Western Australian Planning Commission

Your Ref: 09/45-02
Our Ref: SPN/0536
Enquiries: Regan Douglas (Ph 6551 9289)

Chief Executive Officer
City of Kwinana
PO Box 21
KWINANA WA 6966

Attention: Alison Rumley

Dear Sir/Madam

WELLARD LOCAL STRUCTURE PLAN – LOT 90 AND PART LOT 378 MILLAR ROAD

I refer to correspondence regarding the abovementioned matter and our letter dated 28 January 2014.

The Western Australian Planning Commission has resolved to approve the Lot 90 and part Lot 378 Millar Road, Wellard Local Structure Plan.

Please find enclosed, one signed copy of the Wellard Local Structure Plan.

Should you wish to discuss this matter further, please contact the assigned planning officer listed above.

Yours faithfully

T. Hillyard

Tim Hillyard
Secretary
Western Australian Planning Commission
15 May 2014

Enclosure: One copy of Wellard Local Structure Plan

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20 MAY 2014
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Cardno
Shaping the Future

Lot 90 and Part Lot 378
Millar Road
Wellard Local Structure Plan

Prepared for DJ MacCORMICK PROPERTY GROUP
Project Number P04017

ARTMENT OF PLANNING
- 5 MAY 2014
FILE SPN/0536

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1 Introduction

This following report provides justification for a second Local Structure Plan (LSP) within the Wellard East Cell for land described as Lot 90 and Part Lot 378, Millar Road, Wellard East (referred to as the LSP Area and the site in the following report). The following report also refers to a wider area - the Wellard East Cell, which is land located east of the Kwinana Freeway, south of Mortimer Road, north of Millar Road and west of Woolcoot Road, referred to as Wellard East (refer to **Figures 1** and **2** for LSP and cell boundaries). The LSP Area or the site is located in the southern part of the Wellard East Cell. The report and appendices are prepared by Cardno (WA) Pty Ltd (Cardno) and other consultants (Emerge & Associates), GHD, Transcore and Lloyd George Acoustics.

Whilst the LSP Area covers part of the Wellard East Cell, the following report addresses planning and environmental issues in a holistic manner, however the detailed technical reports (such as the District and Local Water Management Strategy) mainly focus on the LSP Area (ie. Lot 90 and Part Lot 378). Also the Local Structure Plan (**Figures 17 and 20**) shows a design over the LSP Area as well a conceptual design over the balance of the cell and the previously approved LSP design over the northern portion of the cell (ie part Lot 201 and Lot 27 Mortimer Road). The technical reports demonstrate that development of Lot 90 and Part Lot 378 can proceed independently and will not adversely impact or prejudice future development/subdivision of adjoining land. **On this basis, a second LSP approval within the Wellard East Cell is being sought for Lot 90 and Part Lot 378.** This will enable subdivision to proceed in a timely manner, whilst other more detailed issues are addressed and resolved within the balance of the cell.

The LSP is generally consistent with the concept planning for the site which was undertaken as part of the first LSP that was endorsed in August, 2011 by the City of Kwinana and WA Planning Commission (WAPC). A review of the concept planning resolved that it was an appropriate design response and so it has not been amended other than some minor adjustments in the northern section of the site.

The following report recognises the opportunities and constraints of the Wellard East Cell, particularly in terms of the location, lot configuration, topography and environmental features as well as the specific drainage requirements reflected in the District and Local Water Management Strategy (GHD) for Lot 90 and Part Lot 378. The following report also includes a review of the current planning framework, environmental investigations (such as a flora and vegetation survey), transport assessment, servicing analysis and design rationale for the LSP Area.

The LSP will guide the subdivision of the site and ensure that development proceeds in a sustainable manner facilitating the objectives of the Western Australian Planning Commission (WAPC), as advocated through Liveable Neighbourhoods and in accordance with the objectives of the City of Kwinana. The LSP reflects the intended use of the subject site for urban development as identified in the Jandakot Structure Plan and the Draft District Structure Plan, referred to as the Eastern Residential Intensification Concept (ERIC).

1.1 Background

The LSP has been prepared in accordance with Clauses 6.15, 6.17 and 6.17.3.3 (ie. Structure Plan over part of the Development Zone) in the City of Kwinana Town Planning Scheme No. 2 (TPS2), which requires an LSP to be prepared for land zoned Development prior to consideration and approval of an application for subdivision and development of the land. The LSP provides the planning framework for development within Wellard East and establishes a context for the consideration and eventual approval of subdivision applications for lots within the cell.

In January 2009, Cardno lodged a Metropolitan Region Scheme (MRS) lifting proposal on behalf of another landowner to transfer the Wellard East Cell (also referred to as the cell) from the Urban Deferred Zone to Urban. Due to outstanding buffer issues associated with the livestock holding facility, basic raw material resource (clay) and jet ski park (all uses located to the south of Millar Road), only the northern part of the cell was zoned Urban. In accordance with Section 126 of the Planning and Development Act, the same portion of land was concurrently zoned Development under the City of Kwinana Town Planning Scheme No. 2 (referred to as TPS 2).

Since this time, a second Urban Deferred lifting was lodged with the WAPC to transfer more land to the Urban Zone within the Wellard East Cell on the basis that it was no longer affected by the Basic Raw Material (clay). On 3 May, 2011, land in the south-west portion of the cell was zoned Urban under the MRS and Development under TPS 2. This second lifting included the LSP Area - the subject of this report (ie. Lot 90 and Part Lot 378).

Further investigations have been carried out by other consultants and landowner into removing or reducing the only remaining buffer within the Wellard East Cell, which is the 1000m odour buffer triggered by the Livestock Holding Facility located to the south of Millar Road. The further odour study is currently being assessed by DEC. Most importantly, the current 1000m odour buffer does not affect any part of Lot 90 and Part Lot 378 and as such this issue is not relevant to the LSP approval for the subject site (ie. Lot 90 and Part Lot 378).

In response to the first Urban Deferred Lifting, Cardno lodged a Local Structure Plan for the northern section of the Wellard East Cell (ie. Lot 27 and Part Lot 201). The first LSP was endorsed by the WAPC on the 28th June, 2011 and by the City of Kwinana on the 5th August, 2011. This first LSP set the local structure planning framework and direction for the balance of the Wellard East Cell by showing a conceptual design, land uses, movement network and residential densities over the entire cell.

In accordance with Clauses 6.17.3.3 and 6.17.3.5 of TPS 2, which allows LSP approval over part of the Development Area or Development Zone provided sufficient integration of services, movement network and land uses are demonstrated, the owner of Lot 90 and Part Lot 378 is now seeking a second LSP approval over their land in the south-west portion of the cell in a manner similar to that shown on the endorsed LSP.

2 Site Description

2.1 Location

The LSP Area is located approximately 36 kilometres south of Perth's Central Business District and totals approximately 16.79 hectares (refer to **Figures 1** and **2**). It is situated in the South West Corridor of Perth and is bounded by Kwinana Freeway to the west and Millar Road to the south. The LSP Area is situated wholly within the municipality of the City of Kwinana.

2.2 Extent of Local Structure Plan Area

The LSP Area is located in the south-west portion of the Wellard East Cell and comprises Lot 90 and Part Lot 378 Millar Road.

The LSP Area comprises predominantly cleared farmland and a residential dwelling and associated outbuildings. **Figure 2** provides an aerial photograph of the LSP Area.

Mary Donald Nominees (D.J. MacCormick Property Group) owns Lot 90 and Part Lot 378 Millar Road as detailed in the next section.

2.3 Land Ownership

The Wellard East Cell contains twenty two (22) land parcels, under varying ownership as outlined in Table 1 below. The properties owned by Mary Donald Nominees (D.J. MacCormick Property Group) are highlighted in bold.

Table 1: Lot Description, Ownership and Areas

Lot No. and Street	Owner	Land Area (ha)
Pt 27 Mortimer Road	Armana Holdings	3.51
Pt 28 Mortimer Road	C. Berry, D. Berry, K. Griffin, B. Munro	3.79
Pt 26 Mortimer Road	Main Roads Western Australia	2.39
126 Mortimer Road	Main Roads Western Australia	0.23
127 Mortimer Road	Main Roads Western Australia	0.67
128 Mortimer Road	Main Roads Western Australia	0.48
129 Mortimer Road	Main Roads Western Australia	0.50
201 Mortimer Road	Armana Holdings Pty Ltd	39.93
59 Woolcoot Road	Geographe Development Pty Ltd	12.48
61 Woolcoot Road	LM + C Morley	2.69
62 Woolcoot Road*	A. Bombara, M. Bombara, M. Verheggen and Robin Lodge Pty Ltd	12.71
62 Woolcoot Road*	VN Nguyen & Thi Hoa Vo	9.84
64 Woolcoot Road	Silver Knight Holdings	11.77
89 Woolcoot Road	Bertolini	14.13

1219 Woolcoot Road	Husker Holdings Pty Ltd	15.18
0 Johnson Road	Main Roads Western Australia	0.10
Pt 11 Johnson Road	Main Roads Western Australia	1.28
Pt 91 Johnson Road	Main Roads Western Australia	0.19
90 Millar Road	**Mary Donald Nominees (D.J. MacCormick Property Group)**	**8.94**
Pt 378 Millar Road	**Mary Donald Nominees Pty Ltd**	**7.85**
Pt 379 Millar Road	Armana Holdings Pty Ltd	15.37
Pt 380 Millar Road	S. Lang, J. W Wang, C. Ye	2.70
Closed Road Reserve	Landgate Update	0.15
Drainage Reserves	Water Corporation	3.87
TOTAL		**170.75**

Notes:* There are two lots known as Lot 62 Woolcoot Road

The location and area of each lot are reflected in **Figure 3.**

Table 1 highlights the extent of land owned by Mary Donald Nominees (D.J. MacCormick Property Group) as the proponent of this LSP. Mary Donald Nominees (D.J. MacCormick Property Group) currently owns 16.79ha or 9.8% of the Wellard East Cell. However, in terms of the portion of developable land within the cell owned by D.J. MacCormick Property Group, the percentage is much higher. If the approximate areas of the wetlands and buffers and the Western Power Easement (ie. 59.1ha) are deducted from the cell (leaving a land area of 111.65ha), then the portion owned by DJ MacCormick Property Group is 15% of the cell.

It should be noted that Lot 59 Woolcoot Road is also owned by DJ MacCormick Property Group (through the company of Geographe Development Pty Ltd) but does not form part of the LSP approval area. This land will be the subject of a future LSP.

3 Environmental Considerations

A desktop investigation was previously completed by Cardno (2011a) to support the Local Structure Plan for the Wellard East Cell, focussing in particular on Lot 201 Mortimer Road and Lot 379 Millar Road. A review of this information as well as available desktop information and site specific investigations have been undertaken by Emerge Associates to support the Local Structure Plan for Lot 90 and Part Lot 378 Millar Road (the site).

The site specific investigations include:

- Preliminary Acid Sulfate Soils Assessment (Cardno 2011b)
- Flora, Vegetation and Fauna Survey (GHD 2011)
- District and Local Water Management Strategy (GHD 2012)
- Geotechnical Investigation (Structerre 2010)
- Traffic Noise Assessment (Lloyd George Acoustics 2012)

The available environmental information has been updated to reflect the environmental values as they currently exist within the site and unless otherwise outlined, address the environmental values for Lot 90 and Part Lot 378 Millar Road.

3.1 Physical Description

3.1.1 Topography

The topography of the site is gently undulating, with a generally south-westerly aspect. The site ranges from 14 metres Australian Height Datum (AHD) in the north-east portion of the site to 9 metres AHD in the south-west portion of the site, although the site ranges to 8 metres AHD through the central portion of the site, which coincides with an agricultural drain. The topography of the site is shown in **Figure 4.**

3.1.2 Landforms and soils

The site is located on the Swan Coastal Plain, which forms the central portion of the Perth Basin. The Perth Basin extends from the Darling Fault in the east to the continental slope west of Rottnest Island, and from the Murchison River in the north to the Southern Ocean in the south. The Perth Basin is sedimentary in origin and is marginal to the west of the Australian Shield (Seddon 2004).

The Swan Coastal Plain is composed of two wide belts of sediment that differ in origin, with one formed from alluvial deposits (water-laid) and the other formed from aeolian origins (wind-laid). It is approximately 20 to 30 kilometres wide, consisting of a series of geomorphic entities that run parallel to the coastline with the alluvial deposits in the east and the aeolian deposits in the west. The youngest and western most geomorphic entity of aeolian origin is the Quindalup Dunes, followed by the Spearwood Dunes and the Bassendean Dunes (Beard 1994, Seddon 2004). The Pinjarra Plain follows the Bassendean Dunes and is alluvial in origin, which then joins the Ridge Hill Shelf at the eastern most edge of the Swan Coastal Plain. The site is located within the Bassendean Dune System, which is described as low relief, leached grey, siliceous Pleistocene sand dunes with well drained grey sands intervening sandy and clayey swamps and gently undulating plains.

The *Perth Metropolitan Region 1:50 000 Environmental Geology Series, Rockingham Part Sheet 2033 II and 2033 III* (Gozzard 1983) describes the site as comprised of Sand (S_8) which is "*very light grey at surface, yellow at depth, fine to medium-grained, sub-rounded quartz moderately well sorted of aeolian origin*". A geotechnical investigation completed for the site determined that the natural soils

encountered were consistent with the expected soil characteristics, outlined in Gozzard (1983) (Structerre Consulting Engineers 2010).

3.2 Acid Sulfate Soils

Acid sulfate soils (ASS) are the name commonly given to naturally occurring soils and sediment containing iron sulphide (iron pyrite) materials. In their natural state ASS is generally present in waterlogged anoxic conditions and do not present a risk to the environment. ASS can present issues when oxidised, producing sulphuric acid, which can impart a range of impacts on the surrounding environment, infrastructure and human health. ASS that have been oxidised and resulted in the creation of acidic conditions are commonly termed 'Actual ASS (AASS)' and those that have acid generating potential but remain in their natural anaerobic state are termed 'Potential ASS (PASS)'.

Mapping prepared by the Department of Environment and Conservation (DEC) provides a broad scale indication of areas with potential ASS risk. The mapping indicates that the entire site has been classified as having a '*moderate to low risk of ASS occurring with 3 metres of the natural soil surface, but high to moderate risk beyond 3 metre of the natural soil surface*', and is shown in **Figure 5.**

A preliminary ASS investigation was completed by Cardno (2011b) to determine the actual presence or absence of ASS, and to determine where, if necessary, further investigation may be required. This investigation found that soil conditions vary from being slightly acidic to slightly alkaline. Field and laboratory analysis found that ASS is unlikely to be disturbed within the soil profile above the watertable, while ASS may be disturbed in soil below the water table.

3.3 Hydrology

3.3.1 Surface Water

The site is located within the Serpentine River Catchment and the Lower Serpentine surface water allocation area. An artificial drain occurs through the central portion of the site, traversing the site in a north-west to south-east direction. In addition another drain occurs outside the site, adjacent to the northern boundary of the site. These are shown in **Figure 6.** From available mapping, aerial photography and surface water monitoring completed for the drains, the drains do not appear to be inundated permanently and are generally only inundated when groundwater rises seasonally, in association with winter rainfall (Cardno 2009, GHD 2012).

The Serpentine River and associated catchment is considered the major river in the northern portion of the Peel-Harvey Catchment. The Peel-Harvey Catchment is nearly 1.5 million hectares in size and covers a broad range of geographical areas within the western portion of the Swan Coastal Plain, encompassing coastal dune and lake environments, a large estuarine system in the south-west and an extensive back plain and foothills area to the east (Peel Harvey Catchment Council 2005).

Two policies, the *Environmental Protection (Peel Inlet – Harvey Estuary) Policy 1992* (Environmental Protection Authority 1992) and *State Planning Policy 2.1 Peel-Harvey Coastal Plain Catchment Policy* apply to the site, and both require specific water quality objectives to be met. The *Environmental Protection (Peel Inlet – Harvey Estuary) Policy 1992* was created to protect the Peel-Inlet Harvey Estuary from ongoing degradation, on which *State Planning Policy 2.1 Peel-Harvey Coastal Plain Catchment Policy* is based. The aim of this policy is to protect the estuary from nutrient enrichment, through the setting of environmental quality objectives to enable rehabilitation of the area and prevent further degradation. Nutrient enrichment of this system has resulted from activities such as the clearing of native vegetation and land uses such as agriculture and fertiliser use.

3.3.2 Groundwater

The *Perth Groundwater Atlas* (Department of Water, 2012) indicates that groundwater is likely to be between 5 metres AHD in the northern-eastern portion of the site, and 4 metres AHD in the southern portion of the site, which based on topographic contours ranges from 8 metres below ground surface in the northern-eastern portion of the site to 4 metres below ground surface in the southern portion of the site.

In order to determine the maximum groundwater levels within the site, predevelopment groundwater monitoring was completed for the wider area between October 2005 and 2008 (Cardno 2009). This monitoring was compared with data from Department of Water bores (Department of Water bores are monitored over a longer period of time) to calculate an average annual maximum groundwater level (GHD 2012). The calculated average annual maximum groundwater level was 9 metres AHD in the north-east and 5.5 metres AHD in the south-west. Overall, the calculated average annual maximum groundwater level is mostly greater than 1.2 metres below ground surface except for through the central portion of the site where depth to groundwater is less than 1.2 metres AHD, with some ponding expected to be observed along the central-eastern boundary of the site (GHD 2012).

The expected groundwater contours are shown in **Figure 6.**

The site forms part of the Serpentine Groundwater Area and is found within the Jandakot Mound 2 Subarea (Department of Water 2012). This area is underlain by the Perth – Superficial Swan aquifer, which is described as the 'water table aquifer' and is unconfined within this portion of the Swan Coastal Plain, then the Leederville and Cattamarra aquifers which are semi-confined and lastly the Yarragadee aquifer which is confined. The Yarragadee aquifer is not currently accessed for groundwater supply in this portion of the Swan Coastal Plain due to its depth below ground surface.

A search of the Department of Water online register *Water Register* was undertaken to determine whether groundwater was still available for allocation, or if any current groundwater allocations existed within the site. Groundwater is still available with Jandakot Mound 2 Sub area for allocation purposes. No licence is currently held within the site.

3.3.3 Public Drinking Water Source Areas

Public Drinking Water Source Areas (PDWSAs) are proclaimed by the Department of Water to protect the water quality of identified drinking water sources, which can be surface water or groundwater sources (Department of Water 2009). They are established under the *Metropolitan Water Supply, Sewerage and Drainage Act 1909* or the *Country Areas Water Supply Act 1947* as Water Reserves, Catchment Areas or Underground Water Pollution Areas (Department of Water 2009). PDWSAs provide the community with the majority of its drinking water supplies and can be vulnerable to contamination from a range of land uses and water based activities (Department of Water 2009). Once an area is identified as a PDWSA, consideration needs to be given to the intended land use and associated activities to ensure that they are appropriate in meeting the water protection objectives of the area.

The site is not located within any proclaimed PDWSA.

3.4 Flora and vegetation

The site is found within the Swan Coastal Plain Interim Biogeographical Regionalisation of Australia (IBRA) area and is broadly categorised as *Banksia* low woodland on leached soils with *Melaleuca* swamps on ill-drained soils and woodlands of Tuart (*Eucalyptus gomphocephala*), Jarrah (*E. marginata*) and Marri (*Corymbia calophylla*) on less leached soils (Thackway and Cresswell 1995).

Vegetation complex mapping undertaken by Heddle *et al* (1986) for parts of Western Australia uses a combination of landform, soils and rainfall parameters and indicates that the site is within the 'Bassendean Complex – Central and South'. This complex is described as a range of woodland of *E. marginata* (Jarrah), *Casuarina sp.* (Sheoak) and *Banksia sp.* on the low dunes, to low woodland of *Melaleuca sp.* and sedgelands in the swamps and depressions.

The Environmental Protection Authority *Guidance for the Assessment of Environmental Factors Level of Assessment No. 10 For Proposals Affecting Natural Areas Within the System 6 Region and Swan Coastal Plain Portion of the System 1 Region* aims to ensure that proposals consider and minimise potential impacts on bushland within the *Bush Forever* area and regionally significant natural areas within the System 6 and Swan Coastal Plain portion of the System 1 Region. According to updated data prepared by the Perth Biodiversity Project, approximately 27 per cent of the pre-European extent of this vegetation complex remains within the Swan Coastal Plain, with 3.32 per cent of this with some form of formal protection.

A detailed flora and vegetation survey was completed for the site in accordance with *Environmental Protection Authority Guidance Statement 51 Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessment in Western Australia* (Environmental Protection Authority 2004a). This included a site visit in October 2010 by an experienced botanist to identify dominant vegetation types, vegetation condition and significant flora species (GHD 2011).

Five vegetation communities were identified during the survey and include:

- Exotics/house plantings
- Cleared paddock
- Tall open scrub of *Kunzea glabrescens* over paddock weeds
- Open forest of *Eucalyptus rudis* over tall shrubland of *Kunzea glabrescens* and weeds
- Woodland of *Eucalyptus marginata* and *Banksia menziesii* over mixed herbs and weeds.

The majority of the site is described as cleared paddocks, with the north-east portion of the site described as being composed of woodland of *Eucalyptus marginata* and *Banksia menziesii* over mixed herbs and weeds and open forest of *Eucalyptus rudis* over tall shrubland of *Kunzea glabrescens* and weeds. The western portion of the site is described as predominantly tall open scrub of *Kunzea glabrescens* over paddock weeds. The vegetation communities are shown in **Figure 7**.

The vegetation condition of the site was based on the Keighery (1994) rating system and suggests that the site ranges from 'Good' to 'Completely Degraded' condition, with the majority of the site in a 'Completely Degraded' condition. The southern portion of the site was considered to be 'Degraded' or 'Completely Degraded', while the north-eastern portion of the site was considered to be generally in a 'Good' condition, with the areas of cleared paddock in 'Completely Degraded' condition. The areas of 'Good' condition were assessed as being significantly altered by obvious signs of multiple disturbances, including clearing, grazing, weed invasion and fire (GHD 2011). The vegetation condition is shown in **Figure 8**.

3.4.1 Flora species of conservation significance

The Commonwealth *Environmental Protection and Biodiversity Conservation Act 1999* promotes the conservation of biodiversity by providing statutory protection for plants at a species level. Section 178 and 179 of the *Environmental Protection and Biodiversity Conservation Act 1999* provides for the lists and categories of threatened species under the act and is summarised in Table 1 below.

Table 1: Categories of threatened species (Environmental Protection Biodiversity Conservation Act, Section 178 and 179, 1999)

(Only categories marked with an * are matters of national environmental significance under the EPBC Act)

CONSERVATION CODE	CATEGORY
E	**Extinct** Taxa which is known only to survive in cultivation, in captivity or as a naturalised population, well outside its past range; or it has not been recorded in its known/or expected habitat, at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form.
CE*	**Critically Endangered** Taxa which is facing a very high risk of extinction in the wild in the immediate or near future, as determined in accordance with the prescribed criteria.
E*	**Endangered** Taxa which are not critically endangered and is facing a very high risk of extinction in the wild in the near future, as determined in accordance with the prescribed criteria.
V*	**Vulnerable** Taxa which is not endangered and is facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with the prescribed criteria.
CD	**Conservation Dependent** A species that is the focus of a specific conservation program; the cessation of which would result in the species becoming vulnerable, endangered or critically endangered within a period of five years.

Species of flora acquire Declared Rare Flora (DRF) or Priority Flora (PF) conservation status within Western Australia where populations are restricted geographically or threatened by local processes. The Department of Environment and Conservation recognises these threats and applies regulations towards population protection and species conservation. The Department of Environment and Conservation enforces regulations under the *Wildlife Conservation Act 1950* (WC Act) to conserve Declared Rare Flora species and protect significant populations. Priority Flora is described as potentially rare or threatened species and is classified in order of threat. Declared Rare Flora and Priority Flora categories are listed below in Table 2.

Table 2: Definition of Rare and Priority Flora species (Atkins 2006)

CONSERVATION CODE	CATEGORY
R	**Declared Rare Flora – Extant Taxa.** Taxa which have been adequately searched for and are deemed to be in the wild either rare, in danger of extinction, or otherwise in need of special protection, and have been gazetted as such.
X	**Declared Rare Flora – Presumed Extinct Taxa** Taxa which have not been collected, or otherwise verified, over the past 50 years despite thorough searching, or of which all known wild populations have been destroyed more recently, and have been gazetted as such.
P1	**Priority One – Poorly Known Taxa** Taxa which are known from one or a few (generally <5) populations which are under threat, either due to small population size, or being on lands under immediate threat e.g. road verges, urban areas, farmland, active mineral leases etc., or the plants are under threat, e.g. from disease, grazing by feral animals etc. May include taxa with threatened populations on protected lands. Such taxa are under consideration for declaration as 'rare flora', but are in urgent need of further survey.
P2	**Priority Two – Poorly Known Taxa** Taxa which are known from one or a few (generally <5) populations, at least some of which are not believed to be under immediate threat (i.e. not currently endangered). Such taxa are under consideration for declaration as 'rare flora', but urgently need further survey.
P3	**Priority Three – Poorly Known Taxa** Taxa which are known from several populations, and the taxa are not believed to be under immediate threat (i.e. not currently endangered), either due to the number of known populations (generally >5), or known populations being large, and either widespread or protected. Such taxa are under consideration for declaration as 'rare flora' but need further survey.
P4	**Priority Four – Rare Taxa** Taxa which are considered to have been adequately surveyed and which, whilst being rare (in Australia), are not currently threatened by any identifiable factors. These taxa require monitoring every 5-10 years.

To assess the potential for the site to contain specially protected flora species, as a part of the flora and vegetation survey, a search of the state based Department of Environment and Conservation *NatureMap* database and the federal based Department of Sustainability, Environment, Water, Population, Arts and Community *Protected Matters* database was undertaken. It is important to note that these searches do not take into account the condition of the vegetation occurring on the site, but are based on the proximity of the site to known occurrences of significant species. These results are listed in Table 3.

Table 3: Conservation coded flora known to occur within the vicinity of the site.

SPECIES		CONSERVATION CODE	
SCIENTIFIC NAME	COMMON NAME	FEDERAL	STATE
Acacia lasiocarpa var. bracteolata long peduncle variant		Not listed	P1
Andersonia gracilis	Slender Andersonia	E	R

SPECIES		CONSERVATION CODE	
SCIENTIFIC NAME	COMMON NAME	FEDERAL	STATE
Aponogeton hexatepalus		Not listed	P4
Boronia juncea subsp. juncea		Not listed	P1
Caladenia huegelii	Giant Spider Orchid	E	R
Centrolepis caespitosa		E	P4
Cyathochaeta teretifolia		Not listed	P3
Darwinia foetida	Muchea Bell	CE	R
Dillwynia dillwynioides		Not listed	P3
Diuris micrantha	Dwarf Bee Orchid	V	R
Diuris purdiei	Purdie's Donkey Orchid	E	R
Dodonaea hackettiana	Hackett's Hopbush	Not listed	P4
Drakaea elastica	Glossy-leaved Hammer Orchid	E	R
Drakaea micrantha	Dwarf-hammer Orchid	V	R
Eremaea asterocarpa subsp. brachyclada		Not listed	P1
Jacksonia gracillima		Not listed	P3
Johnsonia pubescens subsp. cygnorum		Not listed	P2
Lasiopetalum pterocarpum	Wing-fruited Lasiopetalum	E	R
Lepidosperma rostratum	Beaked Lepidosperma	E	R
Pithocarpa corymbulosa	Corymbose Pithocarpa	Not listed	P3
Thelymitra variegata	Queen of Sheba	Not listed	P3
Stylidium ireneae		Not listed	P4
Stylidium longitubum	Jumping Jack's	Not listed	P3
Synaphea stenoloba	Dwellingup Synaphea	E	R

A total of 61 plant species were identified during the flora and vegetation survey (GHD 2011). None of the species identified as occurring within the site were classified as specially protected flora species at the state or federal level.

3.4.2 Threatened Ecological Communities

Generally ecological communities can be described as vegetation communities that are assemblages of species that occur together in a particular type of habitat. They are the sum of species within an ecosystem and, as a whole provide many of the processes which support a specific ecosystem.

Specific communities are afforded statutory protection at a federal level pursuant to the *Environmental Protection and Biodiversity Conservation Act 1999*. Threatened Ecological Communities (TECs) are listed under Section 181 of the *Environmental Protection and Biodiversity Conservation Act 1999*, and are defined as 'Critically Endangered', 'Endangered' and 'Vulnerable' under Section 182.

In Western Australia, Threatened Ecological Communities are defined by the Department of Environment and Conservation, with advice provided by the Western Australian Threatened Ecological Communities Scientific Advisory Committee on community listings. Threatened Ecological Communities are not afforded direct statutory protection at a state level but their significance is acknowledged through other state environmental approval processes (i.e. environmental impact assessment pursuant to Part IV of the *Environmental Protection Act 1986*). Under the state process the Department of Environment and Conservation has been identifying and informally listing Threatened Ecological Communities since 1994, using a range of definitions to indicate the level of threat to the Threatened Ecological Communities in question. These definitions are outlined below in Table 4.

In addition to Threatened Ecological Communities, the Department of Environment and Conservation defines Priority Ecological Communities (PECs), which are communities that do not meet the survey criteria; are adequately known; are rare but not threatened or meet the criteria for near threatened.

Table 4: Categories of Threatened Ecological Communities utilised by the Department of Environment and Conservation (DEC 2007)

CODE	CATEGORY
PD	**Presumed Totally Destroyed** An ecological community that has been adequately searched for but for which no representative occurrences have been located. The community has been found to be totally destroyed or so extensively modified throughout its range that no occurrence of it is likely to recover its species composition and/or structure in the foreseeable future.
CR	**Critically Endangered** An ecological community that has been adequately surveyed and found to have been subject to a major contraction in area and/or that was originally of limited distribution and is facing severe modification or destruction throughout its range in the immediate future, or is already severely degraded throughout its range but capable of being substantially restored or rehabilitated. Generally it has been found to be facing an extremely high risk of total destruction in the immediate future.
EN	**Endangered** An ecological community that has been adequately surveyed and found to have been subject to a major contraction in area and/or was originally of limited distribution and is in danger of significant modification throughout its range or severe modification or destruction over most of its range in the near future. An ecological community will be listed as Endangered when it has been adequately surveyed and is not Critically Endangered but is facing a very high risk of total destruction in the near future.
VU	**Vulnerable** An ecological community that has been adequately surveyed and is found to be declining and/or has declined in distribution and/or condition and whose ultimate security has not yet been assured

	and/or a community that is still widespread but is believed likely to move into a category of higher threat in the near future if threatening processes continue or begin operating throughout its range. An ecological community is considered Vulnerable when it is facing a high risk of total destruction or significant modification in the medium to long-term future

No Threatened Ecological Communities or Priority Ecological Communities were recorded within the site.

3.4.3 Bush Forever

The Government of Western Australia's Bush Forever Policy is a strategic plan for conserving regionally significant bushland within the Swan Coastal Plain portion of the Perth Metropolitan Region. The objective of Bush Forever is to protect comprehensive representations of all original ecological communities by targeting a minimum of ten per cent of each vegetation complex for protection (Government of Western Australia 2000). Bush Forever Sites are representative of regional ecosystems and habitat and have a key role in the conservation of Perth's biodiversity.

No Bush Forever Sites are listed as occurring in or adjacent to the site. The nearest site is Bush Forever Site 349 '*Leda and adjacent bushland*', which is approximately 500 metres west of the site and is separated from the site by the Kwinana Freeway.

3.4.4 Environmentally Sensitive Areas

Environmentally Sensitive Areas (ESAs) are areas prescribed under the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004* (Department of Environment and Conservation 2009a). As a result, Environmentally Sensitive Areas are most applicable when a clearing permit is required under these regulations. For any area that is situated within an Environmentally Sensitive Area, none of the exemptions pursuant to *Environmental Protection (Clearing of Native Vegetation) Regulations 2004* apply. These areas have been identified in order to protect the native vegetation values of areas surrounding significant, threatened or scheduled ecosystems or communities.

No Environmentally Sensitive Areas are mapped as occurring within the site.

3.4.5 Biodiversity Linkages

Biodiversity linkages can be described as any area of remaining remnant vegetation that can provide a corridor or linkage between larger patches of vegetation, to allow movement of flora, fauna and their genetic material through the landscape. Linkages can prevent isolation of flora and fauna and help to prevent the extinction of species. Biological linkages need to be continuous or near-continuous as the more fractured a linkage is, the less ease flora and fauna have in moving within the corridor.

The City of Kwinana Draft Eastern Residential Intensification Concept (ERIC) (2005) considers the implementation of the City of Kwinana 'Greenways Concept' which identifies a range of significant environmental values for retention. This plan identifies the drain through the central portion of the site as a potential ecological linkage (City of Kwinana 2005).

3.5 Fauna

The federal government maintains a list of protected fauna species under the EPBC Act. Species are listed in accordance with the categories described below.

In addition, the conservation status of fauna species in Western Australia is assessed under the *Wildlife Conservation Act 1950*. The *Wildlife Conservation Act 1950* utilises a set of schedules described in Table 5. In addition to this, the Department of Environment and Conservation also produces a list of priority species which while not considered threatened under the *Wildlife Conservation Act 1950*, there is concern over their long-term survival. These categories are outlined below in Table 6.

Table 5: Categories of Department of Environment and Conservation threatened fauna

CATEGORY	CODE	DESCRIPTION
Schedule 1	S1	Fauna which is rare or likely to become extinct
Schedule 2	S2	Fauna which is presumed extinct
Schedule 3	S3	Birds which are subject to an international agreement between the governments of Australia and other countries relating to the protection of migratory birds and birds in danger of extinction
Schedule 4	S4	Fauna that is otherwise in need of special protection

Table 6: Department of Environment and Conservation priority fauna categories

CATEGORY	CODE	DESCRIPTION
Priority 1	P1	Taxa with few, poorly known populations on threatened lands.
Priority 2	P2	Taxa with few, poorly known populations on conservation lands.
Priority 3	P3	Taxa with several, poorly known populations, some on conservation lands.
Priority 4	P4	Taxa in need of monitoring (Not currently threatened or in need of special protection but could be if present circumstances change) .
Priority 5	P5	Taxa in need of monitoring (Not considered threatened but are subject to specific conservation program, the cessation of which would result in the species becoming threatened within five years).

A search of federal and state online resources (*Protected Matters Search Tool* and *NatureMap*) indicated that a number of species of conservation significance may occur within or potentially use the site. These species are listed in Table 7 below. It should be noted that these online resources use databases that contain historical data in which some recorded species may now be locally extinct, as well as species which may be vagrants or present in the general area but not specifically within the site due to lack of suitable habitat.

Table 7: Significant fauna species occurring or potentially occurring within the site

SPECIES		CONSERVATION CODE	
COMMON NAME	**SCIENTIFIC NAME**	**FEDERAL**	**STATE**
BIRDS			
Carnaby's black cockatoo	Calyptorhynchus latirostris	E	Schedule 1
Forest red-tailed black cockatoo	Calyptorhynchus banksii naso	V	Schedule 1
Baudin's black cockatoo	Calyptorhynchus baudinii	V	Schedule 1
Peregrine falcon	*Falco peregrinus*	Not listed	Schedule 4
Rainbow bee-eater	*Merops ornatus*	Migratory	Schedule 3
Cattle egret	*Ardea ibis*	Migratory	Schedule 3
Great egret	*Ardea alba*	Migratory	Schedule 3
Fork-tailed swift	*Apus pacificus*	Migratory	Schedule 3
White-bellied sea eagle	*Haliaeetus leucogaster*	Migratory	Schedule 3
INSECTS/INVERTEBRATES			
Graceful Sun-Moth	*Synemon gratiosa*	E	Schedule 1
MAMMALS AND MARSUPIALS			
Chuditch	*Dasyurus geoffroii*	V	Schedule 1
Quokka	*Setonix brachyurus*	V	Schedule 1
Southern brush-tailed Phascogale	*Phascogale tapoatafa*	Not listed	Schedule 1
Red-tailed Phascogale	*Phascogale calura*	E	Schedule 1
Southern brown bandicoot (Quenda)	*Isoodon obesulis fusciventer*	Not listed	Priority 5
Western Brush Wallaby	*Macropus Irma*	Not listed	Priority 4
REPTILES AND RODENTS			
Southern carpet python	*Morelia spilota imbricata*	Not listed	Schedule 4
Water rat	Hydromys chrysogaster	Not listed	Priority 4

A Level 1 fauna survey was undertaken across the site in accordance with Environmental Protection Authority Guidance Statement No. 56 Assessment of Environmental Factors for Terrestrial Fauna Surveys for Environmental Impact Assessment in Western Australia (EPA 2004b). This survey included a desktop investigation and opportunistic field survey and habitat assessment. It included

visual and aural surveys for any fauna species utilising the site as well as a search for signs of use, such as tracks, scats, bones, diggings and feeding evidence.

No conservation significant species were observed during the survey. The habitat assessment indicates that the majority of habitat preferences for the conservation of significant species are not met within the site. However, habitat observed within the site, particularly the woodland of Eucalyptus marginata and Banksia menziesii over mixed herbs and weeds and open forest of Eucalyptus rudis over tall shrubland of Kunzea glabrescens and weeds, was considered by GHD (2011) to be potential foraging and nesting habitat for the three black cockatoo species listed in Table 7 above. The Department of Planning mapping 'Metropolitan Region Scheme South West - potential habitat for Carnaby's Black Cockatoo which may require further assessment' (2011) identified the north-eastern portion of the site as containing potential black cockatoo habitat.

Additional to this and as part of the Local Structure Plan planning process, the extent of potential foraging and nesting habitat for the three black cockatoo species was investigated in further detail by Emerge Associates.

It was determined that approximately 1.9 hectares of the site could be considered to contain potential foraging habitat, and included areas containing Banksia attenuata, B. menziesii and Corymbia calophylla in the north-eastern portion of the site and planted pine trees adjacent to the current residence in the south-western portion of the site. These areas have been shown in **Figure 9**. There was some evidence of foraging within the site, mainly associated with the Banksia sp. in the northern portion of the site, with the majority of the evidence found as not recent. The Federal Department of Sustainability, Environment, Water, Population and Community provides a set of criteria for "potential nesting trees", which are described as any Eucalyptus or Corymbia tree with a diameter at breast height of 500 millimetres (or greater) and/or the presence of one or more large hollows (100 millimetres or greater). Within the site, five Eucalyptus rudis trees were considered to meet these criteria, however no nesting was observed. Further, the Federal Department of Sustainability, Environment, Water, Population and Community also provides criteria for potential roosting habitat, which is described as any tall Eucalyptus or Corymbia tree (greater than 8 metres tall). Based on this criterion 67 trees were identified as potential roosting habitat, however no evidence of roosting was observed.

As a part of this investigation, foraging habitat within the wider area was also considered. Within a five kilometre radius of the site, it was found that approximately 2,360 hectares of foraging habitat occurs, with at least forty per cent of this contained within Bush Forever Sites. No confirmed or potential nesting areas were recorded within the five kilometre radius of the site (Department of Planning 2011).

In the event that individuals of conservation significant species of fauna are discovered in the mobilisation or construction phases of the development a suitable trapping and relocation program will be conducted at the site prior to and during the beginning stages of site clearing in accordance with the established management regimes of the DEC.

3.6 Wetlands of Conservation Significance

The Department of Environment and Conservation maintains the Geomorphic Wetlands of the Swan Coastal Plain database which identifies wetland areas and categorises individual wetlands into specific management categories, as indicated in Table 8 (Hill et al 1996).

Table 8: Geomorphic Wetlands of the Swan Coastal Plain management categories

MANAGEMENT CATEGORY	DESCRIPTION OF WETLAND	MANAGEMENT OBJECTIVES
Conservation (CCW)	Supports high levels of attributes and functions.	Preserve wetland attributes and functions through reservation in national parks, crown reserves and state owned land. Protection provided under environmental protection policies
Resource Enhancement (REW)	Partly modified but still supporting substantial functions and attributes.	Restore wetland through maintenance and enhancement of wetland functions and attributes. Protection via crown reserves, state or local government owned land, environmental protection policies and sustainable management on private properties.
Multiple Use (MUW)	Few wetland attributes but still provide important hydrological functions	Use, development and management considered in the context of water, town and environmental planning through land care.

A review of the dataset indicates that one wetland is mapped over the north-western and central portion of the site, roughly in-line with the drain, and is described as a Multiple Use Wetland with Unique Identifier 12921. This wetland is described as a dampland, which is a seasonally waterlogged basin and has been shown in **Figure 10**.

3.7 Existing and Historical Land Uses

The site is zoned 'Urban' under the Metropolitan Region Scheme and 'Development' under the City of Kwinana Town Planning Scheme No. 2. Currently the site is not utilised for any specific purpose.

Previously the site was zoned 'Rural' under both the Metropolitan Region Scheme and the City of Kwinana Town Planning Scheme No.2. Historical aerial photography indicates that the site was likely to have been historically used for grazing/agricultural purposes, associated with the rural zoning and consistent with land use in the wider area. The land has been predominantly cleared since at least 1953, with some regrowth of vegetation in the latter years.

3.8 Adjacent Land Uses

Within the vicinity of the site there are a number of different land uses which include urban, agricultural (agricultural and livestock) and other rural land uses. Under the Metropolitan Region Scheme, land to the north of the site is zoned 'Urban', land to the east is zoned 'Urban' and 'Urban Deferred', land to the south is zoned 'Rural' and land directly to the west is reserved 'Primary Regional Road' and further west is 'Urban' and 'Urban Deferred'.

As outlined in the Local Structure Plan for Lot 201 Mortimer Road and Lot 379 Millar Road, there are a number of surrounding land uses within the vicinity of the site which are considered to generate emissions which may potentially exceed amenity levels considered acceptable to residential areas and other sensitive land uses (EPA 2005). These land uses considered to be potentially incompatible include a livestock holding facility, a power boat facility, Kwinana Freeway and Mundijong Freight Line and the *Environmental Protection (Kwinana) (Atmospheric Wastes) Policy 1999* area. These are shown in **Figure 11** and discussed in greater detail below.

3.8.1 Livestock Holding Facility

A livestock holding facility is located on part of Lot 732 Telegraph Lane, Baldivis, approximately 450 metres to the east of the site. The livestock holding facility is licensed under Part V of the *Environmental Protection Act 1986* to operate as a 'livestock saleyard or holding pen' and is owned, licensed to and operated by Wellard Rural Exports Pty Ltd.

Under the associated regulations, a 'livestock saleyard or holding pen' is defined as a premise on which live animals are held pending their sale, shipment or slaughter. The livestock holding sheds are located approximately 1,100 metres south-east of the site. The livestock holding facility contains 10 holding sheds, with the feedlot further east of these. It is likely that due to the inherent variability associated with livestock supply and shipment, livestock are likely to be held for periods of between 5 and 10 days and in the past Wellard Rural Exports Pty Ltd have indicated that the livestock holding facility is stocked for less than fifty per cent of the year (Cardno 2011a).

Livestock holding facilities are recognised by the Department of Environment and Conservation and Environmental Protection Authority as potentially resulting in noise, dust and odour emissions that may exceed the amenity levels considered acceptable in residential areas. There is a 1000m odour buffer over part of the Wellard East Cell, however this buffer does not affect any part of the LSP Area (ie. Lot 90 and Part Lot 378) and therefore does not impact on the LSP. The WAPC, in its determination of the application for the lifting of urban deferment over the northern portion of the Wellard East Cell in 2009 decided to measure the 1000 metre separation distance from the livestock holding sheds based on the applicant's arguments, which included the claim that the sheds were the primary source of odour.

3.8.2 Environmental Protection (Kwinana) (Atmospheric Wastes) Policy 1999

The site is located within the Kwinana Atmosphere Policy Boundary where the provisions of the Environmental Protection Authority's *Environmental Protection (Kwinana) (Atmospheric Wastes) Policy 1999 (Kwinana Atmospheric Wastes EPP)* apply. The policy aims to set sulphur dioxide and total suspended particle standards and limits for the Kwinana Industrial Area. This policy describes three areas (A, B and C) each with ambient air quality standards and limits, increasing in stringency from Area A (industrial) through to Area C (largely residential).

The site is found within Area C and is provided a level of protection under this policy in line with land uses for residential and rural purposes. Since the *Kwinana Atmospheric Wastes EPP* was enacted in 1992, the 1-hour averages used to measure ambient air quality have not been exceeded (EPA 2009). Therefore it is highly unlikely that future residents within the site will be adversely affected by emissions as emission concentrations are required to remain within the levels prescribed in the *Kwinana Atmospheric Wastes EPP*. As such the potential implications associated with this policy will not be considered any further.

3.8.3 Kwinana Freeway and Mundijong Freight Line

The Kwinana Freeway is located adjacent to the western boundary of the site and carries a significant volume of both heavy and non-heavy vehicles. The Mundijong freight line is located adjacent to the southern boundary of the site – being 23m from Lot 90 and 25m from Part Lot 378.

3.8.4 Power Boat Facility

The Power Boat facility is located approximately 1000 metres south-east of the site, within the City of Rockingham and is commonly known as Bonney's Water Ski Park. It has operated in the local area since 1985. The facility caters for a wide range of water-related activities including water skiing and

jet boat racing, operating most days of the week. The water ski park supports jet boat racing events from October to April, with evening events generally running until 2100 hours on weekends. The facility itself is composed of five man-made lakes and various recreational facilities to support the requirements of those utilising the facility.

Historically, noise complaints have been received by the City of Rockingham and the City of Kwinana regarding the operation of the facility. A Noise Management Plan is currently being updated in order to manage potential noise impacts from the power boat facility on current and future residents, supported by the Department of Environment and Conservation, the City of Rockingham and the City of Kwinana.

3.8.5 Basic Raw Materials

Basic raw materials are described as materials such as sand (including silica sand), clay, hard rock, limestone (including metallurgical limestone) and gravel and other construction and road building materials, which are produced relatively cheaply and generally important to land development. *State Planning Policy No. 2.4 Basic Raw Materials* aims to identify and protect areas of basic raw material from incompatible land uses which could limit future exploitation. Areas of basic raw materials are classified as 'priority resource locations', 'key extraction areas' and 'extraction area'.

No basic raw materials are currently extracted within or in the vicinity of the site, however two areas are mapped under *State Planning Policy No. 2.4 Basic Raw Materials* as resources. These areas include a:

- Sand 'extraction area' within Lot 201 Mortimer Road, to the north of the site.
- Clay 'priority resource area' located approximately 500 metres directly south of the site.

3.9 Heritage

3.9.1 Indigenous heritage

An online search for relevant Aboriginal heritage information was undertaken using the Department of Indigenous Affairs (DIA) Aboriginal Inquiry System which incorporates both the heritage site register and heritage survey database (DIA 2009). The Aboriginal Heritage Site Register is maintained pursuant to *Section 38* of the *Aboriginal Heritage Act 1972* and contains information on over 22 000 listed Aboriginal sites throughout Western Australia (DIA 2008).

No Aboriginal 'Registered Aboriginal Heritage Sites' or 'Other Heritage Places' are mapped as occurring within the site. One 'Registered Aboriginal Heritage Site' is mapped as occurring south-west of the site, on the western side of the Kwinana Freeway (DIA 2012). This heritage site is identified as DIA 3568 'Wally's Camp' and is shown in **Figure 12.**

3.9.2 Non-indigenous heritage

In order to determine the actual or potential presence of sites or features of non-indigenous heritage significance within the site, a review of readily available information at a federal, state and local government level was undertaken to determine if there were any of the following within the site:

- World Heritage Sites
- National Heritage Sites
- Commonwealth Heritage Sites
- Sites on register of National Estate
- Sites Listed on the City of Kwinana Municipal Heritage Inventory List.

No non-indigenous heritage sites were identified within or directly adjacent to the site.

4 Statutory and Planning Considerations

4.1 State and Regional Planning

4.1.1 Metropolitan Region Scheme

The majority of the Wellard East Cell is zoned Urban in the Metropolitan Region Scheme (MRS) (refer to **Figure 13**). The Urban Zone includes all of the LSP Area (ie. Lot 90 and Part Lot 378). The balance of the cell (ie. south-eastern portion) is still zoned Urban Deferred under the MRS.

The lifting of the Urban Deferred Zone over the south-eastern portion of the cell is not supported by the WAPC at this stage as the land is still affected by an interim buffer from a livestock holding facility, which is located to the south of Millar Road (outside the Wellard East Cell). This interim buffer is subject to further odour investigations as part of a separate process to this LSP. The non relevance of the interim odour buffer reinforces the "stand alone" nature of the LSP over Lot 90 and Part Lot 378, thus allowing for its approval without undermining further planning of other land within the cell.

This Wellard East Cell is surrounded by the following reservations and zones:

- Urban Deferred and Other Regional Roads to the north;
- Rural to the east and south; and
- Primary Regional Roads and Urban to the west.

4.1.2 Directions 2031 - Draft Spatial Framework for Perth and Peel (June 2009)

The WAPC released *Direction 2031 – Draft Spatial Framework for Perth and Peel* in June 2009. The purpose of this framework is to establish a vision for future growth of the Perth and Peel Regions and provide a framework to guide detailed planning and the delivery of housing, infrastructure and services to accommodate that growth. It builds on from many of the principles in Network City.

The framework provides three growth scenarios:

1. **Linear City** – continuation of business as usual development patterns with the majority of growth occurring on the urban fringe;

2. **Connected City** – more balanced distribution of infill and greenfield development with a target density of 15 dwelling units per hectare of Urban zoned land; and

3. **Compact City** – more consolidated pattern of growth with an emphasis on infill development.

To achieve the preferred "Connected City" scenario, the framework proposes that new growth occurs in a more balanced way around a diverse activity centres network, which is linked by a robust movement network and supported by green network of parks, conservation and biodiversity areas. The framework identifies the "Activity Centres" hierarchy as follows:

- Perth central area
- Primary centres
- Strategic centres (e.g. city centres, specialised centres and industrial centres)
- Regional centres (e.g. town centres, specialised centres and industrial centres)
- District centres (e.g. town centres and industrial centres)
- Neighbourhood centres
- Local centres

The Strategy provides a framework to facilitate the delivery of appropriately zoned industrial land to the market, allowing the market to respond to forecast demand over the next 20 years. The Strategy identifies 37 potential areas for future industrial land use investigation, designated as either short (0-4 years planning timeframe), medium (4-10 years planning timeframe) or long term sites (10 years plus planning timeframe).

The Strategy does not identify the Wellard East Cell area for any future industrial land uses. However, the Strategy identifies a 1026 hectare portion of land to the south of the Wellard East Cell (generally bound by Millar Road, the Kwinana Freeway and Mundijong Road) referred to as 'North East Baldivis', as a potential medium-term non-heavy industrial area. The site is also identified as the preferred site for future industrial development in the South-West Metropolitan Sub-Region.

The site is likely to be suitable for larger lot general industrial uses. Given the low-lying characteristics of the land, the Strategy states that low-polluting and low water use industries would be suited to the location. It is noted that the majority of the site is envisaged to be utilised for general industrial uses that are non-hazardous. It is possible that some consumer services may locate within the site, with light/service industry adjoining the special rural interface (presumably along Millar Road).

The Strategy notes that existing and surrounding uses may present conflicts with the potential industrial development, particularly with the encroachment of Special Rural land uses. The Strategy recommends that future detailed planning should be undertaken to ensure that the amenity of residential areas are not adversely affected. As such, the visual impact of the potential industrial development will require thorough consideration during the appropriate planning processes, with the rural buffer adjacent to the Freeway likely to be a key issue.

4.1.5 South Metropolitan and Peel Sub-Regional Structure Plan

The Draft South Metropolitan and Peel Sub-Regional Structure Plan was released for public comment in June 2009. It is only a broad strategic guidance document that aims to guide more detailed planning. The plan outlines a range of key objectives including creation of vibrant and sustainable communities, efficient use of land and infrastructure, protection of natural assets, creation of reliable transport network, and provision of a range of housing densities.

The plan includes Wellard East, which is identified as "*Undeveloped Urban and Urban Deferred*". The area to the south of Millar Road is identified as *"Industrial Investigation*".

4.1.6 Jandakot Structure Plan

In August, 2007 the Western Australian Planning Commission (WAPC) released the final Jandakot Structure Plan (JSP), following on from the draft JSP released in October, 2001.

The purpose of the Structure Plan is to:

"plan and coordinate the development expectations of the area while balancing environmental issues following a number of reviews and studies of the area".

The JSP recognises potential development areas and proposed indicative road layouts and locations for commercial facilities, whilst retaining environmentally sensitive features such as wetlands. The plan is based on Liveable Neighbourhood principles and aims to accommodate the projected growth in the corridor. The overall intent is to create contained and environmentally responsive urban developments. **Figure 14** illustrates the JSP and shows Wellard East at the southern end of the plan.

The JSP acknowledges that a "Water Resource Management Strategy" will need to be prepared, together with more detailed Local Structure Plans for future development proposals within the JSP area. This requirement has been addressed by the Department of Water (DoW), through the release of the Jandakot Drainage and Water Management Plan. This Drainage Plan is addressed in **Section**

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5.7 of this report and the District and Local Water Management Strategy (GHD) for Lot 90 and Part Lot 378, Millar Road.

According to the JSP, MRS and local scheme amendments are required prior to subdivision proceeding. This has now occurred over the majority of the Wellard East Cell including Lot 90 and Part Lot 378.

The JSP proposes urban development in the Jandakot Region over three timeframes – short (0-5 years), medium (5-10 years) and long term (10+ years). Five urban precincts are identified in the Structure Plan area with the Wellard East Cell included in Area 4.

Within Area 4, which contains an area of some 300ha, the estimated ultimate population was 8,190 of which 4,990 would be accommodated in the precinct by 2026. Area 4 was estimated to be the most occupied of the 5 precincts by 2026 with 60% of its land area developed by this time.

The JSP earmarks Area 4 for medium term urban development in the draft document when it was released in 2001 (i.e. within 5-10 years) on the basis the land was then zoned Rural. This timeframe was not updated when the JSP was finalised 6 years later. Following the lifting of the Urban Deferred Zone over the majority of the cell, the LSPs and the subdivision approval of land in the northern part of the cell, this is consistent with the timeframe in the JSP.

Whilst a significant portion of the Wellard East Cell is shown as medium term urban, the JSP also shows indicative road layouts (key roads only), significant wetlands, commercial centres, primary school, power lines, drainage lines and urban transition areas along the eastern and southern boundaries of the cell. The JSP also shows notional walkable neighbourhoods focussed around commercial centres.

Many of these land uses are reflected in the LSP and are discussed further in **Section 6.1.1** of this report. It should be noted that the JSP states that the land use designations are indicative only and will guide the more detailed planning and other technical investigations at the LSP stage. Guidelines for urban design are required to be based on Liveable Neighbourhoods. In accordance with the JSP there will need to be a clear transition between rural and urban areas (ie. Woolcoot Road for Wellard East), linear road linkages between neighbourhoods located along the freeway and incorporation of green linkages within LSPs.

In terms of the subject site, mainly medium term urban is shown over Lot 90 and Part Lot 378. Most importantly, no other land uses that will service the wider cell (such as the school site or wetlands) are shown over the subject site and as such it demonstrates the "stand alone" nature of this LSP and thus allows it to be approved without undermining the ongoing planning of other land within the cell.

4.1.7 Liveable Neighbourhoods

The LSP has generally been designed in accordance with the provisions and principles of Liveable Neighbourhoods, in particular the road design. Liveable Neighbourhoods encourages street networks that have a high level of internal connectivity and good external linkages to cycle, pedestrian and bus networks. The road design should also be legible and minimise car travel.

Another key provision in Liveable Neighbourhoods is the promotion of walkable access to activity nodes or destinations with a general requirement for 400 metre walkable catchments. In this case, the location of public open space within the Wellard East Cell is of relevance. This is further addressed in **Section 6.1.1** of the report.

Liveable Neighbourhoods provides guidance on the location, distribution and amount of POS required. A Public Open Space (POS) table has been prepared for the LSP area in accordance with

Liveable Neighbourhoods Table 11 (refer to **Figure 18**). Also a POS table has been prepared for the entire Wellard East Cell (refer to **Figure 19**).

Liveable Neighbourhoods require Local Structure Plans to specify residential densities and encourages diversity in residential densities and dwelling types thereby providing more choice for changing household types. Residential densities proposed in the LSP meet these objectives and are addressed in **Section 6.2** of this report.

Liveable Neighbourhoods also emphasises connections to adjoining development within and external to the Wellard East Cell.

According to Liveable Neighbourhoods it is important for the LSP design to respond to the site context and characteristics, such as the drainage line.

4.2 Local Planning

Whilst the entire Wellard Cell is located within the City of Kwinana, it does adjoin land located within the City of Rockingham (ie. south of Millar Road). This land is included in the City of Rockingham Town Planning Scheme No. 2 and is currently zoned Rural.

4.2.1 City of Kwinana Town Planning Scheme No. 2

Under the City of Kwinana Town Planning Scheme No. 2 (TPS2), the majority of the Wellard East Cell is zoned Development (including the LSP area), which occurred concurrently with the lifting of the Urban Deferred Zone in accordance with Section 126(3) of the Planning and Development Act (refer to **Figure 13**).

The south-eastern portion of Wellard East Cell, which is still zoned Urban Deferred under the MRS, remains zoned Rural A and Cluster/Communal Rural Settlement. TPS2 Zoning Map also shows a number of landscape protection areas (ie. special control areas) that generally align with the wetlands and vegetation located in the cell. Under Clause 6.16 of the Scheme, the general intent is to protect areas of ecological value or landscape amenity whilst at the same timing allowing development. In this regard, Council may require management plans in order to ensure that subdivisions minimise impacts on natural ecological features or areas of landscape amenity. None of these special control areas affect Lot 90 and Part Lot 378.

All of the cell is located in a Drainage Catchment Management Area. The implications of this are dealt with through the District and Local Water Management Strategy (GHD) for Lot 90 and Part Lot 378.

According to the Scheme, the purpose of the Development Zone is to:

"provide for orderly planning and development of larger areas of land in an integrated manner within a regional context whilst retaining flexibility to review planning with changing circumstances…Council will have due regard to the desirability of higher densities, transit related development and good pedestrian and vehicular access to stations in order to promote public transport usage.

The objective of this zone is 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 the orderly 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; and
(e) Provide sufficient certainty for demand forecasting by service providers".

According to Clause 6.15 of TPS 2, the Development Zone triggers the need for a local structure planning process to be completed prior to subdivision of the site. Clause 6.17 of the Scheme sets out the statutory process and the elements to be included in a local structure plan. A Local Structure Plan has been prepared for Lot 90 and Part Lot 378 generally in accordance with the south Jandakot

Structure Plan (JSP), the Draft Eastern Residential Intensification Concept (ERIC) and the adopted Wellard East Local Structure Plan (Lots 27 and 201 Mortimer Road) (refer to **Figure 17**). The conceptual design outside of the adopted Wellard LSP has been utilised as a guide for the subject LSP (refer to **Figure 20**). Also the subject LSP has been designed to meet the intent and principles of the Development Zone and is generally consistent with the Structure Plan requirements in the Scheme.

Under the Scheme, all of the Wellard East Cell is located in Policy Area 6. The provisions in the policy area are mostly outdated as it reflects that area's previous rural land uses.

A Development Contribution Plan for community infrastructure, which affects the Wellard East Cell, is included in Schedule 5 of the Scheme. The Wellard East Cell is now located in a Developer Contribution Area (DCA 11) for contributions towards community infrastructure through a Development Contribution Plan (DCP). The DCP requires developers in Wellard East to contribute to a range of community type infrastructure at the time of subdivision that will be provided at the local level (eg. local community centre), the district level (eg. Anketell Branch Library and Casuarina Community Centre) and the regional level (eg. Kwinana Youth Facility and the Thomas Oval Recreation/Sporting Ground). This DCP was included in the Scheme via Amendment No. 115, which was gazetted in June, 2012. This DCP and associated cost schedules are now being reviewed by Council.

Wellard East is also affected by an amendment to TPS2 (ie. Amendment No. 100), which deals with developer contribution towards various forms of hard infrastructure, including roads. The progress of the amendment and the implications for Wellard East are discussed in the following section.

4.2.2 City of Kwinana Town Planning Scheme No. 2 – Amendment No. 100

City of Kwinana has prepared Amendment No. 100, which provides for developer contributions to "hard" infrastructure such as roads and regional drainage through a development contribution plan. Wellard East Cell is included in Developer Contribution Area 2. Amendment No. 100 requires developers in Wellard East and other cells to contribute to a range of infrastructure at the time of subdivision. Key infrastructure works may include a noise wall along Millar Road, the upgrading of Mortimer and Millar Roads and regional drainage. The Amendment was advertised in late 2009.

Liaison with Council confirms that officers are in the process of addressing issues raised in submissions and amending the type and extent of shared works. The Amendment is expected to be presented to Council in 2014. The amendment may require readvertising.

4.2.3 Eastern Residential Intensification Concept

In November 2005, the City of Kwinana released for comment the Eastern Residential Intensification Concept, commonly referred to as ERIC (refer to **Figure 15).**

According to the City of Kwinana, ERIC *"has been prepared to provide an overarching framework for the co-ordination of subdivision and development within the areas designated under the Jandakot Structure Plan area as having potential for urban development".*

The plan aims to provide a greater level of detail than the JSP and is in effect a district structure planning framework within which to develop local structure plans.

ERIC has been advertised but has not been finalised by the City of Kwinana. Council officers advised that ERIC is a guidance document only. The LSP contained within this report generally reflects the design principles in ERIC, as advertised. This is further discussed in **Section 6.1**.

In terms of land uses within Wellard East, ERIC shows the majority of land being developed for Residential R20 and R30/40 and conservation areas (ie. wetlands). Other land uses proposed in the cell include local primary school, POS, community centre and the marsupial rehabilitation clinic.

In terms of the subject site, ERIC only shows residential, local roads and local POS, which supports the stand alone nature of the LSP, thereby allowing for it to be separately approved. Similar to the

Jandakot Structure Plan, ERIC does not show any land uses over the site that will service the wider cell such as wetlands, senior oval, school site and local collector roads and therefore the location of these uses should not delay LSP approval over Lot 90 and Part Lot 378.

4.2.4 Local Planning Policy 4.3.1 – Conservation of Remnant Vegetation

This Policy addresses Council's objective of protecting remnant vegetation as part of residential subdivisions by giving a high priority to retaining existing trees and retaining representative samples of different vegetation complexes (ie. biodiversity) and ecological linkages. The Policy requires existing trees to be shown on structure plans and planting of local species occurring naturally in the area will be encouraged by Council. Flora and fauna issues are discussed in **Sections 6.4.2** and **6.4.3**.

Australian Standard 4970-2009: Protection of Trees on Development Sites is also relevant to this issue and will be applied during design and construction phases of the development to ensure that the retention of trees is given due consideration during the design of civil works and construction.

5 Infrastructure and Servicing Considerations

5.1 Reticulated Sewerage

DJ MacCormick Property Group advises that the provision of gravity sewer connections to proposed lots within the subject site are available. The Water Corporation 375mm main sewer has been approved for construction below the Kwinana Freeway and will service the east catchment area with reticulation sewers upstream of this main sewer. The 375mm main feeds back into pump station currently located on the western side of Kwinana Freeway in the Emerald Park Estate. The land to the north (Lot 201) and the subject site will initially use this service.

5.2 Reticulated Water

DJ MacCormick Property Group confirms that the Water Corporation has advised that the development can be serviced by extending the current 300mm water main along Johnson Road on the western side Kwinana Freeway via the Millar Road underpass (below the freeway) to service the subject site. The reticulation water mains would then be extended within the subject site. A prefunding agreement with the Water Corporation is likely to be required and initial correspondence has been entered into.

5.3 Power

DJ MacCormick Property Group confirms that Western Power has advised that there is a HV infrastructure on the southern side of the subject site along Millar Road which can be utilised to supply power to the proposed subdivision of the site. The power service is currently above ground and will therefore need to be relocated underground.

5.4 Telecommunications

DJ MacCormick Property Group confirms that telecommunication services already exist along Millar Road and any upgrade requirements (if needed) can be incorporated in the common trenching of water extension along Millar Road.

5.5 Gas

DJ MacCormick Property Group confirms that gas is available and in close proximity to the subject site (ie. Johnson Road on the western side of the Kwinana Freeway). Common trenching will be undertaken as part of extending this service.

5.6 Existing Movement Network

The LSP Area is located adjacent to Kwinana Freeway, which is the major north-south route connecting the Perth CBD to the southern suburbs, Mandurah and South-West WA. Access to the LSP area will be via Millar Road, although eventually the site will be connected to land to east when the adjoining land is developed.

Further details of the existing road and movement network are presented in the Transport Assessment Report by Transcore (refer to **Appendix C**).

The proposed movement network to service the subject site is addressed in Section 6 of this report.

5.7 Drainage

5.7.1 Jandakot Drainage and Water Management Plan

The Jandakot Drainage and Water Management Plan (JDWMP) forms a key part of the DoW's urban drainage initiative. It has been developed as a guide for developers and stakeholders to support development and to allow it to proceed in a timely manner, particularly with regards to stormwater management. The JDWMP has been prepared in accordance with the Jandakot District Structure Plan, which was discussed in **Section 4.1.6**.

Broadly the JDWMP provides design criteria and management strategies to incorporate into District Water Management Strategies (DWMS) and the Local Water Management Strategies (LWMS), to be prepared in support of local structure planning. The areas of focus that the JDWMP include:

- Protection of environmental assets, including wetlands;
- Increasing water use efficiency and the use of non-drinking water resources;
- Stormwater management, in accordance with the *Stormwater Management Manual for Western Australia* (DoW 2007). This includes floodplain management, surface water quality and quantity, groundwater quality and quantity; and
- Key design criteria for stormwater and groundwater management.

5.7.2 District and Local Water Management Strategy

A District and Local Water Management Strategy (DWMS) has been prepared by GHD (refer to it in **Appendix D**). The Strategy has previously been approved by the Department of Water in July 2011 (refer to **Appendix H**), although if the subdivision/LSP design changed on the subject site then the Strategy would need to be revised. Further to the 2011 approval, the Strategy has been revised to accord with the latest LSP design, however the water design principles have not been amended. A summary of the District and Local Water Management Strategy is provided in Section 6 of this report.

6 Local Structure Plan

6.1 Design Rationale

A Local Structure Plan (LSP) has been prepared to facilitate the development of Lot 90 and Part Lot 378 Millar Road (refer to **Figures 17 and 20).** The LSP Area forms part of the south-west portion of the Wellard East Cell. The Wellard East Local Structure Plan (refer to **Figure 17**) for the northern portion of the Wellard East Cell (Lots 201 and 27) was approved by the WAPC on 28 June 2011. As part of that LSP, a conceptual design was prepared for the remainder of the Cell which is generally in accordance with the Jandakot Structure Plan (JSP) and the Eastern Residential Intensification Concept (ERIC).

The proposed LSP (refer to **Figure 20**) reflects the spatial configuration of the conceptual design for the Cell which is oriented around a central drain crossing the LSP in a northwest to southeast manner. Movement connections to the eastern portion of the Wellard East Cell are provided as well as the connection to Millar Road. In addition, the proposed LSP shows an update to the conceptual design for the adjoining portion of the Wellard East Cell to the east.

The design principles underpinning the LSP are largely based on Liveable Neighbourhoods, and were guided by several influences. A drainage reserve traverses the LPS Area and is contained within the central Public Open Space area. The LSP design endeavours to form a modified grid structure to provide strong permeability throughout the development;

Furthermore, the LSP offers a degree of flexibility to enable an innovative and creative response to any future unforseen issues or needs that may arise. As such, the LSP is intended to operate as a guiding framework for subdivision and development that can evolve and adapt over time, rather than functioning as a rigid and finalised design.

6.1.1 Land Uses

As previously mentioned, the LSP has been prepared in accordance with the principles of Liveable Neighbourhoods including optimising land efficiency, providing lot diversity, place activation and the integration of urban water management strategies.

As outlined in ERIC, the expansion of this broader development corridor will be predominantly for residential purposes and the principal land use within the LSP area is low density residential (nominally indicated as being R20 and R25). Medium density residential areas (nominally indicated as R40) are proposed adjacent to public open space (POS) areas on the site.

Whilst no neighbourhood centre is shown on the overall LSP, a local retail centre is proposed just to the north of the Wellard East Cell on Mortimer Road that will also service the Wellard East Cell including the LSP Area. A potential home store (maximum floorspace of 100m^2) is shown on the conceptual Wellard LSP. This will allow residents to purchase daily convenience goods within the cell and therefore reduce car reliance for all daily retail needs. Limited commercial land uses within the cell have been previously accepted by the City of Kwinana and the WAPC as part of the previous LSP assessment.

Other key land uses that will service the overall cell have been previously considered by Council and the WAPC when it assessed the first LSP within the cell. In particular, the location of key public open space areas have been determined for the cell and are reflected on the conceptual part of the LSP. Much of the open space is based on the location of a series of wetlands and their buffers along the

northern and eastern sides of the cell. Also a senior oval has been identified in the north-east corner of the cell with a land area of 3.6ha.

Also a primary school site is identified on the LSP to the east of Lot 90 and Part Lot 378. The primary school site location has been the subject of previous detailed consideration by Council and the Department of Education and is generally consistent with the Jandakot and Eastern Residential Intensification Concept Structure Plans.

Therefore, **Figure 17** provides the planning basis for the allocation and location of broader land uses within the cell (such as primary school sites and POS) and allows for a further LSP (**Figure 20**) to be adopted over Lot 90 and Part Lot 378 in accordance with proper and orderly planning.

6.2 Residential Density

The LSP for the site promotes a range of residential densities comprising R20, R25, and R40 lots. It is expected that a total of 250 dwellings will be developed. The average lot size is 446m². For the purposes of calculating developer contributions, the City of Kwinana has estimated that approximately 1500 dwellings should be developed within the cell. Based on these dwellings figures, the LSP for Lot 90 and Part Lot 378 would provide 16.6% of the total dwellings for the cell. This generally equates to the land area percentage of the LSP area as a proportion of the cell, calculated in Section 2 of this report, which is 15% of the developable area of the cell. Therefore, the LSP for the subject site achieves the density and dwelling targets set by the City of Kwinana.

Under Directions 2031 and Beyond the connected city scenario expects an improvement in the residential densities being achieved for new greenfield development on the urban front. At present new residential development is being constructed at densities of approximately 10 dwelling units per gross urban zoned hectare. The connected city scenario has set a target of 15 dwellings per gross urban zoned hectare. Based on this target, the site with a total area of 16.74 hectares would need to deliver 251.8 dwellings. The estimated dwelling yield for the site is 250, which is just marginally below the Directions 2031 target.

Under Liveable Neighbourhoods the relevant dwelling target for the site is 12 to 20 dwellings per site hectare, which the subject site achieves with 14.8 dwellings her hectare.

6.2.1 Lot Layout

The drainage reserve which traverses through the LSP Area together with the interconnected road and footpath movement network and POS areas form the major structuring elements for the site. These elements define the locations where neighbourhood development can proceed.

The design incorporates a number of elements to maximise the amenity, as follows:

- Maximising the number of lots with visual or physical access to areas of high amenity including POS areas;
- Retaining and enhancing the existing drain line; and
- Providing a legible and permeable movement network for vehicles and pedestrians, with a strong entry experience to the development from the south.

6.3 Public Open Space

The public open space (POS) is presented on plans and schedules for the LSP approval area and the overall cell in accordance with Liveable Neighbourhoods. The POS plans are shown on **Figures 18 and 19** and the schedules are included in **Appendix G.** A landscape management plan for the POS areas is included in **Appendix J**.

The allocation of Public Open Space (POS) has been based on the following principles:

- Provision of useable portions of POS in each proposed urban area;
- Linkage of POS networks;
- Provision of POS within a walkable catchment of all urban development;
- Retention of remnant vegetation in either multiple use corridors or parks where possible; and
- Dual use of multiple use corridors as drainage swales and POS in certain locations.

The POS schedules show surplus POS across the cell (ie. 12.5%) due to the inclusion of the senior oval. Lot 90 and Part Lot 378 provides 9.3% POS and as such there is a deficit of 0.7% based on the minimum 10% POS requirement. The deficit will be provided through cash-in-lieu, thus ensuring adequate provision for POS across the cell. The central area of POS within the site is generously proportioned and is sufficiently large to facilitate and meet the needs of the local community in terms of being an active informal recreational area.

POS areas shown in the balance of the cell (with the exception of the existing approved LSP area – Lots 201 and 27) are indicative as they are subject to more detailed urban design, environmental (wetland) and drainage investigations and POS calculations. The POS Schedule for the cell is also indicative as the location and size of REW wetlands may change and drainage calculations included in the schedule are estimates only. Individual LWMSs will determine the final drainage areas.

6.4 Environmental Considerations

This section specifically considers the environmental values and attributes identified in Section 3 that require specific consideration based on their presence within the site, and/or applicable legislation and policies requirements associated with the site.

6.4.1 Acid Sulfate Soils (ASS)

Regional mapping provided by the Department of Environment and Conservation indicates that the site is considered to have a 'moderate to low risk of ASS occurring within 3 metres of the natural soil surface. This is supported with the site specific preliminary ASS investigation, in which it was determined that ASS is unlikely to be disturbed within the soil profile above the watertable, while there is the potential that ASS will be disturbed below the watertable.

Within the Local Structure Plan, no spatial response has been provided for or is required for the potential presence of ASS.

In line with the Preliminary ASS investigation (Cardno 2011b) and Department of Environment and Conservation guidelines Identification and investigation of acid sulfate soils and acidic landscapes (DEC 2009b), ASS is considered to only be potentially disturbed in those areas where excavation occurs below the natural water table. Therefore, further detailed ASS investigations will be undertaken as a part of the subdivision process if excavation is required below the natural water table (i.e. for the installation of services such as sewerage). If necessary, an Acid Sulfate Soil Management Plan will be prepared as a condition of subdivision, prior to site works being undertaken. Correspondence was received from the Department of Environment and Conservation (dated 8 September 2011) confirms this approach.

6.4.2 Flora and Vegetation

A detailed flora and vegetation survey was undertaken for the site and has been outlined in Section 3.4. The survey identified five vegetation communities, with the majority of the site described as cleared paddocks, with the north-east portion of the site described as being composed of woodland of

Eucalyptus marginata and Banksia menziesii over mixed herbs and weeds and open forest of Eucalyptus rudis over tall shrubland of Kunzea glabrescens and weeds. The western portion of the site is described as predominantly tall open scrub of Kunzea glabrescens over paddock weeds. No Declared Rare Flora, Priority Flora, Threatened Ecological Communities or Priority Ecological Communities were identified as occurring within the site.

Overall within the Wellard East Cell, which the sites forms a component of, flora and vegetation values have been given spatial consideration through the retention of wetland areas and the provision of public open space in strategic locations over remnant vegetation. There is limited opportunity for the retention of remnant vegetation, although the public open space through the central portion of the site (in line with the drain) has retained remnant vegetation, where possible. Also some remnant vegetation and paddock trees will be retained in road reserves, where possible, and will be largely influence by the necessary fill material proposed within the site.

The majority of remnant vegetation within the Wellard East Cell is predominantly associated with the areas of wetland or drains. The site contains a multiple use corridor, which provides an opportunity to retain and protect remnant vegetation associated with the drain as well as support the revegetation of the drain, to enhance the potential for the ecological/biodiversity corridor that is proposed in line with the drain. This drain will be important from the perspective of supporting an ecological/biodiversity corridor and also in maintaining the hydrological regime of the Multiple Use Wetland, which is discussed further below in Section 6.4.4.

6.4.3 Fauna

A fauna survey was undertaken within the site, in which a number of conservation significant species were identified as potentially occurring, including the federally and state protected three black cockatoo species. No conservation significant fauna species were observed during the opportunistic survey, however based on the habitat values identified during this survey and mapping prepared by the Department of Planning (2011), it was considered possible that areas of remnant vegetation within the site may contain suitable foraging habitat for the three black cockatoo species. As part of the Local Structure Plan planning process, further investigations were undertaken to determine the presence and extent of foraging and nesting habitat for the three black cockatoo species within the site. It was determined that based on the areas of remnant vegetation and the flora species present, approximately 1.9 hectares of the site could be considered potential foraging habitat. This included areas containing Banksia attenuata, B. menziesii and Corymbia calophylla in the north-eastern portion of the site and planted pine trees adjacent to the current residence in the south-western portion of the site. In accordance with Department of Sustainability, Environment, Water, Population and Community criteria, five Eucalyptus rudis were considered to be "potential nesting habitat" and were found largely adjacent to the current residence.

Spatial consideration in the Local Structure Plan for fauna values has been provided through the retention of the drain and associated values in the central portion of the site, and where possible the retention of remnant vegetation and paddock trees in public open space and road reserves.

Broadly, the primary fauna values of the site are associated with the Multiple Use Wetland through the central portion of the site and remnant vegetation considered foraging habitat for the three black cockatoo species. Remnant vegetation and larger trees will be retained within the site where ever possible, however this will also be balanced with managing drainage within the site and in maintaining the hydrological regime of the Multiple Use Wetland (discussed further in Section 6.4.4 below).

Overall, it is considered that the risk of the development of the site having a significant impact on the black cockatoo species is low, with the habitat identified within the site representing 0.08 per cent of total foraging habitat identified within five kilometres of the site. Any obligation pursuant to the federal

Environmental Protection and Biodiversity Conservation Act 1999 will be considered as part of the subdivision process, as detailed planning, design and civil engineering occurs and the extent of clearing and civil works is known, including requirement for and extent of fill material.

6.4.4 Wetland

One Multiple Use Wetland is mapped as occurring along the north-western boundary and through the central portion of the site, in line with the drains mapped as occurring within or adjacent to the site, covering approximately half of the site.

Some spatial consideration has been provided within the Local Structure Plan, with a multiple use corridor proposed in line with the current drain through the central portion of the site, primarily to support the retention of the current hydrological regime.

As Multiple Use Wetland areas generally support limited wetland values and attributes, they are afforded no statutory and minimal policy protection by the Environmental Protection Authority and Department of Environment and Conservation. The prevailing policy framework focuses on ensuring that all reasonable measures are taken to retain the wetlands hydrological and other wetland functions and is generally accommodated through the development of a Local Water Management Strategy and subsequent Urban Water Management Strategy.

As there are limited ecological values associated with the Multiple Use Wetland in its current condition (historically cleared for agricultural purposes), the hydrological function of the wetland will be managed in accordance with the District and Local Water Management Strategy (GHD 2012) (**Appendix D).** This will include the use of fill material in areas adjacent to the drain in order to maintain an appropriate clearance to groundwater, as filling of these areas, as opposed to lowering the groundwater levels through the Multiple Use Wetland with subsoil drains, will help to maintain the hydrologic regime (GHD 2012). In addition, the proposed multiple use corridor will be landscaped appropriately to support both ecological function and active and passive recreation.

6.4.5 Bush Fire Hazard

A Fire Management Plan (FMP) has been prepared in accordance with WAPC's Planning for Bush Fire Protection Guidelines (refer to **Appendix I**). The bush fire threat is from vegetation on private land surrounding the subject site to the north and east as well as from the vegetation in the adjoining Kwinana Freeway reserve to the west. The key management measures are outlined in the FMP. A shielding structure (3m high noise wall) and a BAL (bushfire attack level) rating of 12.5 for housing construction is recommended along the western boundary and part of the northern boundary. A 20m wide building protection zone (BPZ) is recommended along the eastern boundary and adjacent to this is a recommended BAL rating of 19. The BAL 19 and BPZ requirements lapse once land to the east is cleared for development. These management measures are shown on a spatial map in the FMP.

6.4.6 Existing and Historical Land Uses

Historical aerial photography indicates that the site was historically used for grazing/agricultural purposes and that the land is likely to have been predominantly cleared since at least 1953, with some regrowth of vegetation occurring in the latter years. It is unlikely that any contamination is present within the site, however if any is present it is likely to be localised and minor contamination and would be similar to that associated with urban residential areas, with the overall the risk considered very low. If contamination is present, it is likely to be restricted to the existing residence and related working sheds.

No spatial consideration has been provided within the Local Structure Plan for contamination.

As a part of the subdivision process a detailed review of available information will be undertaken to determine the likelihood of contamination being present. If any soil and /or groundwater contamination exists, recommendations on how to determine the presence of contamination, in accordance with Department of Environment and Conservation guidelines, will be provided and a process enacted to mitigate any contamination if present.

6.4.7 Noise and Odour

A number of adjacent land uses have the potential to cause noise and odour emissions impacts which could exceed the acceptable amenity level within the site. These are discussed in further detail below, with the spatial response within the Local Structure Plan identified and if necessary, management through the future planning and development processes.

6.4.7.1 Livestock Holding Facility

A livestock holding facility is located approximately 450 metres south-east of the site, with the holding sheds approximately 1 100 metres south-east of the site. The livestock holding facility is licensed under the Part V of the Environmental Protection Act 1986 to operate as a 'livestock saleyard or holding pen'. There is potential that the livestock holding facility may emit odours that exceed amenity levels considered acceptable in residential areas and at other sensitive land uses.

The Department of Environment and Conservation (DEC) and the City both raised the potential for odour, dust and noise emissions from the livestock holding facility located to the south east of the LSP area on Millar Road to affect the amenity of residents of the LSP area.

In its submission on the LSP, the DEC favoured the measurement of the 1000 metre separation distance from the boundary of the overall livestock holding yards as per the Environmental Protection Authority's (EPA) Guidance Statement 3: Separation distances between industrial and sensitive land uses (GS3) and not from the livestock holding sheds. Further, the DEC claimed that strong odours were noted as being emitted by the yards at distances over 1000 metres from it in past field observations.

In 2009, the EPA's response to the proposal for the lifting of urban deferment over the northern portion of the Wellard East Cell included concerns regarding the odours from the holding yards and the proposed reduction of the separation distance recommended in GS3. However, on the basis of the applicant's evidence on this matter, the WAPC measured the 1000 metre separation distance from the livestock holding sheds. This is reflected in the mapping of 2011 transfer of the subject land from the Urban Deferred zone to the Urban zone.

In response to the concerns of the DEC, the City requested that the WAPC consider and resolve the issue of the suitability of residential development in the locality of the livestock holding yards due to amenity issues. Further, it recommended that in the event that the WAPC approve the LSP a notification be placed on each title alerting the landowner to the possibility of odour impacts in the area.

Given that the land is zoned for residential development, the City's recommendation for a notification pursuant to Section 70A of the Transfer of Land Act 1893 is supported so as to alert future residents of the potential to be affected by noise, odours and/or dust emissions associated with the ongoing operation of the livestock holding yards.

6.4.7.2 Kwinana Freeway

The Kwinana Freeway is adjacent to a portion of the western boundary of the site. The Kwinana Freeway is the primary link between the south-west coastal region and the Perth Metropolitan Region.

Broadly, the potential noise impacts from the Kwinana Freeway have been considered in the context of the State Planning Policy 5.4 Road and Rail Transport Noise and Freight Considerations in Land Use Planning (WAPC 2009). No spatial consideration has been provided within the Local Structure Plan for the Kwinana Freeway as any potential noise impacts will be managed through appropriate noise mitigation measures and building design.

The noise assessment for the site indicates that there will be noise impacts on the site from the Kwinana Freeway (Lloyd George Acoustics 2010) (refer to **Appendix E**). Based on the findings of this assessment, noise from the Kwinana Freeway is considered manageable through a noise wall and/or quiet house design, although the level and type of noise mitigation will vary depending upon the location of the residences and the type of building (i.e. single storey or multi-storey). In this regard, the noise assessment advises that specialist acoustic advice will be required for double storey construction up to approximately 170 metres from western structure plan boundary.

6.4.7.3 Mundijong Freight Line

The Mundijong Freight Line runs along the southern boundary of the site. As with the Kwinana Freeway, potential noise impacts have been considered in the context of the State Planning Policy 5.4 Road and Rail Transport Noise and Freight Considerations in Land Use Planning (WAPC 2009). No spatial consideration for the freight line has been provided within the Local Structure Plan however it is recognised that there is the potential for noise impacts on future residents, but will be addressed through appropriate noise mitigation measures and building design.

The noise assessment for the site indicates that there will be noise impacts on a number of the proposed lots on the southern boundary of the site.

The noise assessment completed for the site indicates that to mitigate potential noise impacts, a 2.5 metre noise wall/bund would be required along the southern boundary of the site and quiet house design applied to the first row of lots (Lloyd George Acoustics 2012 **(Appendix E).** Further, the noise assessment advises that specialist acoustic advice will be required for double storey construction on the lots along the southern boundary.

6.4.7.4 Power Boat Facility

A power boat facility, Bonneys Water Ski Park is located approximately 1 000 metres south of the site within the City of Rockingham. This facility caters for a range of water-skiing related activities and is open most days of the week. Generally, the facility supports jet boat racing events which run from October to April each season, with events running until approximately 2100 hours during evening events. The power boat facility has the potential to exceed the *Environmental Protection (Noise) Regulations 1997* after 1900 hours, subject to the noise having tonal characteristics.

Within the Local Structure Plan, no spatial consideration has been given to the potential noise impacts of the power boat facility. The potential noise impacts of this facility were investigated as a part of the lifting process of the Urban Deferred Zone, with the areas now zoned Urban considered unlikely to be impacted by noise from the power boat facility.

Based on investigations undertaken by the City of Kwinana and City of Rockingham, as well as an updated Noise Management Plan and associated management measures for the facility, it is envisaged that any potential noise impacts on future residents within the site can be managed appropriately by the operators of the Power Boat Facility in accordance with the *Environmental Protection (Noise) Regulations 1997*.

Therefore, the ongoing operation of this Facility is required to be appropriately managed (given existing dwellings) regardless of the LSP approval over Lot 90 and Part Lot 378 and therefore should not impact on the granting of planning approvals (ie. LSP and subdivision) for the subject site.

6.4.8 Other Land Use Buffers-*Basic Raw Materials*

Basic raw materials are described as sand (including silica sand), clay, hard rock, limestone (including metallurgical limestone) and gravel and other construction and road building materials, which are generally important to land development. As mentioned in **Section 3.8.5**, there are a number of basic raw materials mapped as occurring within the vicinity of the site, namely a:

- Sand 'extraction area' within Lot 201 Mortimer Road, to the north of the site.
- Clay 'priority resource area' located approximately 500 metres directly south of the site.

Under the existing *Environmental Protection Authority Guidance Statement No. 3 – Separation distances between industrial and sensitive land uses* (EPA 2005), generic separation distances are provided for the extraction of certain basic raw materials to ensure no adverse impacts are experienced by sensitive land uses, such as residential developments. A generic 500 to 1 000 metre separation distance is recommended distance applied to clay extraction or processing (and is dependent on the size of the processing), while a generic 300 to 500 metre separation distance is applied to sand and limestone extraction. *State Planning Policy No. 2.4 Basic Raw Materials* provides for the protection of the basic raw materials, with the intention of this policy to ensure these resources can be fully utilised, through appropriate land uses and timeframes for development that may otherwise conflict with this intention.

While generic separation distances are recommended, no spatial consideration has been provided for the presence and future activity associated with either of these basic raw materials within the Local Structure Plan for Lot 90 and Part Lot 378. This is discussed in further detail below.

It is understood from discussions with the landowner of Lot 201 Mortimer Road, where the sand resource is located, that this resource will be extracted as a part of the development process which is likely to precede the development of Lot 90 and Part Lot 378. Therefore it is not expected that the extraction of this resource will impact future residents, nor will residential development within the site impede future extraction of this resource.

Regarding the clay resource to the south, consultation was undertaken with Austral Bricks, the Department of Mines and Petroleum and the Department of Planning, in which it was determined that activities to extract clay within this mapped area would not impact upon future residents, nor would the presence of future residents impede the extraction of clay from this area in the future, with mapping of the resource updated to show the resource occurring 500 metres south of the site. The Department of Mines and Petroleum confirmed that the recommended 500 metre separation distance associated with the extraction of the clay resource abuts the southern boundary of Millar Road and that future residential development would not impede extraction of this resource (refer to **Appendix F** for the Department of Mines and Petroleum letter and plan). Therefore, this buffer does not impact on any part of Lot 90 and Part Lot 378 and will not delay or affect the granting of LSP approval over the site.

6.4.9 Heritage significance

A search of online databases was undertaken, and no indigenous or non-indigenous heritage sites were identified as occurring within the site. Although one registered Aboriginal heritage site was identified south-west of the site, adjacent to the western boundary of the Kwinana Freeway.

No specific consideration for indigenous or non-indigenous heritage has been provided within the Local Structure Plan.

However it is acknowledged that there is the potential that further Aboriginal heritage sites may be found during civil and construction works. It is recognised that if, during construction Aboriginal artefacts or sites are uncovered, that these are protected under the *Aboriginal Heritage Act 1972* and that works will need to cease and suitably qualified experts will be brought in to survey the potential site, and if required permission under the *Aboriginal Heritage Act 1972* to manage and disturb sites will be sought.

6.5 Proposed Movement Network

A detailed traffic report has been prepared by Transcore to support the proposed subdivision of the subject site (refer to **Appendix C**).

Most importantly a traffic generation and distribution analysis has been undertaken for the LSP/subdivision design for the subject site. Refer to Figures 2 and 3 in the Transcore Report. The Transcore report concludes that Millar Road has sufficient capacity to accommodate the future traffic generated from the proposed residential subdivision with no specific requirement for traffic management or road upgrades.

The Transcore Report also concludes that the proposed single access point on Millar Road will provide sufficient capacity to accommodate the anticipated traffic from the proposed development. It is also confirmed that a basic, priority-controlled T-intersection will suffice for this access point. The topography along the section of Millar Road adjoining the site is flat and straight with no visual impediments and therefore good sightlines at the subdivision access point are provided.

The Transcore Report also provides an analysis of the local roads within the subject site. All proposed roads are classified as either Access Street C or Access Street D in accordance with Liveable Neighbourhoods. Figure 5 in the report shows the internal road hierarchy for the subject site. The report also addresses the various cross-sections including total road reservation widths, which has been reflected in the LSP design. Access Street D is required by Council to comprise a 6m road pavement and two 4.5m road verges for a total road reserve width of 15m. This may be reduced to 14m where POS is located on one side given the verge requirements are less (ie no servicing).

The Transcore Report addresses the proposed pedestrian and cyclist network. Figure 9 shows the proposed footpath and dual use path system throughout the proposed subdivision. Most importantly, footpaths/dual use paths will be provided on both sides of roads within 400m of the homestore and primary school. An 8m wide pedestrian access way (PAW) is also identified on the LSP to provide a direct pedestrian/cyclist link to the primary school.

According to Transcore's discussions with the PTA there are currently no plans to provide a bus service to the subject site. However, as demand grows and more of the Wellard East Cell is developed, it is expected that there will be a bus service to the cell. In accordance with the LSP concept design for the cell (refer to **Figure 17**) the bus service will be provided along the north-south connector road to the east of the subject site. Therefore, there is no requirement for internal roads within the subject site to accommodate buses.

6.6 District and Local Water Management Strategy

The development of a District and Local Water Management Strategy is the appropriate mechanism to establish broad-level designs and management measures for flood mitigation and effective stormwater management at the local structure planning stage. The District and Local Water

Management Strategy (DLWMS) for Lot 90 and Part Lot 378 is a key supporting document for the Local Structure plan (LSP) (refer to **Appendix D**) and verifies that the subject site can be developed independently of other sites within the Wellard East Cell in accordance with the latest water management principles. The development of the DLWMS has been undertaken with the intention of providing a structure within which subsequent development can occur consistent with a 'total water cycle management' approach described in the document. It is also intended to provide overall guidance to the general stormwater management principles for the area and to guide the future Urban Water Management Plans (UWMP) that will support the subdivision approval for the site.

The DLWMS for the site has previously been approved by the Department of Water (refer to **Appendix H**), however it has been updated in accordance with the latest LSP/subdivision design.

The DLWMS prescribes water related design objectives for water conservation, groundwater and stormwater. The key design criteria for the subject site are based on those provided in the JDWMP and the *Stormwater Management Manual for Western Australia* (DoW 2007) and are outlined in **Table 9**.

Table 9: Key design criteria of DLWMS

Design Criteria
Water Conservation
› Minimising water requirements in the establishment and maintenance of POS.
› Prescribing water efficiency measures to buildings within the development in addition to mandatory requirements of the Building Codes of Australia.
› Supplying fit-for purpose water to reduce the demand for potable (drinking) water.
Surface Water
› The Peel Main Arterial Drainage Scheme provides pre- and post-development flood levels for the 10- and 100-year Average Recurrence Interval (ARI) storm events.
› Development along the central Peel Main Drainage line (Sub N1A Drain) must be situated at a minimum level of 8.31m AHD.
› Development in the vicinity of the northern drainage line (the Peel Sub N Drain) must be situated at a minimum of 8.98m AHD, based on 500-mm freeboard.
› There are no major arterial roads within the development that need flood protection from the 100-year ARI storm.
› The stormwater design has been based on the minor and major principles for drainage, where minor events (1-year and 5-year ARI storm) are conveyed using a network of drainage structures (pits and pipes), and major events (100-year ARI) utilise overland flow paths such as roadways
› Post development flows must be discharged at flow rates that are consistent with pre-development flow rates for the same reoccurrence events.
› In minor events of up to the 1-year ARI, all site runoff shall be retained in basins and disposed by infiltration. During major storm events, overflow from Basin A shall be conveyed to the central drainage line via overland flow paths.
› Water quality treatment systems (including soak wells and combined treatment and detention basins) have been designed to capture a range of likely pollutants and provide opportunity for infiltration throughout the system.
› The bioretention basin treatment system will need to measure approximately 0.23ha to meet the water quality objectives of the site.
› Surface water quality targets are to be achieved through a treatment train approach.
Groundwater
› Existing ground levels provide adequate clearance to maximum groundwater levels for most of the site.
› In the vicinity of the drainage lines, it is necessary to provide fill material to maintain an appropriate clearance

to groundwater to prevent waterlogging of soils.

- Subsoil drainage pipes are to be laid simultaneously or adjacent to the stormwater drainage network to allow for subsoil drainage should groundwater levels increase beyond the estimated maximum groundwater levels.
- The base of combined treatment/detention basins are to be lined with subsoil drainage pipes that freely discharge to the central drainage line to provide necessary clearance to groundwater (0.5m).

7 Statutory Implementation of the Local Structure Plan

The following statutory controls apply to the site (Local Structure Plan area):

- Unless otherwise specified in this part, the words and expressions used in this Structure Plan shall have the respective meanings given to them in the City of Kwinana Town Planning Scheme No. 2 (the Scheme) including any amendments gazetted thereto.
- The Structure Plan (**Figure 20**) outlines land uses, zones and reserves applicable within the Structure Plan Area. The zones and reserves designated under this Structure Plan apply to the land within it as if the zones and reserves were incorporated into the Scheme.
- Pursuant to Clauses 6.17.7.3 and 6.17.7.6 of the Scheme:

1. If a provision of the Structure Plan is inconsistent with a provision of the Scheme, then the provision of the Scheme prevails to the extent of any inconsistency;
2. The provisions of the Structure Plan apply to the land as if its provisions were incorporated into the Scheme and it is binding and enforceable in the same way as corresponding provisions incorporated in the Scheme; and
3. Any other provision, standard or requirement of the Structure Plan that is not otherwise contained in the Scheme, shall apply to the Structure Plan Area as though it is incorporated into the Scheme and shall be binding and enforceable to the same extent as if it were part of the Scheme.

- Detailed Area Plan(s) are required to be prepared in accordance with Clause 6.17.6.1 of the Scheme prior to the subdivision and/or development of lots affected by the following circumstances:

1. Rear-loaded (laneway access) lots;
2. Lots subject to BAL (bushfire attack level) construction standards;
3. Lots subject to 'Quiet House' design requirements; and
4. Lots with a residential density coding of R40.

- At the time of subdivision and/or development the following conditions may be recommended:

1. Notification on title (Section 70A Transfer of Land Act 1893) for lots where the noise target is exceeded as defined in State Planning Policy 5.4: Road and Rail Transport Noise and Freight Considerations in Land Use Planning in accordance with the Lloyd George report (Appendix E);
2. Notification on title (Section 70A Transfer of Land Act 1893) for all lots advising of the operating livestock holding yards and the potential to be affected by noise, odours and/or dust emissions associated with the ongoing operation of the livestock holding yards;
3. Notification on title (Section 70A Transfer of Land Act 1893) for lots identified in the Fire Management Plan (Appendix I) requiring increased construction standards associated with a designated Bushfire Attack Level rating;
4. Memorial on title (Section 165 Planning and Development Act 2005) for all lots advising that the lot is in close proximity to known mosquito breeding areas and that the predominant mosquito species is known to carry viruses and other diseases; and
5. Preparation and implementation of a mosquito and midge management strategy.

8 Conclusion

As discussed and demonstrated throughout this report, the LSP for Lot 90 and Part Lot 378 can be approved on the grounds that it is a "stand alone" LSP, which does not include broader land uses that will service the wider cell. Also based on servicing, traffic and stormwater management, the subject site can be independently developed. Also the subject site is not affected by any unresolved issues such as the 1000m odour buffer. In fact the site is not affected by any buffers, thus allowing the LSP for the site to be approved.

The proposed local structure plan design for Lot 90 and Part Lot 378 is based on recommendations from detailed investigations that support development of the land, including flora and vegetation assessments, transport assessment, planning framework review, servicing analysis and district and local water management strategy.

The LSP design for Lot 90 and Part Lot 378 is generally consistent with the conceptual design for the overall cell that was included on the Wellard East LSP (Lots 201 and 27) particularly in terms of general lot and POS configuration and pedestrian and vehicular connections to Millar Road and the Cell area to the east.

Also the LSP design for the site is generally consistent with Liveable Neighbourhoods (including POS provision), Jandakot Structure Plan, ERIC and City of Kwinana TPS2. As stated, the Jandakot Structure Plan and ERIC and the previously endorsed Wellard East LSP do not propose any broader land uses over the subject site which will service the wider cell, such as senior ovals, the school site, major roads, wetlands and commercial centres. Also the subject site will have separate road access from Millar Road that will adequately service the development until adjoining land is developed in the future. The LSP design allows for a number of road connections to the east to ensure that the subject site is integrated within the cell.

There are many areas within the cell that will be subject to further investigations. The development of Urban zoned land (Lot 90 and Part Lot 378) should not be delayed until all of these investigations are undertaken. It is considered that this LSP for Lot 90 and Part Lot 378 provides sufficient detail to ensure that development throughout the cell is co-ordinated and can proceed in an orderly manner without prejudicing the development and planning of adjoining land.

There is already a precedent for LSP approval over part of the cell, which was endorsed by COK and the WAPC in respect of Lots 201 and 27 in the northern part of the cell. In accordance with Clauses 6.17.3.3 and 6.17.3.5 of TPS2, a LSP can be approved over part of a Development Area or Development Zone provided sufficient integration with the balance of the cell is demonstrated. It is considered that the LSP plan, this report and supporting appendices demonstrate the required level of integration.

In order for the subdivision to commence on Lot 90 and Part Lot 378, it is requested that Council and the WAPC endorse this LSP. In summary, it is considered that the LSP provides an appropriate planning framework for the future subdivision and development of these lots.

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Figures

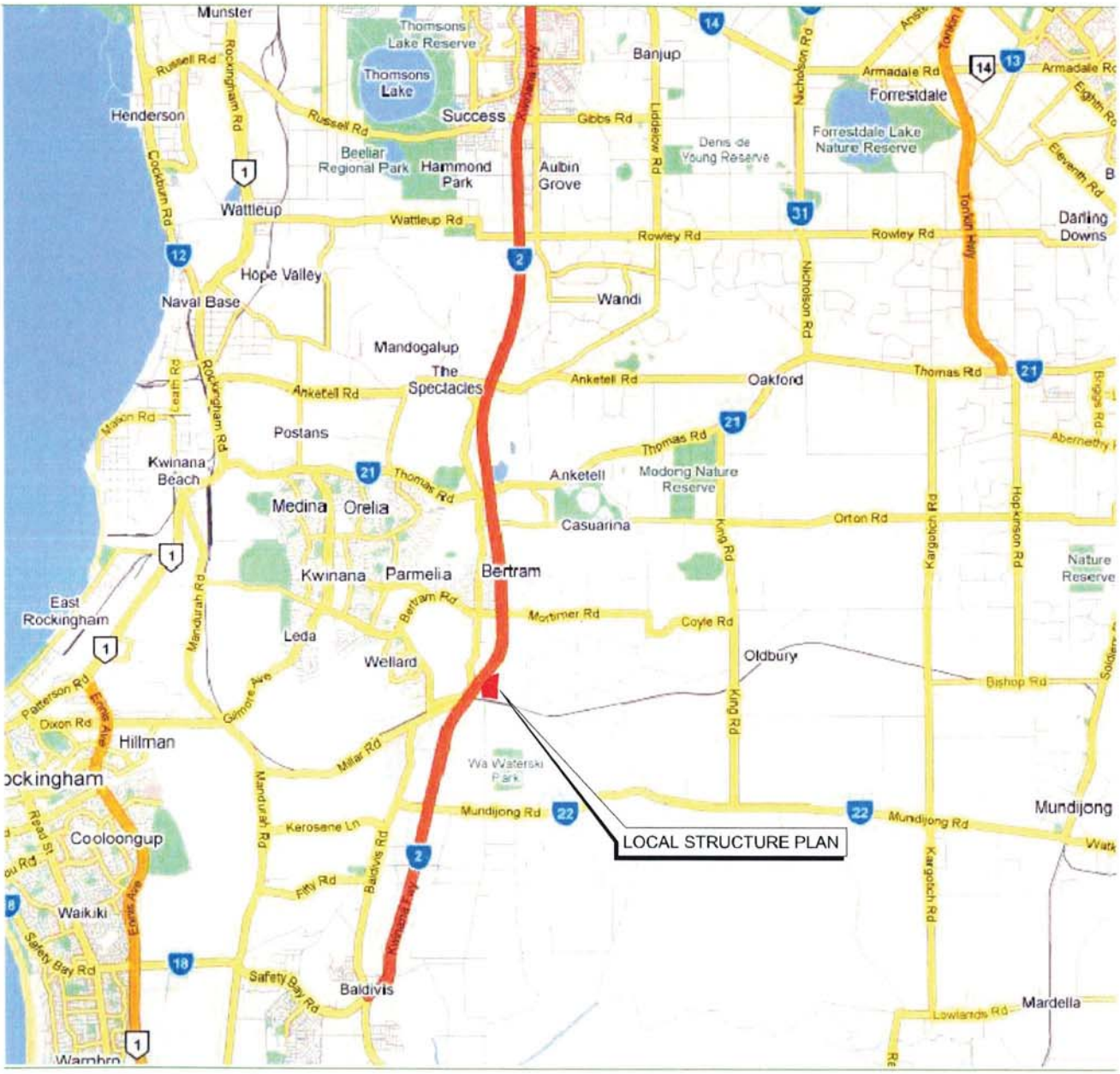

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FIGURE 1

LOCATION PLAN
LOCAL STRUCTURE PLAN
LOTS 90 AND 378 WELLARD EAST

Cardno
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TOWN PLANNERS
PROJECT MANAGERS
ENVIRONMENTAL CONSULTANTS
BUILDING DESIGN

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DATE: 28.02.2012 SCALE AT A3: NTS
DESIGNED: FC CHECKED:
DRAWN: DCD APPROVED:
LOCAL AUTHORITY
TOWN OF KWINANA
PROJECT-PHASE-PLAN NUMBER REVISION
P04017-001-001

LSP BOUNDARY

WELLARD EAST CELL BOUNDARY

0 400 800 m

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FIGURE 2

AERIAL PHOTOGRAPH
LOCAL STRUCTURE PLAN
LOTS 90 AND 378, WELLARD EAST

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DATE:	28.02.2012	SCALE AT A3:	1:8000
DESIGNED:	FC	CHECKED:	
DRAWN:	DCD	APPROVED:	
LOCAL AUTHORITY			
TOWN OF KWINANA			
PROJECT PHASE PLAN NUMBER		REVISION	
P04017-001-002			

LSP BOUNDARY

WELLARD EAST CELL BOUNDARY

0 400 800m

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FIGURE 3

EXISTING LOT CONFIGURATION
LOCAL STRUCTURE PLAN
LOTS 90 AND 378, WELLARD EAST

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PROJECT MANAGERS
ENVIRONMENTAL CONSULTANTS
BUILDING DESIGN

DATE: 28.02.2012 SCALE AT A3: 1:8000
DESIGNED: FC CHECKED:
DRAWN: DCD APPROVED:
LOCAL AUTHORITY
TOWN OF KWINANA
PROJECT-PHASE-PLAN NUMBER REVISION
P04017-001-003

Figure 4: Topography

Project:	Wellard East Local Structure Plan
Client:	D.J. MacCormick Property Group

Plan Number: EP12-007(01)--F01

Drawn:	GRO	Date:	22/02/12
Approved:	JDH	Date:	28/02/12
Checked:	KK	Scale:	1:8,000@A4

0 80 160 320 Metres

emerge ASSOCIATES
Integrated Science & Design

Sources: The following datasets were used in the production of this map: Contours and spot heights - LGATE (2012)

While Emerge Associates makes every attempt to ensure the accuracy and completeness of data, Emerge accepts no responsibility for externally sourced data used

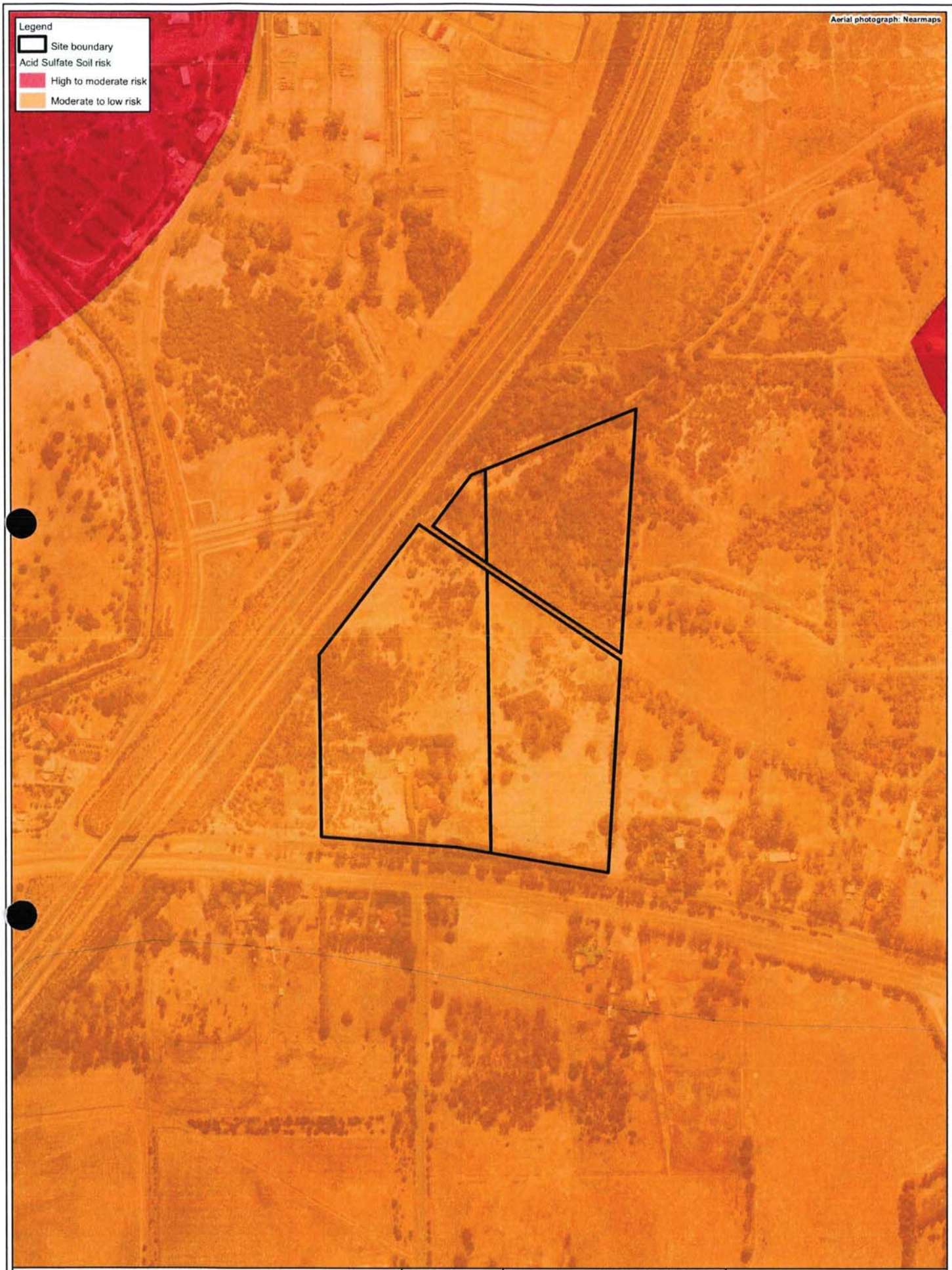

Figure 5: Acid Sulfate Soils Risk Mapping

Project: Wellard East Local Structure Plan

Client: D.J. MacCormick Property Group

Plan Number: EP12-007(01)--F02			
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Approved:	JDH	Date:	28/02/12
Checked:	KK	Scale:	1:6,000@A4

0 60 120 240 Metres

emerge ASSOCIATES Integrated Science & Design

Sources: The following datasets were used in the production of this map: Acid Sulfate Soil Risk - DEC (2010)

While Emerge Associates makes every attempt to ensure the accuracy and completeness of data, Emerge accepts no responsibility for externally sourced data used

Figure 6: Surface Water and Groundwater

Project: Wellard East Local Structure Plan

Client: D.J. MacCormick Property Group

Plan Number: EP12-007(01)--F03			
Drawn:	GRO	Date:	22/02/12
Approved:	JDH	Date:	28/02/12
Checked:	KK	Scale:	1:4,000@A4

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Sources: The following datasets were used in the production of this map: Hydro Line - LGATE (2010)

While Emerge Associates makes every attempt to ensure the accuracy and completeness of data, Emerge accepts no responsibility for externally sourced data used

Figure 7: Vegetation Communities

Project: Wellard East Local Structure Plan

Client: D.J. MacCormick Property Group

Plan Number: EP12-007(01)--F04

Drawn:	GRO	Date:	22/02/12
Approved:	JDH	Date:	28/02/12
Checked:	KK	Scale:	1:3,000@A4

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Sources: The following datasets were used in the production of this map: Vegetation - GHD (2011)

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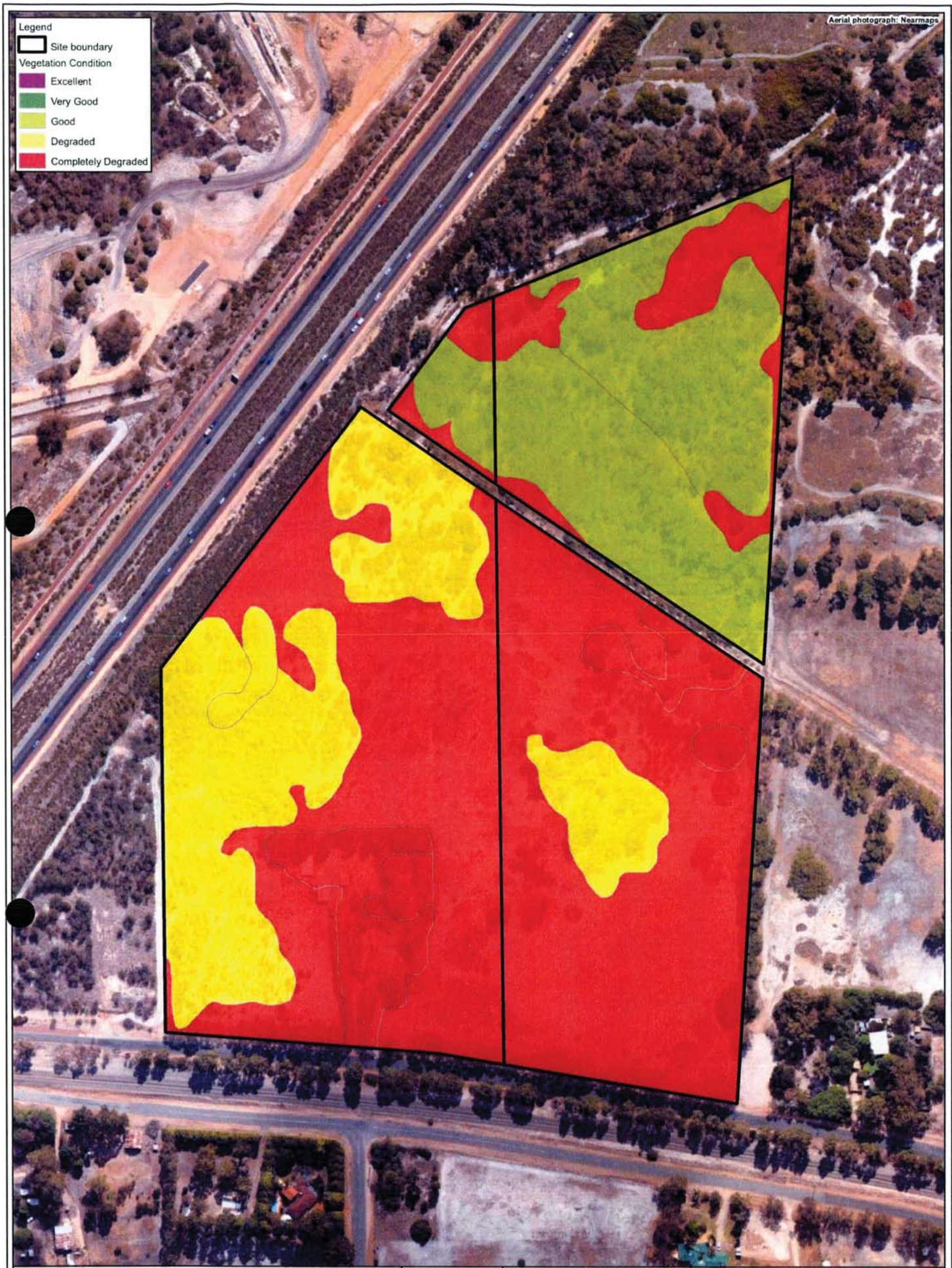

Figure 8: Vegetation Condition

Project: Wellard East Local Structure Plan

Client: D.J. MacCormick Property Group

Plan Number: EP12-007(01)--F05

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Approved:	JDH	Date:	28/02/12
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Sources: The following datasets were used in the production of this map: Vegetation Condition - GHD (2011)

While Emerge Associates makes every attempt to ensure the accuracy and completeness of data, Emerge accepts no responsibility for externally sourced data used

Figure 9: **Black Cockatoo Habitat**

Project: Wellard East Local Structure Plan

Client: D.J. MacCormick Property Group

Plan Number: EP12-007(01)--F06			
Drawn:	GRO	Date:	22/02/12
Approved:	JDH	Date:	29/02/12
Checked:	KK	Scale:	1:3,000@A4

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While Emerge Associates makes every attempt to ensure the accuracy and completeness of data, Emerge accepts no responsibility for externally sourced data used

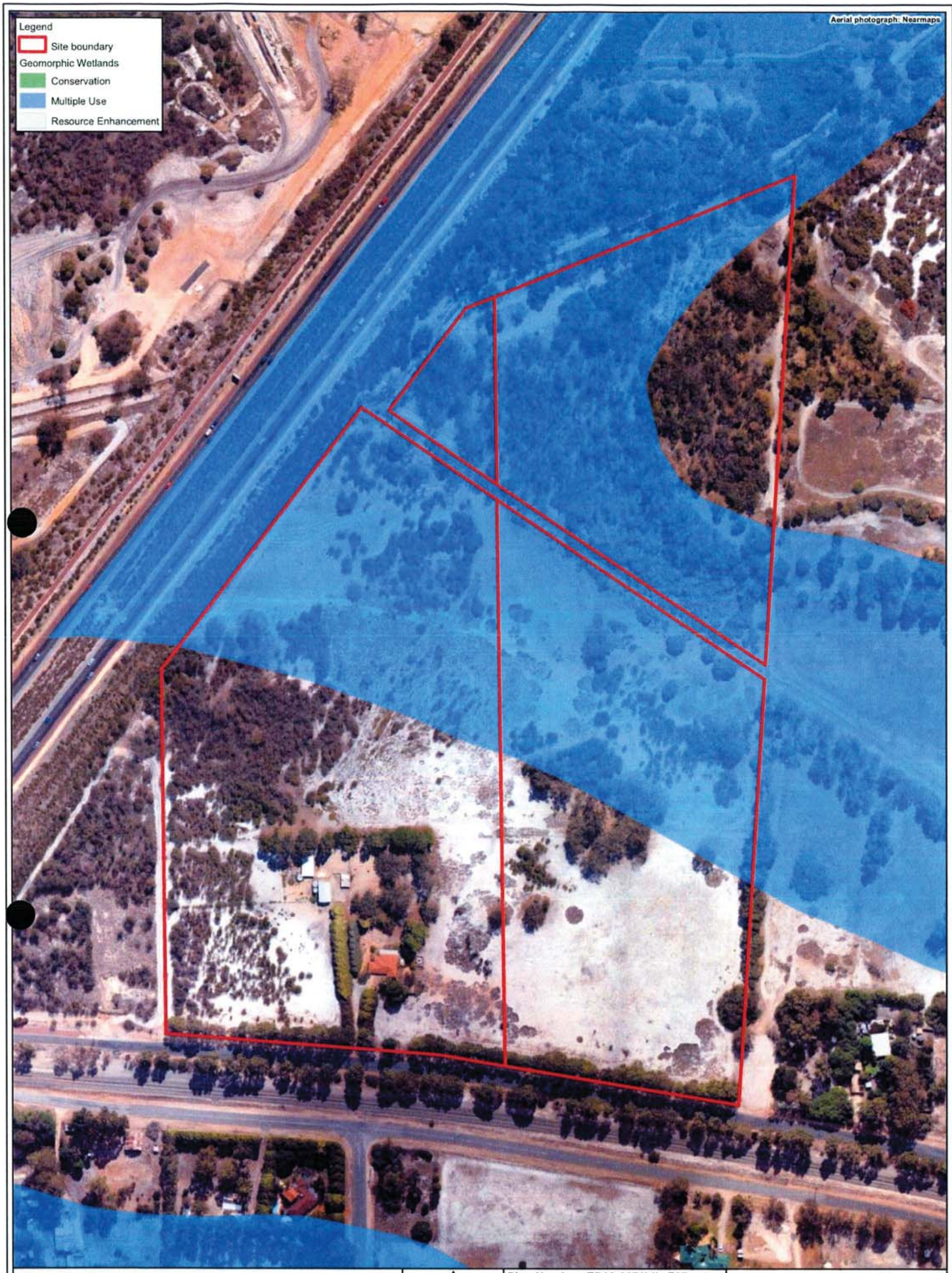

Figure 10: Geomorphic Wetlands Mapping

Project: Wellard East Local Structure Plan

Client: D.J. MacCormick Property Group

Plan Number: EP12-007(01)--F07

Drawn:	GRO	Date:	22/02/12
Approved:	JDH	Date:	29/02/12
Checked:	KK	Scale:	1:3,000@A4

0 30 60 120 Metres

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Integrated Science & Design

Sources: The following datasets were used in the production of this map: Geomorphic Wetlands - DEC (2011)

While Emerge Associates makes every attempt to ensure the accuracy and completeness of data, Emerge accepts no responsibility for externally sourced data used

Figure 11: Adjacent Land Uses

Project:	Wellard East Local Structure Plan
Client:	D.J. MacCormick Property Group

Plan Number: EP12-007(01)--F08

Drawn:	GRO	Date:	22/02/12
Approved:	JDH	Date:	29/02/12
Checked:	KK	Scale:	1:11,000@A4

0 110 220 440 Metres

emerge ASSOCIATES
Integrated Science & Design

While Emerge Associates makes every attempt to ensure the accuracy and completeness of data, Emerge accepts no responsibility for externally sourced data used

Figure 12: Indigenous Heritage Sites

Project: Wellard East Local Structure Plan

Client: D.J. MacCormick Property Group

Plan Number: EP12-007(01)–F09			
Drawn:	GRO	Date:	22/02/12
Approved:	JDH	Date:	28/02/12
Checked:	KK	Scale:	1:8,500@A4

0 85 170 340 Metres

emerge ASSOCIATES
Integrated Science & Design

Sources: The following datasets were used in the production of this map: Aboriginal Heritage Sites - DIA (2011)

While Emerge Associates makes every attempt to ensure the accuracy and completeness of data, Emerge accepts no responsibility for externally sourced data used

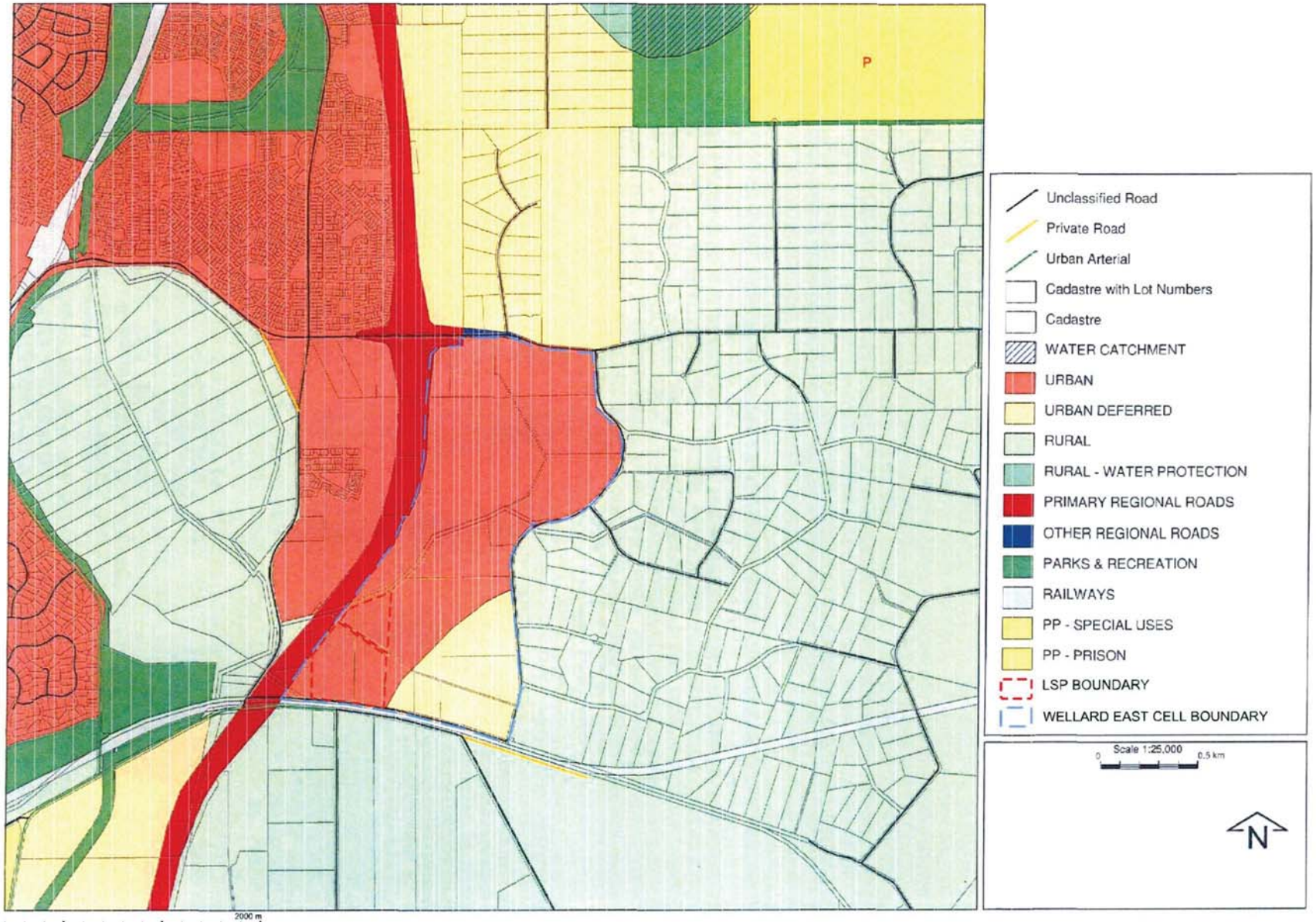

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FIGURE 13

METROPOLITAN REGION SCHEME
LOCAL STRUCTURE PLAN
LOTS 90 AND 378, WELLARD EAST

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TOWN PLANNERS
PROJECT MANAGERS
ENVIRONMENTAL CONSULTANTS
BUILDING DESIGN
Cardno (WA) Pty Ltd
Cardno Centre
2 Seagal Road
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Telephone (08) 9273 3888
Facsimile (08) 9388 3831

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DESIGNED: FC CHECKED:
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LOCAL AUTHORITY
TOWN OF KWINANA
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P04017-001-004

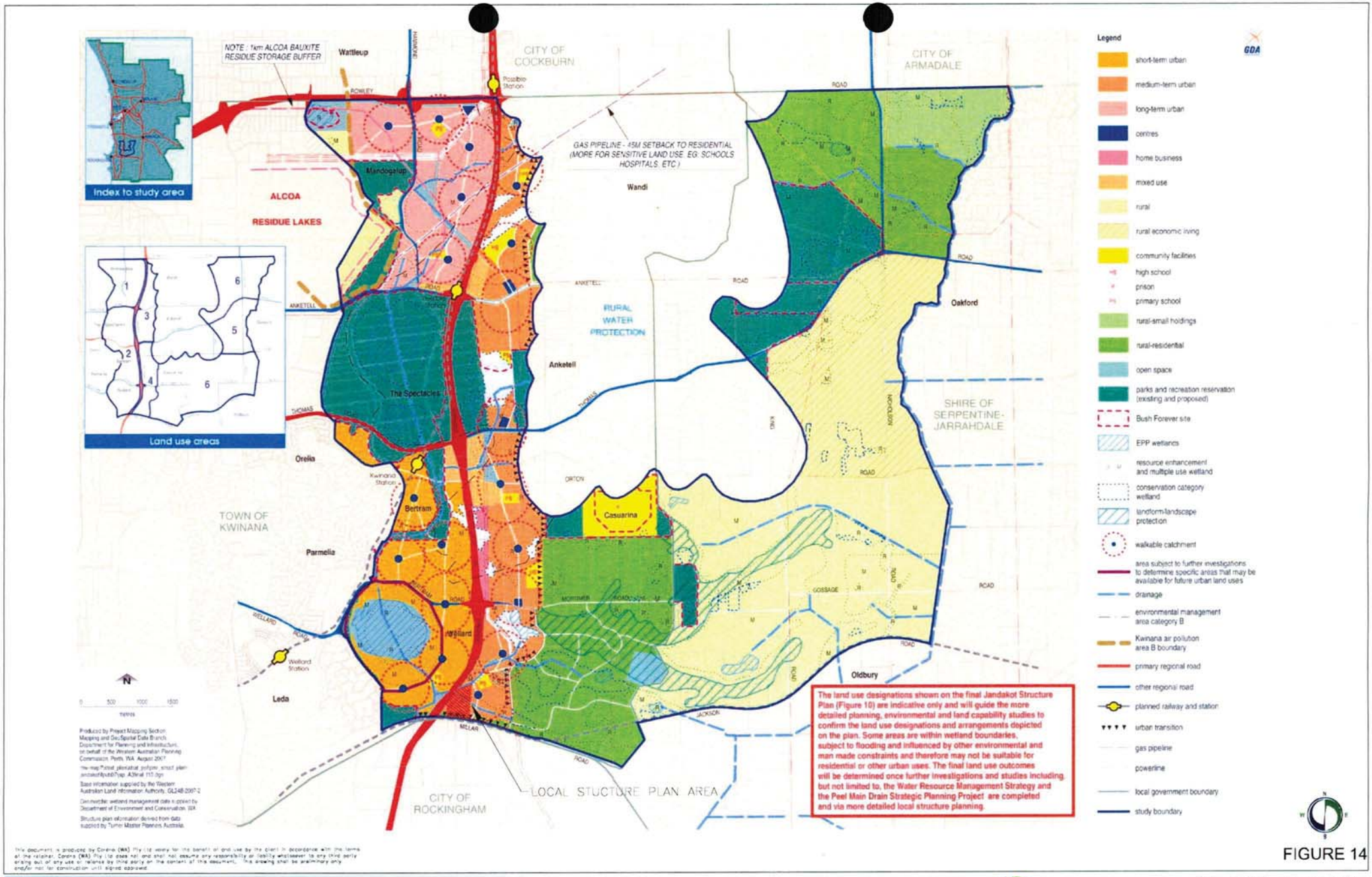

FIGURE 14

FINAL JANDAKOT STRUCTURE PLAN
LOCAL STRUCTURE PLAN
LOTS 90 AND 378, WELLARD EAST

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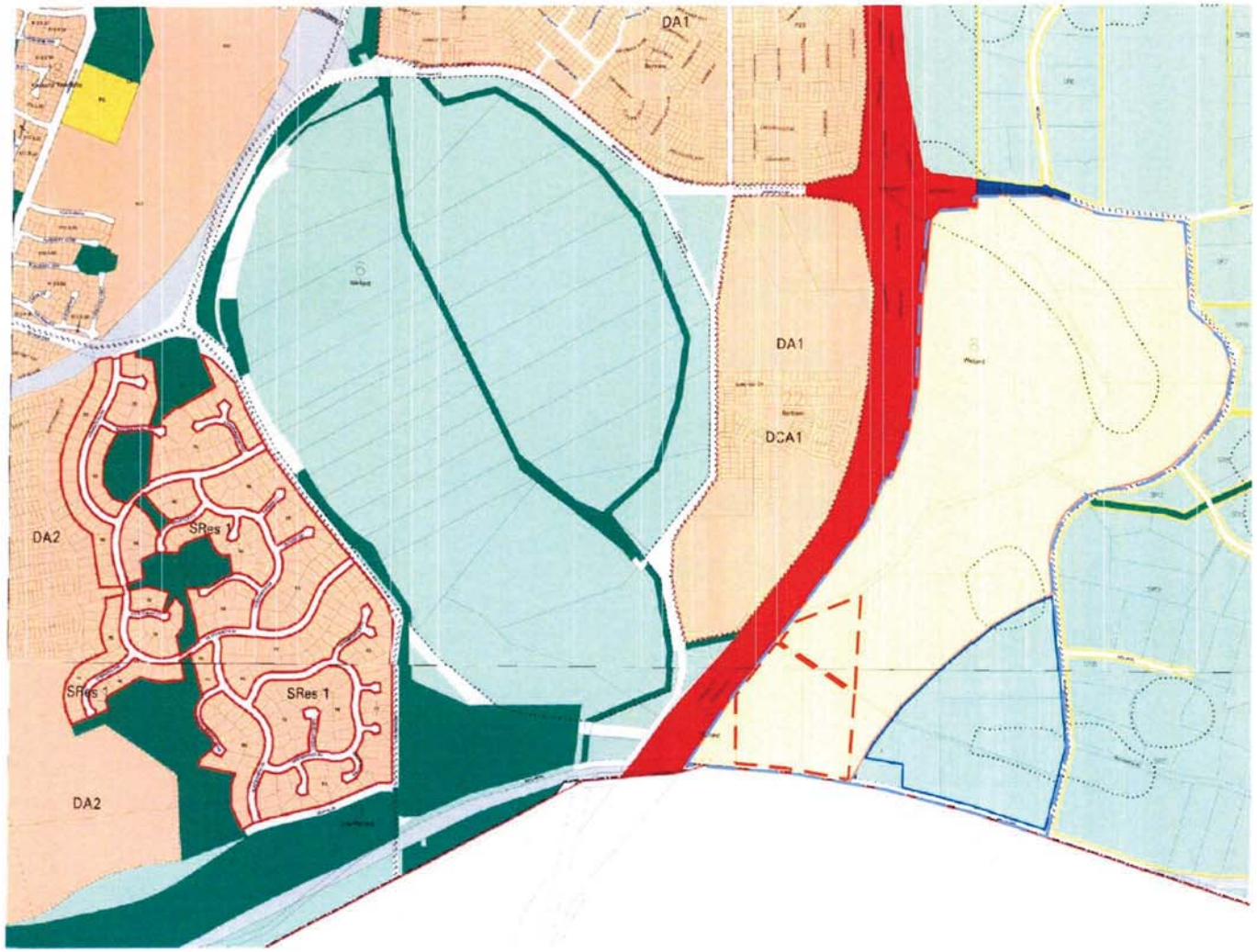

LEGEND

METROPOLITAN REGION SCHEME RESERVES

LOCAL SCHEME RESERVES

ZONES

OTHER

VERSION No 1

TOWN OF KWINANA

TOWN PLANNING SCHEME NO. 2

(DISTRICT SCHEME)

LSP BOUNDARY

WELLARD EAST CELL BOUNDARY

0 750 1500m

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FIGURE 15

TOWN OF KWINANA - TOWN PLANNING SCHEME No. 2

LOCAL STRUCTURE PLAN

LOTS 90 AND 378, WELLARD EAST

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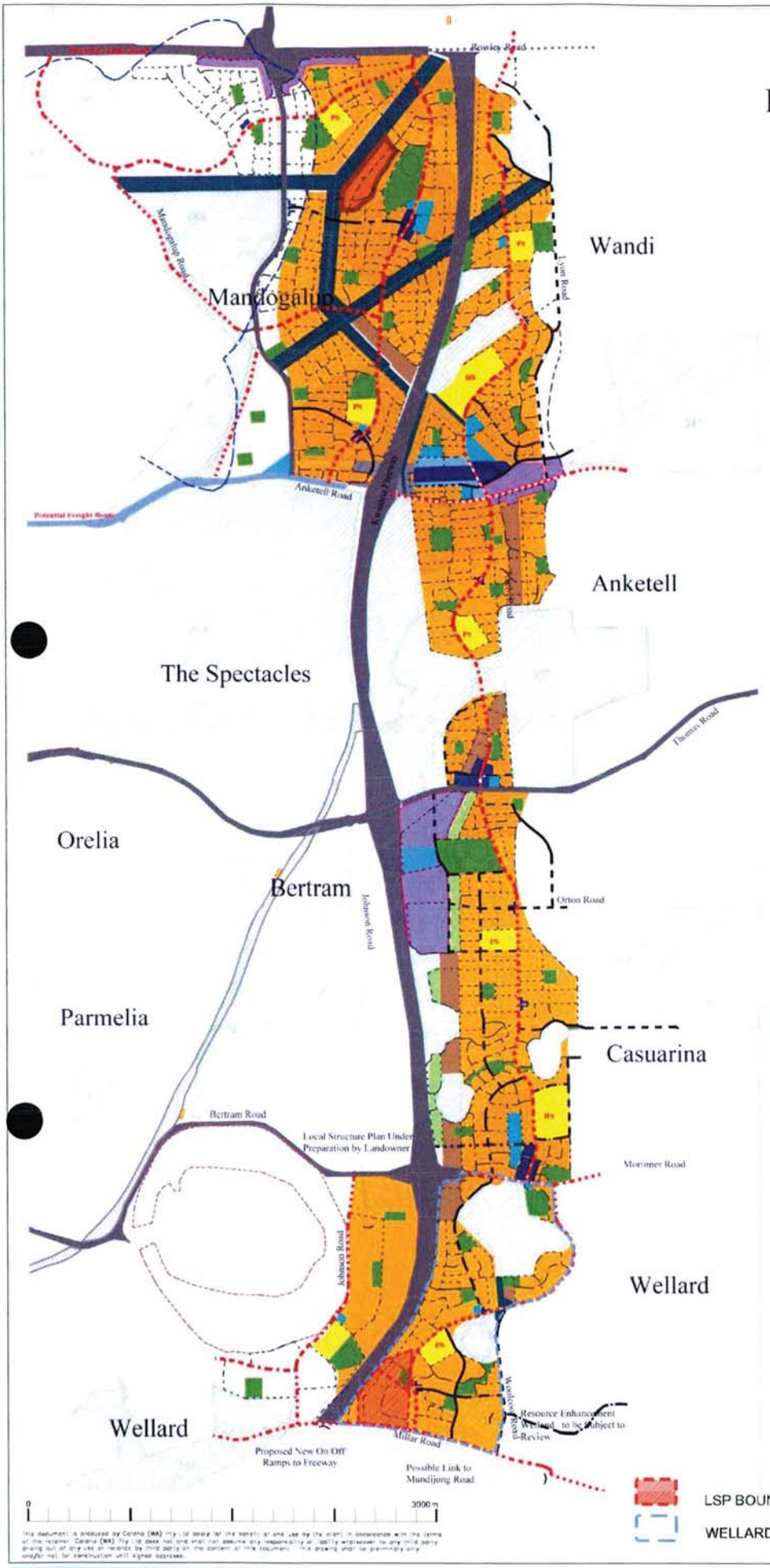
Town of Kwinana
Eastern Residential Intensification Concept
(District Structure Plan)



Proposed Land Use

- Residential R20
- Residential R25 (& Higher)
- Residential/Business (Home Based Business)
- Special Residential R5
- Special Residential (Power Lines)
- Possible Mid to Long Term Future Residential
- Commercial Centre
- Mixed Business
- Commercial Centre Mixed Use
- Neighbourhood Node
- High School
- Primary School
- Local/District Recreation
- Community Facilities
- Conservation
- Bush Forever area No.
- Multiple Use Corridor -Infrastructure (Power & Gas Lines) & Ecological Linkages

Transport Infrastructure

- Regional Road
- Structure Plan Local & District Distributor
- Structure Plan Local Collector Roads
- Structure Plan Local Access/Collector Roads (Indicative Only)
- Long Term Road Closure Following Realignment of Current Route
- Railway Purposes
- Railway Station Location
- Noise and Impact Attenuation Bunds

Other Factors

- Modeled Dust Buffer Edge Requires 2 Years of Dust Monitoring by Developers to Validate Model
- Future Urbanisation May be Considered Following Full Technical Environmental Review of Impacts of Urbanisation on Wetland Area. (To be Undertaken by Landowner/Developer in Consultation with DoE)

Scale 1: 30,000

LSP BOUNDARY

WELLARD EAST CELL BOUNDARY

FIGURE 16

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EASTERN RESIDENTIAL INTENSIFICATION CONCEPT
LOCAL STRUCTURE PLAN
LOTS 90 AND 378, WELLARD EAST

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TOWN OF KWINANA
PROJECT-PHASE-PLAN NUMBER REVISION
P04017-001-007

Development Principles

1. This LSP only relates to the design for Lots 27 and 201 Mortimer Road which are zoned 'Urban' under the Metropolitan Region Scheme (MRS) and zoned 'Development' under the Town of Kwinana Town Planning Scheme No. 2 (TPS2) within the solid orange line. The design shown over the balance of the Wellard East Cell is indicative only and generally consistent with the Eastern Residential Intensification Concept (ERIC) Plan. The balance of the Wellard East Cell is subject to further investigations.
2. Detailed Area Plans (DAPs) will be provided for all 'medium density' coded lots and all lots abutting the Western Power Easement.
3. As development progresses the performance of the Mortimer Road - Road A interim intersection at Lot 27 will be monitored. If performance deteriorates to an unacceptable level prior to the construction of the ultimate intersection at Nicolas Drive, the roundabout annulus will be constructed and the interim intersection will be modified to a left-in/left-out intersection.
4. The boundary of the Resource Enhancement Wetland (REW) on Lot 27 is indicative and is subject to the preparation of a Wetland Management Plan which requires approval by the Department of Environment and Conservation (DEC).
5. The land comprising the easement for Western Power, not within the Core Conservation Wetland (CCW) Buffer, being transferred free of cost to the Town of Kwinana at subdivision stage.

Reference should be made to the attached overall Public Open Space Schedule outlining the provisions of POS for the Wellard East Cell

LEGEND

OPEN SPACE

WETLAND BUFFER

WETLAND CORE

WELLARD EAST CELL BOUNDARY

LOCAL STRUCTURE PLAN BOUNDARY LOTS 90 AND 378

Wellard East Cell
Public Open Space Plan for LSP
Town of Kwinana

0 100 200m

PROJECT-PHASE -PLAN NUMBER
P04017-CON-003

Figure 18

michaelSWIFT & associates . town planners

source : robertday

Reference should be made to the attached overall Public Open Space Schedule outlining the provisions of POS for the Wellard East Cell

Note: POS areas over the cell (with the exception of Lots 90, 378 and part Lot 201) are approximate only and subject to future Local Structure Plans

LEGEND

OPEN SPACE

PRIMARY SCHOOL

WETLAND CORE

WETLAND BUFFER

WELLARD EAST CELL BOUNDARY

LOCAL STRUCTURE PLAN BOUNDARY LOTS 90 AND 378

Wellard East Cell
Overall Public Open Space Plan
Town of Kwinana

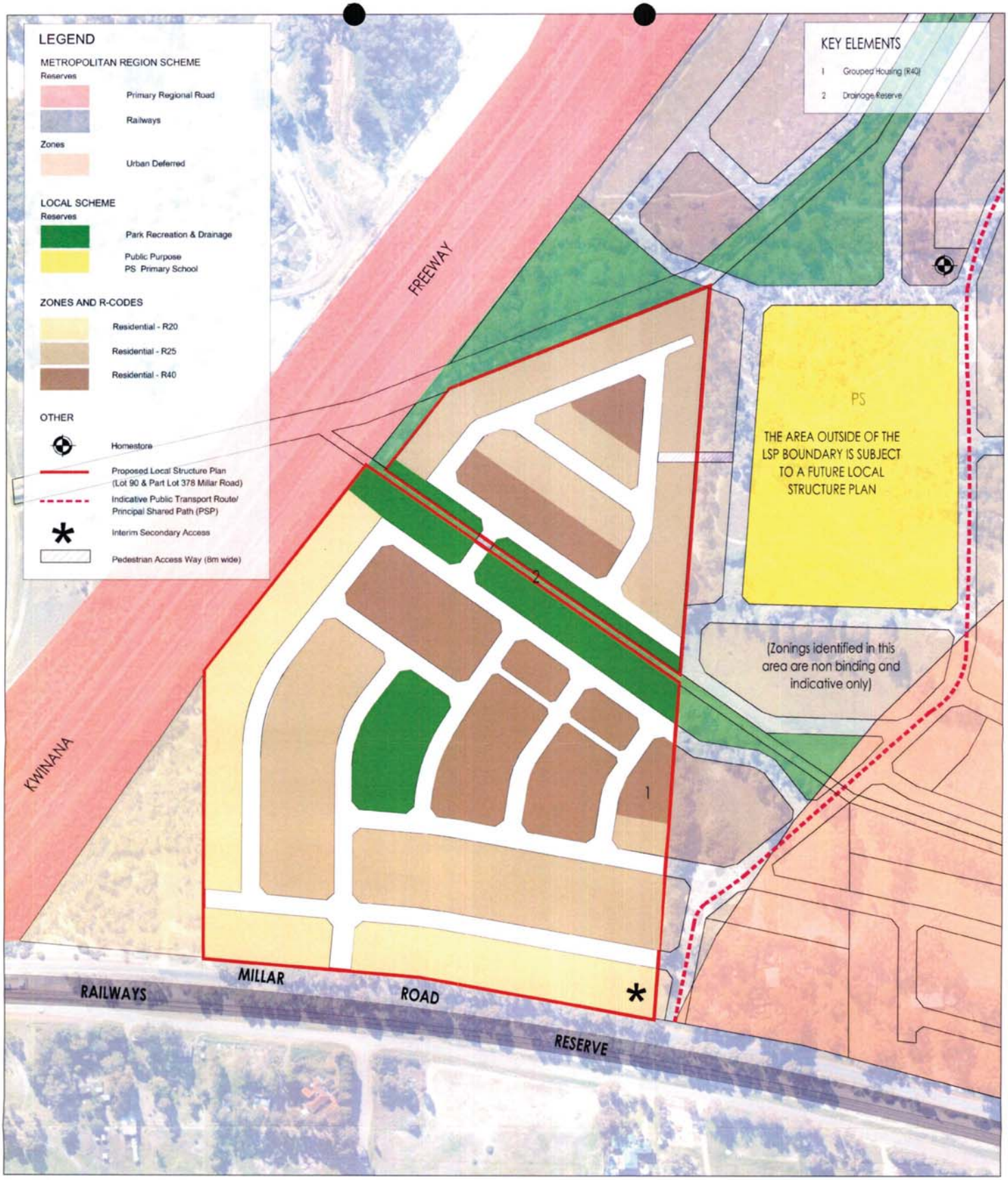
0 100 200m

PROJECT-PHASE-PLAN NUMBER
P04017-CON-002-A

Figure 19

michaelSWIFT & associates . town planners

source : robertsday



Adopted by resolution of the Council pursuant to Clause 6.17.4.15 of Town of Kwinana Town Planning Scheme No.2

30/4/14 Date

Chief Executive Officer

Approved by Western Australian Planning Commission on

24 January 2014

Signed by an officer duly authorised by the Western Australian Planning Commission pursuant to section 24 of the *Planning and Development Act 2005*

Wellard

Local Structure Plan

Lot 90 and Part Lot 378 Millar Road

City of Kwinana

0 50 100m

PROJECT-PHASE -PLAN NUMBER
P04017-CON-0011

Figure 20

michaelSWIFT & associates . town planners

Cardno