with an emphasis on focus materials.	State Government			✓			9
	Develop better practice guidance and standards for waste-derived products to build confidence in recycled products and ensure protection of the environment.	Waste Authority	✓	✓	✓	✓	✓	10
	Maintain a communications toolkit for local government on consistent messaging for better practice kerbside service delivery.	Waste Authority	✓	✓			✓	11
	Develop education and engagement resources to communicate the benefits of resource recovery and the use of recycled products, and to minimise contamination in collection systems.	Waste Authority	✓	✓	✓	✓	✓	12
	Develop and publish better practice guidance to support increases in recovery with an emphasis on focus materials.	Waste Authority	✓	✓	✓	✓	✓	13
	Identify and implement options for collaboration between industry and the State Government to support market development and recovery with an emphasis on focus materials.	Waste Authority			✓	✓	✓	14
	Investigate and improve reporting on material that is reused (as distinct from recycled) to better monitor the state's move toward becoming a circular economy.	State Government	✓	✓	✓	✓	✓	15
ENABLING INFRASTRUCTURE	Establish mechanisms, including funding approaches to support investments in local infrastructure for recovery with an emphasis on focus materials.	State Government					✓	16

* Includes local government, private industry and state entities.

Table 3: Recover strategies continued

			Strategy application					
			Waste generators				Waste managers*	
	Strategy description	**Lead stakeholder**	**Community**	**Local government**	**State Government**	**Industry**	**Waste industry**	**#**
INCENTIVES	Provide funding to local governments to introduce better practice services and extend the Better Bins program to include FOGO (food organics and garden organics services).	Waste Authority	✓	✓			✓	17
	Provide funding to promote the use of priority recycled products and support the establishment of local markets with an emphasis on focus materials.	State Government		✓	✓	✓	✓	18
	Support community, government and industry initiatives that promote resource recovery in the Perth and Peel regions, major regional centres and remote areas through grant programs.	State Government	✓	✓	✓	✓	✓	19
	Develop a legislative framework to encourage the use of waste derived materials, including product specifications, to build confidence in recycled products, increase their demand and develop relevant markets while protecting the environment.	State Government		✓	✓	✓	✓	20
	Implement measures and policies that support sustainable government procurement practices and outcomes that encourage greater use of recycled products support local market development.	State Government		✓	✓	✓		21

* Includes local government, private industry and state entities.

Objective 3: Protect

Western Australians protect the environment by managing waste responsibly

The transport, storage, processing and disposal of waste all have the potential to directly impact the environment.

Certain wastes, such as hazardous materials or materials that are commonly littered or dumped, can also pose significant risks to public health and the environment. Poorly managed waste infrastructure (including landfills and recycling facilities) and services, as well as adverse waste behaviours, all increase the risk of negative impacts on public health and the Western Australian environment.

In the event waste cannot be avoided, it is important that waste management systems – including recycling and disposal (landfill) facilities – protect the environment from the negative impacts of waste by adopting better practice.

Litter and illegal dumping can significantly damage our environment. It is important that waste enters the correct waste management system so that it can be properly managed by better practice facilities, and is not littered or dumped in the environment.

PROTECT TARGETS		
◎ 2030 – No more than 15% of Perth and Peel regions' residual waste is disposed to landfill ◎ 2030 – All waste is managed by and/or disposed to better practice facilities		
Waste generators		**Waste managers***
Community	**Government and industry**	**Waste industry**
◎ **2030** – Move towards zero illegal dumping ◎ **2030** – Move towards zero littering	◎ **2030** – Move towards zero illegal dumping	◎ **2030** – No more than 15% of Perth and Peel regions' residual waste is disposed to landfill ◎ **2030** – All waste facilities adopt environmental protection better practice

* Includes local government, private industry and state entities.

Priority areas

In working towards achieving these targets, Western Australia should focus on behaviours and materials that provide the greatest potential to protect the environment including:

- the transport, storage, processing and disposal of waste;
- problem wastes, including hazardous materials;
- poorly managed waste infrastructure, including landfills, recycling facilities and services;
- taking action early in a waste material's life cycle; and
- giving priority to reflect the risk posed by a waste material.

National priorities

The management of some types of waste require an international approach. Initiatives that are the responsibility of the Commonwealth Government and to which WA contributes include the Basel Convention, an international treaty to reduce the movement of hazardous waste between countries with a view to protecting public health and the environment, and the Minamata Convention on Mercury, a global treaty to protect public health and the environment from the adverse effects of mercury.

Table 4: Protect strategies

			Strategy application					
			Waste generators				Waste managers*	
	Strategy description	**Lead stakeholder**	**Community**	**Local government**	**State Government**	**Industry**	**Waste industry**	**#**
KNOWLEDGE	Identify and collect required data to monitor illegal dumping and allow better targeted monitoring and enforcement.	State Government		✓	✓		✓	23
	Deliver a community engagement and education campaign to raise awareness of illegal dumping and its impacts.	State Government	✓	✓	✓	✓		24
	Investigate, document and publish options for avoiding waste plastic.	Waste Authority	✓	✓	✓	✓		25
	Review and report on approaches to the management of hazardous waste including controlled and liquid waste.	State Government				✓	✓	26
	Assess existing recovery facility and landfill siting and management practices and publish information to guide achievement of better practice approaches.	Waste Authority					✓	27
ENABLING INFRASTRUCTURE	Work with land owners and managers to build their capacity to tackle illegal dumping.	State Government	✓	✓	✓	✓		28
	Investigate and report on the role of funding approaches to drive the uptake of better practice approaches at waste management facilities.	Waste Authority		✓			✓	29
INCENTIVES	Support local governments to safely collect and manage hazardous materials generated by households that present a significant risk to public health and the environment.	State Government	✓	✓			✓	30
	Provide relevant funding and guidance to prevent the illegal dumping of waste at charitable recycler waste collection sites.	State Government					✓	31

* Includes local government, private industry and state entities.

Table 4: Protect strategies continued

			Strategy application					
			Waste generators				Waste managers*	
	Strategy description	**Lead stakeholder**	**Community**	**Local government**	**State Government**	**Industry**	**Waste industry**	**#**
INCENTIVES	Implement the litter prevention strategy to reduce littering and manage its impacts.	Keep Australia Beautiful Council	✓	✓	✓	✓		32
	Detect, investigate and prosecute illegal dumping.	State Government	✓	✓	✓	✓		33
	Review and update the regulatory framework for waste to ensure it is appropriate and reduces the environmental impacts and risks from waste management.	State Government					✓	34
	Revise waste classifications and definitions to reflect current knowledge to ensure waste materials are managed according to their risk and are treated and/or disposed of appropriately.	State Government					✓	35
	Develop and revise legislative frameworks to encourage the use of waste derived materials and build confidence in recycled products.	State Government	✓	✓	✓	✓		36

* Includes local government, private industry and state entities.

Foundation strategies

that apply to multiple objectives

Waste Strategy 2030 includes strategies which support multiple objectives and underpin the delivery of this waste strategy. These are referred to as foundation strategies.

Foundation strategies include:

- information and data – to provide high quality information to the community, government and industry to inform decision making.
- regulation and policy – to provide a level playing field and deliver efficient and effective waste management outcomes.
- education – to underpin behaviour change approaches for avoid, recover and protect, for waste generators and waste managers.
- planning – to provide support and guidance for waste services planning as well as infrastructure and land use planning.

The range of strategies, both new and ongoing, that will allow Western Australians to achieve outcomes against all three objectives of the waste strategy are presented below.

Table 5: Foundation strategies

			Strategy application					
			Waste generators				Waste managers*	
	Strategy description	Lead stakeholder	Community	Local government	State Government	Industry	Waste industry	#
INFORMATION AND DATA	Review and update data collection and reporting systems to allow waste generation, recovery and disposal performance to be assessed in a timely manner.	State Government		✓	✓	✓	✓	37
	Collaborate with industry to develop a data strategy that includes actions to improve waste data collection, management and reporting, and guides their implementation.	State Government Waste Authority		✓	✓	✓	✓	38
	Investigate and report on the application of the circular economy in WA, including opportunities and barriers implementation.	Waste Authority	✓	✓	✓	✓	✓	39
	Collaborate with the Commonwealth Government to develop local approaches to implementing the National Food Waste Strategy.	State Government	✓	✓	✓	✓	✓	40

* Includes local government, private industry and state entities.

Table 5: Foundation strategies continued

			Strategy application					
			Waste generators				Waste managers*	
	Strategy description	Lead stakeholder	Community	Local government	State Government	Industry	Waste industry	#
INFORMATION AND DATA	Provide support to local governments, recyclers and landfill operators for reporting under amendments to the *Waste Avoidance and Resource Recovery Regulations 2008*.	State Government		✓			✓	41
	Develop state-wide waste communications to support consistent messaging on waste avoidance, resource recovery and appropriate waste disposal behaviours.	State Government	✓	✓	✓	✓		42
ENGAGEMENT AND EDUCATION	Recognise and reward the adoption of positive behaviours, practices and innovation that contribute to reduced waste generation, increased resource recovery and protection of the environment.	Waste Authority	✓	✓	✓	✓	✓	43
REGULATION AND POLICY	Investigate options for developing a 'needs based' approach to the approval of new landfills and other waste infrastructure.	State Government					✓	44
	Contribute to national waste policy and programs aimed at waste avoidance, resource recovery and environmental protection.	State Government	✓	✓	✓	✓	✓	45
	Review the scope and application of the waste levy to ensure it meets the objectives of Waste Strategy 2030.	State Government	✓	✓	✓	✓	✓	46
	Review and revise regulations and policies to achieve a level playing field for industry which ensures entities that are compliant and apply best practice are not disadvantaged.	State Government		✓	✓	✓	✓	47

* Includes local government, private industry and state entities.

Table 5: Foundation strategies continued

			Strategy application					
			Waste generators				Waste managers*	
	Strategy description	Lead stakeholder	Community	Local government	State Government	Industry	Waste industry	#
REGULATION AND POLICY	Implement local government waste plans which align local government waste planning processes with the waste strategy.	State Government	✓	✓				48
	Lead and support initiatives that bring together agencies, local governments, industry and community to assist knowledge exchange and strategic waste planning.	Waste Authority	✓	✓	✓	✓	✓	49
PLANNING	Undertake a strategic review of Western Australia's waste infrastructure (including landfills) by 2020 to guide future infrastructure development.	State Government	✓	✓	✓	✓	✓	50

* Includes local government, private industry and state entities.

Next steps

Supporting documents

Waste Strategy 2030 Action Plan

This strategy will be supported by an action plan which outlines specific actions to be implemented to achieve the objectives of the strategy.

The action plan will be prepared by the Waste Authority in consultation with relevant State Government agencies, for consideration by the Minister for Environment.

Waste Authority Position and Guidance Statements

The Waste Authority publishes position statements from time to time. Position statements formalise the views of the Waste Authority and may be used to inform decisions relevant to the Waste Authority's role in implementing the strategy.

State Waste Infrastructure Plan

A state waste infrastructure plan will be developed together with key stakeholders to guide the planning and decision making for the establishment and maintenance of critical infrastructure. This will include the type and capacity of additional infrastructure that will be needed to meet the targets in this strategy, the areas in which infrastructure may be best located and forecast dates for when it is needed.

Annual Business Plan

The *Waste Avoidance and Resource Recovery Act 2007* (WARR Act) requires the Waste Authority to prepare a draft business plan to be submitted to the Minister each year. The business plan sets out objectives and priorities for government funding for the next five financial years, and must be consistent with this strategy.

Waste Data Strategy

A waste data strategy will guide the ongoing development of data definitions, collection mechanisms, management and reporting requirements to ensure progress on *Waste Strategy 2030* can be monitored appropriately and that any revision of approach is based on sound information.

Measuring progress

The Waste Authority will be responsible for evaluating *Waste Strategy 2030*, including progress towards objectives and targets. The Waste Authority will publish annual reports against its business plan, and coordinate reports on behalf of the Minister against the outcomes of the action plan.

Strategy updates

As Western Australia implements this waste strategy, new opportunities and priorities may be identified which may warrant a review of the scope and focus of the strategy. The *WARR Act* requires that the waste strategy be reviewed for currency at least every five years, including a full public consultation process. Minor amendments to the waste strategy can be made by the Waste Authority subject to the approval of the Minister.

Glossary

Term	Definition
Circular economy	An alternative to a traditional linear economy (make, use, dispose) in which we keep resources in use for as long as possible – extracting the maximum value from them while in use, then recovering and reusing products and materials. Three core principles underpin a circular economy – design out waste and pollution; keep products and materials in use; and regenerate natural systems.
Commercial and industrial (C&I) waste	Waste produced by institutions and businesses, including schools, restaurants, offices, retail and wholesale businesses and industries, including manufacturing.
Construction and demolition (C&D) waste	Waste produced by demolition and building activities, including road and rail construction and maintenance, and excavation of land associated with construction activities.
Drop-off facility	Site where residents can bring their waste or recyclables for disposal.
Household hazardous waste	Products used in and around the home that have at least one hazardous characteristic (flammable, toxic, explosive or corrosive).
Hazardous waste	Waste that, by its characteristics, poses a threat or risk to public health, safety or the environment.
Illegal dumping	Premeditated littering where people go out of their way to dump waste in public places illegally, typically for commercial benefit or to avoid disposal fees.
Kerbside collection	A regular containerised service that collects waste from a residents' kerbside.
Litter	Waste that is left in public places and not deposited into a bin.
Litter Prevention Strategy	Litter Prevention Strategy for Western Australia 2015–2020.
Liquid waste	Wastes that are not solid or gaseous. May refer to sludges and slurries, or other liquids discharged to sewer. May also refer to waste water.
Major Regional Centre	Any WA local government not within the Perth metropolitan region or Peel region, with a population above 15,000 and within 600km (by road) of Perth. If more than one centre within a Western Australian Planning Commission planning region meets this definition, then the most populated centre is included in the first instance. Smaller centres that also meet the above criteria are included if within 15 per cent of the population of the planning region's most populated centre; or if greater than 300km from the planning region's most populated centre. This definition includes the cities of Albany, Busselton, Bunbury, Greater Geraldton and Kalgoorlie-Boulder.
Municipal solid waste (MSW)	Waste primarily collected from households and local governments through waste and recycling collections.
Organic waste	Waste materials from plant or animal sources, including garden waste, food waste, paper and cardboard.
Perth and Peel regions	The Perth region, or Perth metropolitan region, is the area defined by the Metropolitan Region Scheme. The Peel region is the area defined by the Peel Region Scheme.
Product stewardship	Product stewardship is an approach to managing the impacts of different products and materials. It acknowledges that those involved in producing, selling, using and disposing of products have a shared responsibility to ensure that those products or materials are managed in a way that reduces their impact, throughout their life cycle, on the environment and on public health and safety.
Residual waste	Waste which remains following the application of better practice source separation and recycling systems.
Resource recovery	The process of extracting materials or energy from a waste stream through re-use, reprocessing, recycling or recovering energy from waste.
Vergeside service	Local government services that collect a range of materials from the verge for recovery or disposal.
Waste avoidance	Refers to the prevention or reduction of waste generation, or the prevention or reduction of the environmental impacts (for example toxicity) of waste generation.
Waste diversion	The act of diverting a waste away from landfill for another purpose such as re-use or recycling.

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DRAFT ONLY

Waste Authority

DRAFT ONLY

Request for Variation – Draft Waste Strategy 2030: Western Australia's Waste Strategy

Closing Date: 5pm, 6 November 2018

Summary

The City of Kwinana (the City) welcomes the opportunity to respond to the Draft Waste Strategy 2030: Western Australia's Waste Strategy (the Draft Strategy) and more particularly recommend variations to the Draft Strategy to realise the State's objectives.

The City commends the improvements made to the Draft Strategy by the Waste Authority such as the inclusion of Avoid and Protect objectives and targets.

However, the City is extremely concerned with the Recover strategies and targets as presented in the Draft Strategy and in particular the impact of changes proposed on the City of Kwinana ratepayers. The City has been working diligently towards meeting the target for waste diversion in the current WA Waste Strategy and finds it unreasonable that the State Government is proposing to significantly increase the targets and implement a change from waste diversion to material recovery in the Draft Waste Strategy before the timeframes in the original Strategy have expired. It is on this basis that the City requests variations to:

1. *Community Targets: Increase MSW material recovery in the Perth and Peel regions*

   It is requested that these targets revert back to reflect the 2020 waste diversion target rather than material recovery targets. If not, it is requested that the target dates for material recovery be increased by 5 years each to reflect the WA context at the moment and provide more realistic targets as follows:

   - **2020** – Increase diversion from landfill of material presented for collection in the metropolitan region to 65%.
   - **2025** – Increase diversion from landfill of material presented for collection in the metropolitan region to 67%.
   - **2030** – Increase diversion from landfill of material presented for collection in the metropolitan region to 70%.

   Or

   - **2025** – Increase MSW materials recovery to 65% in the Perth and Peel regions
   - **2030** – Increase MSW materials recovery to 67% in the Perth and Peel regions
   - **2035** – Increase MSW materials recovery to 70% in the Perth and Peel regions

2. *Target 2025 - all local governments in the Perth and Peel region to change to a harmonised kerbside collection that include food organics and garden organics (FOGO).*

   It is requested that this target be varied to enable local governments to determine their own approach to increasing waste diversion targets set by the State.

3. The inconsistencies and ambiguity in the Draft Strategy around the definition of residual waste and the associated target date for energy recovery.

   It is requested that the definition of residual waste be reconsidered following further assessment and definition of what is “better practice”.

   It is also requested that the target date for energy recovery from residual waste only be delayed until 2025.

Further to these requests for variation, the City also raises concerns with a number of suggestions and statements made within the Draft Strategy that have not been supported by further evidence or detail. These are highlighted as part of this submission as other variations to the Draft Strategy for your consideration and action.

Introduction

The City is the second fastest growing metropolitan local government in Western Australia, facilitating waste and recycling services for its 44,000+ residents and commercial businesses. Sustainable management of waste through the use of waste avoidance and resource recovery strategies in line with the Western Australian Waste Strategy of 2012 are the guiding principles for the City’s Waste Management Strategy.

The City continues to provide waste education independently and in partnership with the Southern Metropolitan Regional Council (SMRC) to educate residents on waste avoidance, waste minimisation and better management of recycling in bins through bin tagging and various other mediums. The City also participates in Waste Authority supported programs such as the Garage Sale Trail, Department of Water and Environmental Regulation (DWER) run Wastewise programs in schools, Keep Australia Beautiful campaigns, household hazardous waste collection programs and various other recycling programs for e-waste and metals. The City also actively prosecutes illegal dumpers. These initiatives fit well within the Avoid and Protect Objectives and are therefore supported by the City.

The City’s current waste strategy demonstrates, through extensive multi-criteria analysis, that a 2 bin system going to waste to energy would not only be the best value option for our ratepayers but also meet the waste diversion target of 65% by 2020 as required in the 2012 WA Waste Strategy. It is on this basis that the City signed a 20-year contract with Kwinana Waste to Energy Project Co Pty Ltd (Project Co) in 2013.

Request for Variation #1 – Change Recover material recovery targets to waste diversion targets or increase the timeframe to achieve material recovery targets

In 2017, the City of Kwinana Waste Management Strategy 2017 (WMS) prepared by MRA consulting was adopted by the City. The WMS considered various governance, social, environmental and economic factors and rated the 2-bin system with waste from the green-lid bins going to a waste to energy (WTE) plant in Kwinana as the best option for the City of Kwinana to achieve the set diversion targets.

After various delays, the WTE plant in Kwinana achieved financial close in October 2018, with the plant set to be constructed in the next three years. This is momentous for WA, as it means that there is another real option to assist in achieving the diversion targets for municipal solid waste (MSW).

However, the Draft Strategy now proposes to shift the goal posts. The 'waste diversion' targets previously adopted and accepted by local governments have now been replaced by 'material recovery' targets, which have a completely different meaning and would effectively invalidate the efforts the City of Kwinana has made, as a committed and progressive local government, in attempting to achieve the current waste diversion targets.

Although energy recovery sits lowest on the recovery measures of the waste hierarchy, WTE plants do have an important role to play in the State's ability to reduce the amount of materials being landfilled. WTE plants are essential in ensuring that WA stands a chance of achieving the Draft Strategy's 2030 'Protect' target of no more than 15% of waste generated in Perth and Peel regions being landfilled.

To ensure that the WTE plants are viable and are able to recover the significant capital outlay involved in their construction, on-going partnerships with the security of waste tonnages are essential. For the State Government to implement changes before the term of the previous Waste Strategy has expired that impact on tonnages received does not provide industry with the certainty to invest in alternate waste methodologies.

The change of targets to increased material recovery targets, which have a different meaning to diversion from landfill targets, before the waste diversion milestones due in 2020 can be met is considered unreasonable.

The Draft Strategy acknowledges the size of the State and the fact that there are no local markets, especially outside the Perth and Peel region. Waste diversion targets are therefore further considered more realistic to ensure improvements across WA.

In conclusion, in order to meet the Draft Strategy's 2030 'Protect' target of no more than 15% of waste generated in Perth and Peel regions is landfilled a whole range of waste processing and recycling options are required to enable any chance of success being achieved. The provisions of the Draft Strategy must be balanced in order to enable both the implementation of FOGO and Waste to Energy processing to coexist. Local government should have the ability to implement an approach that meets the requirements of the State whilst having regard to local conditions. Each local government represents a diverse range of communities. In Kwinana, any changes to our waste management service beyond what has been adopted through a comprehensive multi criteria analysis will put more financial stress on an already stressed and disadvantaged community where every dollar counts.

Request for Variation #2 – Remove any requirement for a harmonised kerbside collection system which includes FOGO

The Draft Strategy prescribes that all local governments in the Perth and Peel region must adopt a 3-bin FOGO system. The consequences of introducing this requirement for all Perth and Peel local governments has not been appropriately considered, and should be publically debated in Parliament by the introduction of appropriate legislation so that the community can be fully aware that it is the State who are imposing this additional cost burden on them.

Below are a list of issues that need to be appropriately considered in relation to implementing a 3-bin FOGO system by 2025 across all local governments in the Perth and Peel region:

1. There is no local government within the Perth and Peel region that has adopted and implemented a 3-bin FOGO system to date. Accordingly, there is no robust information to suitably consider the practicalities of operating such a complex system. The Southern Metropolitan Regional Council (SMRC), of which the City is a member council, has run a FOGO trial in selected areas of the City of Melville with numerous added resource costs and restricted the trial to single residential properties. What needs to be considered here

is; if the 3-bin FOGO system is better practice, why has no metropolitan local government introduced the 3-bin FOGO system so far?

2. The City's WMS considered the costs of implementing a 3-bin FOGO system. The costs of the roll-out and the on-going costs of education and managing contamination are prohibitive and resulted in the analysis that 2-bins with waste going to the waste to energy plant was the best option. Although, financial assistance as incentives have been suggested in the Draft Strategy and are essential for this to occur, to effectively have 30 local governments roll out a 3-bin FOGO system will require significant funding and assistance. The actual funds that the Waste Authority will additionally contribute towards this change have not been communicated. Essentially, local governments are being obligated to change to a FOGO system, without a clear understanding of the financial commitment and on-going support from the Waste Authority.
3. There are currently no local governments in the Perth metropolitan area operating a 3-bin FOGO service and consequently there is no local experience with processing the contaminated FOGO materials from a 3-bin service.
4. The compost generally does not meet the requirements of the Australian Standards for domestic use due to contamination in the form of nappies, plastics, glass and other domestic waste that includes hazardous materials. The compost therefore ends up as cover on agricultural properties, rather than on local lawns and gardens.
5. If private industry does not take up the cost of providing the appropriate infrastructure to process and de-contaminate the FOGO stream, the requirement falls on regional councils such as the SMRC to do so. As regional councils derive their income from member local governments, it is the member local government ratepayers that ultimately have to pay for these added infrastructure costs. The member local governments of the SMRC are still repaying multi-million dollar loans for the waste management infrastructure being used to compost waste that is now reaching its end of life.
6. There is a real concern over providing a 3-bin service for multiple unit dwellings (MUDs) that simply do not have the space for the extra bins, the volumes to justify the added service or the protocols to ensure that the organics in the FOGO bin will not be severely contaminated.
7. FOGO represents a significant change to the manner in which household food organics and inert wastes are managed. Education of residents then becomes an on-going necessity and cost to the local governments with very gradual improvements. This is evident from the fact that after years of recycling in the WA and on-going education, most residents are still not fully aware of accepted recyclables.
8. There may be an assumption that a 3-bin FOGO system is better for the environment. However, when the added transport carbon dioxide equivalent (CO^2e) emissions from operating a 3-bin system, combined with the increased CO^2e emissions from aerobic composting are compared with the CO^2e emissions generated from a WTE plant, including the CO^2e emissions that offset the equivalent amount of energy generated from coal fired plants; a 2-bin system with waste for WTE ranks better for the environment than a 3-bin FOGO system.

As an example of an innovation to increase waste diversion without introducing a 3-bin FOGO system, the City of Kwinana could consider issuing every resident with Bokashi buckets for managing household organic waste as part of a 3-bin garden organics (GO) system. The set up costs of distributing the Bokashi buckets might be greater; however the on-going costs and requirements for education would be much less and would have a beneficial impact on the environment. It also caters for the issue of organics separation by MUDs more effectively.

Request for Variation #3 – Remove inconsistencies and ambiguity around the definition of residual waste and increase the target date for energy recovery

Residual waste has been defined in the Glossary of the Draft Strategy as waste which remains following the application of "better" practice source separation and recycling systems. However, at various points in the document the definition of residual waste has been defined as waste that remains after source separation through "best" practice.

Neither "better" practice nor "best" practice source separation has been defined in the Draft Strategy.

The last Recover target of the Draft Strategy specifies 'Recover Energy only from residual waste' without a target date on Page 6. On Page 12 it appears as a 2020 target. It seems to imply that the requirement is in place at the onset of the Strategy, without sufficient time for LGs to adjust. The requirement also does not seem to apply to waste taken to landfill. It appears therefore that although energy recovery sits higher on the waste hierarchy than landfill, there are more restrictions on LGs committed to WTE, than those LGs sending waste to landfill.

The target to recover energy only from residual waste should therefore be amended to a 2025 target. This must be coupled with a clear definition for better practice and permit local governments sufficient time to adjust to this new target.

Request for further variations and consideration of other matters

1. Key strategy elements – The first dot point of Supporting Documents on Page 6 of the Draft Strategy references *the Waste Strategy 2030 Action Plan.* This Action Plan has not been provided for consideration by local government and other stakeholders and is an essential tool required by the City to understand the priority actions of the City and the State government in realizing the objectives and targets outlined in the Draft Strategy.

2. Key strategy elements – The fifth dot point of Headline Strategies on Page 6. *Changes to the scope and application of the waste levy* has the potential to impact the City's ability to fund any changes to its waste management service and implement a harmonized kerbside collection system. It is requested that any action plan prioritise the review of the waste levy to ensure that any additional costs associated with any changes are funded through the waste levy and not passed onto the ratepayers.

3. Setting the direction – The last paragraph on page 7 again references that the waste strategy is to be supported by an action plan. This is a key document and should have been provided for consideration along with the Draft Strategy. The commentary suggests that the action plan is to be prepared by the Waste Authority in consultation with relevant State Government agencies for consideration by the Minister for Environment. Local government is a key stakeholder in the implementation of any Waste Strategy for the State and must be consulted in the formulation of the action plan. Without local government representation the State runs the risk of establishing an action plan that is idealistic and has no regard to the practicalities and impacts of changes to waste management services.

4. Our Starting Point on page 8. The Draft Strategy correctly identifies the challenging nature of waste management in Western Australia in recognizing the State's considerable distance from waste end markets and the impact that this may have on establishing waste and recycling infrastructure and achieving overall recycling rates. That being said, this contextual understanding of where Western Australia is at currently, does not flow through into the objectives and targets established for the Perth and Peel metropolitan area. The Draft Strategy fails to acknowledge that under the current conditions, diversion targets are not being achieved and also fails to establish a staged plan with more appropriate targets that has regard to the current challenges faced by WA in developing the necessary infrastructure to support its plan.

5. Targets – Recover section on Page 29. The 2020, 2025 and 2030 material recovery targets of 65%, 67% and 70% respectively for MSW are unrealistic and should revert back to waste diversion targets as per the current Strategy but, if kept, should be changed to a more realistic end dates with an additional 5 years applicable to each target.

6. Circular Economy – Third paragraph on Page 14. Given that there are few local recycling options available in Australia, it is unrealistic to expect local recycling markets to be set up in WA which has a much smaller population and transport costs are greater. This again demonstrates that the WA context has not been adequately considered in formulating the Draft Strategy and in particular creating more realistic and achievable targets as part of a step program for change.

7. Principles - Better Practice on Page 17. An assumption has been made that stakeholders will adjust practices when better practice is promoted. This does not occur in reality when the costs of the changes are prohibitive for the local government ratepayers.

8. Our Approach – Local Solutions and Markets on Page 19. The Draft Strategy suggests that it is sufficient to promote procurement decisions that preference local markets. Experience in the procurement of recycled products indicates that local markets are used when the costs compare favorably to procuring the materials from elsewhere. The financial impact purchasing will have on the ratepayer is a fundamental consideration of local government.

9. Our roles and responsibilities – State Government on Page 20. This section of the Draft Strategy highlights the role of State Government as encouraging businesses to invest and innovate in the waste and the recycling sector but fails to state how a circular economy can and will be achieved in WA's resource driven economy.

10. Opportunities and focus materials – Construction and demolition waste on Page 22. There is unlikely to be any significant change unless new markets are created and there is legislative change in place to ease requirements for re-use of such materials.

11. Opportunities and focus materials – Organics: food organics and garden organics on Page 22 – Markets are essential for re-use of processed FOGO and to date the poor quality of composted material remains an issue.

12. Table 2: Avoid Strategies – Knowledge on Page 27 - Lead collaboration between State Government agencies on actions that reduce the waste generation with an emphasis on focus materials should not apply to local government.

13. Focus Materials on Page 30. This suggests that a consistent approach where all local governments provide the same kerbside service will result in greater recycling effectiveness but as evidenced by local government's long experience with recyclables this does not guarantee a clean and consistent stream of material.

14. Energy Recovery information on Page 30. The summary does not factor the by products such as fly ash and bottom ash that could also be re-used as per the approval in brick making for the construction industry. Nor does it account for the industrial symbiosis from steam, heat and other by-products.

15. Table 5: Foundation Strategies – Information and Data on Page 38. The Draft Strategy refers to amendments to the *Waste Avoidance and Resource Recovery Regulations 2008* but does not outline what the amendments will include and how they will support local government.

16. Table 5: Foundation Strategies – Regulation and Policy on Page 38. The changes should ensure that a larger share of the waste levy is returned to local government to support implementation of strategies that would otherwise be cost prohibitive to implement.

Yours sincerely

_____

Joanne Abbiss
Chief Executive Officer

17 Urgent Business

Nil

18 Councillor Reports

18.1 Councillor Wendy Cooper

Councillor Wendy Cooper reported that she had attended the City of Kwinana Pioneer Luncheon.

Councillor Cooper advised that she had attended the City of Kwinana Arts, Culture and Entertainment Awards.

Councillor Cooper mentioned that she had attended a Local Government Act Review Forum which was interesting.

Councillor Cooper reported that she had attended the Calista Primary School Board Meeting and was pleased to hear the NAPLAN results were above the national average.

Councillor Cooper advised that she had attended the City of Kwinana Citizenship Ceremony which was really great.

Councillor Cooper mentioned that she had attended the Homestead Ridge Progress Association Annual General Meeting which was a well prepared event.

Councillor Cooper advised that she had attended the Kwinana Small Business Luncheon which was well attended.

Councillor Cooper mentioned that she had attended the Gilmore College Process Plant Opening and met the next cohort of students that will be attending that facility.

Councillor Cooper reported that she had attended the Kwinana Returned and Services League (RSL) Remembrance Day Service.

Councillor Cooper advised that she had attended the Southern Metropolitan Regional Council (SMRC) Stakeholders Meeting.

18.2 Councillor Merv Kearney

Councillor Merv Kearney announced that the Men's Shed reopened on Monday and that they have 40 members so far.

18.3 Councillor Sandra Lee

Councillor Sandra Lee reported that she had attended the Kwinana Tennis Club Annual Open Day, the Children's Week Family Picnic Day at the Adventure Park and the Community Fete at St Vincent's Primary School. Councillor Lee stated that these events were well attended and enjoyed by all.

18 COUNCILLOR REPORTS

Councillor Lee advised that she had attended the City of Kwinana Citizenship Ceremony and that it was lovely to see people become Australian Citizens.

Councillor Lee mentioned that she had attended the Homestead Ridge Progress Association Annual General Meeting.

Councillor Lee reported that she had attended the South West Reference Group Meeting, where she went on a bus tour to the Banksia Road, Banksia Woodland, the Baldivis Tramway Reserve, the Lewington Reserve TEC Trial and to Lake Richmond to learn about the Thrombolites.

Councillor Lee advised that she had attended the City of Kwinana Arts, Culture and Entertainment Awards, held at the Koorliny Amphitheatre. Councillor Lee further advised that it was a wonderful evening to acknowledge the talented people who contribute to making Kwinana a great place to live.

Councillor Lee mentioned that she had attended the Kwinana Small Business Luncheon, held at the Kwinana Golf Club, where about 150 people attended, many who are Sole Business proprietors, it was an opportunity for people to network and listen to the Commissioner for Small Business.

Councillor Lee reported that on behalf of Mayor Adams, she attended the Australia China Friendship Society night.

Councillor Lee advised that she had attended the twin birthdays of the Bab and Baha u llah to celebrate the births of the two central figures of the Baha I Faith.

Councillor Lee mentioned that she had attended the Kwinana RSL Remembrance Day Service which was another fitting tribute to all the people who have and do serve in the military.

18.4 Councillor Dennis Wood

Councillor Dennis Wood reported that he had attended the City of Kwinana Pioneer luncheon which was fantastic.

Councillor Wood advised that he had attended the City of Kwinana Citizenship Ceremony which was good.

Councillor Wood mentioned that he had attended the Kwinana RSL Remembrance Day Service.

19 Response to Previous Questions

Question taken on notice at the Ordinary Council Meeting held on 12 September 2018

19.1 Mr Richard White, Mandogalup

Question 6
The entrance statement to Kwinana on Thomas Road, they have done some work there but they do not seem to have cleaned it up, there is sand everywhere.

19 RESPONSE TO PREVIOUS QUESTIONS

Response
The Mayor took the question on notice.

Further response from the City of Kwinana
The existing stockpiles of various materials in front of the entrance statement on Thomas Road have been removed by the contractor.

20 Mayoral Announcements (without discussion)

Mayor Carol Adams was pleased to report that the City's advocacy for the speed reduction on Lyon Road in Wandi has been successful. Subject to the advertisement period on the Main Roads website, the speed between Honeywood Avenue and Anketell Road will be reduced by 10km/h (from 80km/h to 70km/h).

The Mayor passed on her thanks to the City's Engineering Manager and City Officers for achieving this outcome on behalf of the Wandi residents.

The Mayor announced that this Sunday is the start of the RoadWise Road Ribbon for Road Safety Campaign, which will run until 4 January 2019. This is a community-based initiative, which works towards achieving zero deaths and serious injuries on our roads. The City is very proud to support the RoadWise Safety Initiative especially as we lead into the Christmas and New Year festive season.

The Mayor advised that she had attended meetings with:

- Hon Simon O'Brien MLC with regard to a briefing on the City's objection to the location of New Energy Waste to Energy.
- President and Chief Executive Officer, Shire of Coolgardie regarding Lithium and battery supply chain.
- Advocating for Caravan Rest spots in Kwinana.
- Rockingham Flames General Manager regarding basketball opportunities in Kwinana and better engagement with the City of Kwinana.
- West Australian Symphony Orchestra (WASO) briefing on the work they have been doing with the North Parmelia and Medina Primary Schools. The Mayor announced she had been invited to attend the end of year concerts at each of these schools to hear firsthand the outcome of the partnership between the students and WASO.

The Mayor advised that she had attended the following events:

- City of Kwinana Pioneer Luncheon, held at Medina Hall.
- City of Kwinana Arts, Culture and Entertainments Awards, held at the Koorliny Amphitheatre. The Mayor passed on her congratulations to:
    - Junior Performing Arts Person of the Year, Shakaylee Wallam
    - Visual Arts Person of the Year, Ashley Collard
    - Junior Visual Arts Person of the Year, Carissa-Joy Winter
    - Performing Arts Person of the Year, Kelly Salatheil
- City of Rockingham Annual Recognition Function.
- City of Kwinana Citizenship Ceremony, where we welcomed 47 new Australians.
- Children's Week Family Picnic day presented by Nature Play, Meerilinga, and Lotterywest.
- Leda Kids Expo held at Leda Primary School

20 MAYORAL ANNOUNCEMENTS (WITHOUT DISCUSSION)

- Kwinana Small Business Luncheon, with special guest speaker, Mr David Eacott, the Small Business Commissioner.
  An interesting fact, last financial year, 988 businesses were created in the City of Kwinana. Many of these are part time industries pursued in people's spare time. 830 were sole traders mostly starting a business from home.
- Local Government Act Review Forum held at the City of Cockburn. Attended with the City's Lawyer and Councillor Cooper and Councillor Lee.
- WA Indo-Pacific Defence Conference Official launch by the Premier, Mark McGowan, of the WA Defence and Defence Industries Strategic Plan. The Mayor explained that it was a positive announcement of initiatives around the defence industry in Henderson, which will lead to job opportunities and downstream jobs for local businesses and our region.
- Launch by Minister Ben Whyatt of the CCI WA report entitled: *"WA's Future in the Lithium Battery Value Chain*". Given the importance to the City of this emerging industry, the City provide a contribution to the report along with CME (Chamber of Minerals and Energy, Synergy, BHP and Neometals. Following the launch I was part of a panel discussion on what effectively the developing Lithium and Battery value chain investment means for the City of Kwinana.
- Gilmore Clontarf Academy End of Year Celebration.
- Homestead Ridge Progress Association AGM. The Mayor passed on her congratulations to Robina Ellis on her re-election (unopposed) as President.
  The Mayor advised that issues raised, which will be formally submitted to the City for a response were:
  - Request for water fountain in Homestead Park
  - Lighting in the carpark
  - New signage for Homestead Park (given the re-naming)
  - What is the local government law in relation to the requirement of dog owners to pick up after their dogs in reserves?
  - They are currently conduction a survey via their Facebook site in relation to resident's opinions on footpaths and marked bicycle lanes– Silversmith Street came into discussion given that this street is used extensively by bike riders and early morning walkers

The Mayor advised that upcoming events of note are:

- Bertram Punjabi Club's Third Annual Multicultural Fair on the Bertram Primary School Site, from 12pm – 6pm.
- Turning on of the City of Kwinana Christmas Tree Lights, on Friday 23 November 2018.

The Mayor passed on her sincere sympathy to Councillor Merv Kearney on the passing of his father in law, Ron Willcocks, a former Councillor of the City of Kwinana.

21 Matters Behind Closed Doors

COUNCIL DECISION
333
MOVED CR W COOPER **SECONDED CR S MILLS**

That in accordance with Section 5.23(2)(c) of the *Local Government Act 1995*, Council move behind closed doors to allow discussion of the Matters Behind Closed Doors items.

CARRIED
8/0

The gallery exited the Council Chambers and the doors were closed at 7:56pm.

21.1 Variations to kerbside waste and recycling contract

COUNCIL DECISION
334
MOVED CR S MILLS **SECONDED CR M ROWSE**

That Council approve the following variations to the Schedule of Fees and Charges of the Waste Management Services – Waste and Recycling Collections, Processing and Disposal contract with SUEZ Recycling and Recovery Pty Ltd:

A. $15 + GST per bin for delivery of bins purchased during the former kerbside waste and recycling contract.
B. $20.50 + GST per event bin delivered, collected and cleaned.
C. $30.50 + GST per abandoned or returned bin that is collected, cleaned, stored and delivered for re-use.

CARRIED
8/0

21.2 City of Kwinana Response to Changes to Conditions of Approval – Kwinana Waste To Energy Project

COUNCIL DECISION

335

MOVED CR C ADAMS **SECONDED CR S MILLS**

That Council adopt the City of Kwinana Response to Changes to Conditions of Approval – Kwinana Waste to Energy Project as detailed in Attachment C.

CARRIED
8/0

COUNCIL DECISION

336

MOVED CR P FEASEY **SECONDED CR D WOOD**

That Council return from Behind Closed Doors.

CARRIED
8/0

The Council Chambers doors were reopened at 7:59pm.

22 Meeting Closure

The Mayor declared the meeting closed at 8:00pm.

Chairperson: 28 November 2018