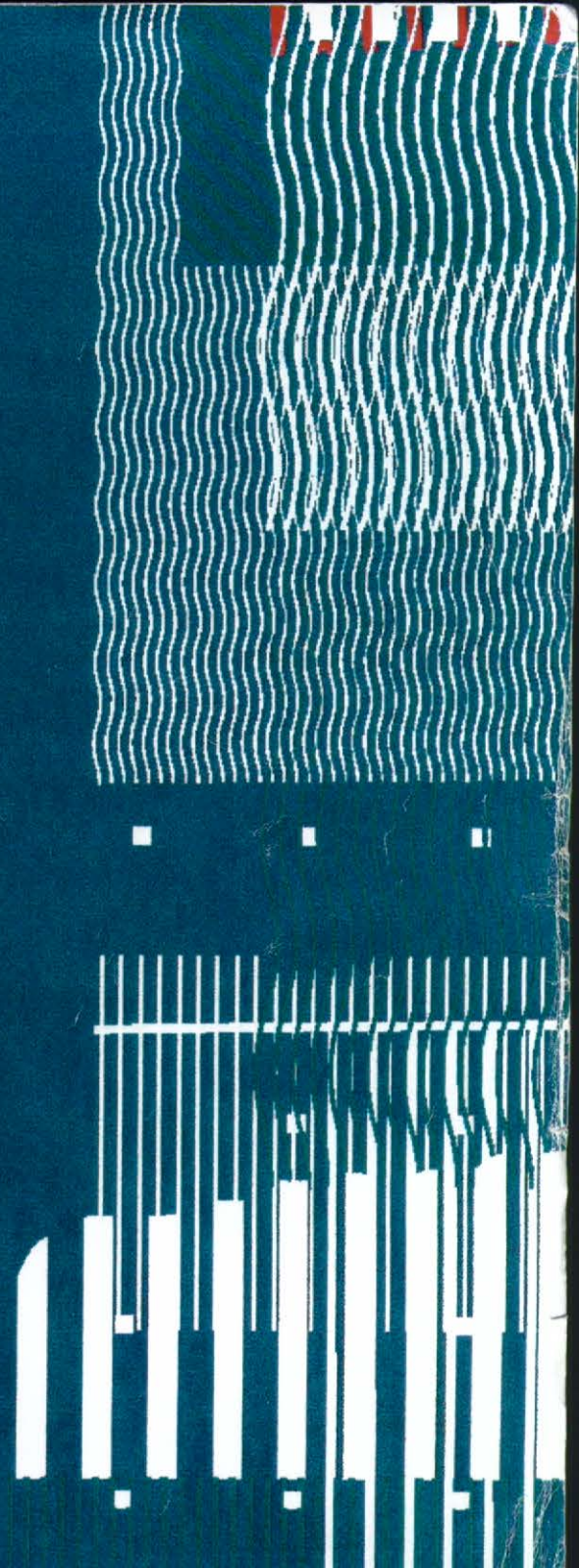
CASUARINA LOCAL STRUCTURE PLAN
CONSOLIDATED REPORT June 1998

TAYLOR BURRELL Town planning and design
for
SULLIVANS Real Estate



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This report reflects a consolidation of modifications and conditions as set out in the Town of Kwinana Structure Plan approval dated 13 May 1998. This report is to be read in conjunction with the following reports:

Cossil & Webley	"Drainage management Plan and Bulk Earthworks Strategy for Casuarina Landholdings" 18 June 1998, and
Sinclair Knight Merz	"Casuarina Local Structure Plan Traffic Impact Report" June 1998

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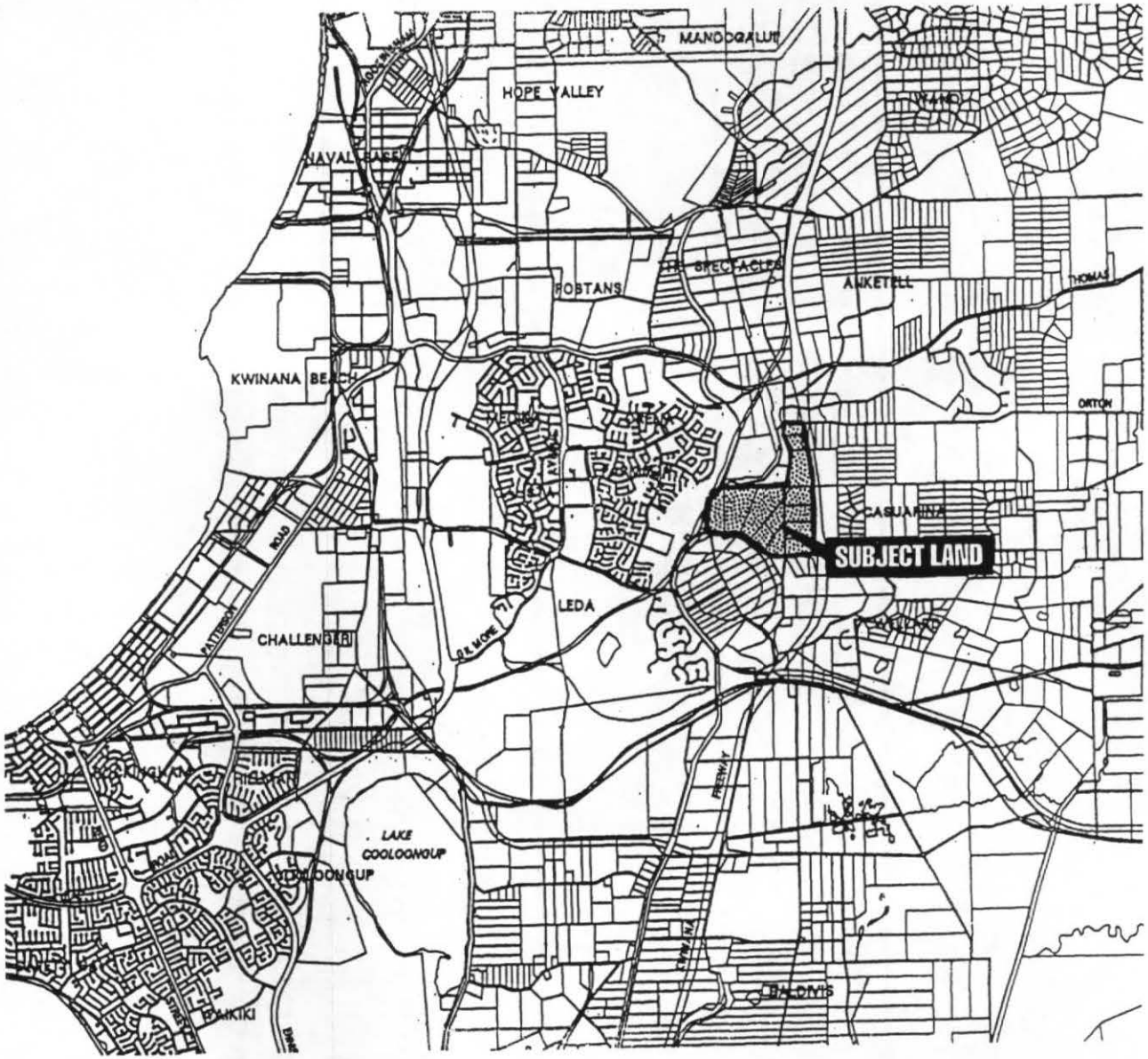
1.0 Introduction

This report has been prepared to describe a Local Structure Plan (CLSP) over land bounded by Orton Road, Kwinana Freeway, Bertram Road, the Railway and Regional Open Space Reservations within the Town of Kwinana, to provide a rational framework for subdivision of this land under the Town of Kwinana Town Planning Scheme No.2. The Structure Plan also recognises (but does not include) the urban deferred area south of Mortimer Road between Wellard Swamp and the Freeway, and the urban zoned land bounded by Thomas Road, the Railways and Regional Open Space Reservations (Figure 1).

The Structure Plan assesses the opportunities and constraints to development and depicts appropriate locations for major landuses, including residential, public open space, conservation areas, school sites, commercial sites and major roads, establishing the future overall development pattern of the area.

The subject land predominantly comprises private landowners all of whom wish to develop their properties for urban purposes.

The Structure Plan was initially prepared in 1993 in support of local and Region Scheme amendments. The Plan was subsequently modified to include the South West Corridor Transport Reserve.



The most recent revision to the Structure Plan (June 1997) was approved (with conditions) by the Town of Kwinana at its Ordinary Meeting on May 13, 1998 (refer to Appendix A).

This (Consolidated) Casuarina Structure Plan Report now incorporates the modifications and conditions set out in that approval for ease of reference.

2.0 Sub-Regional Context

The Study Area is located 10km north-east of the Rockingham Town Centre and 3km east of the Kwinana Town Centre (refer Figure 1). The Kwinana Freeway abuts the eastern boundary of the site, affording good regional access. Both Thomas Road to the north and Bertram Road to the south are Important Regional Roads in the Metropolitan Region Scheme. These roads link the Study Area to the Freeway, other regional roads (i.e. Cockburn Road) and Rockingham.

3.0 Local Context

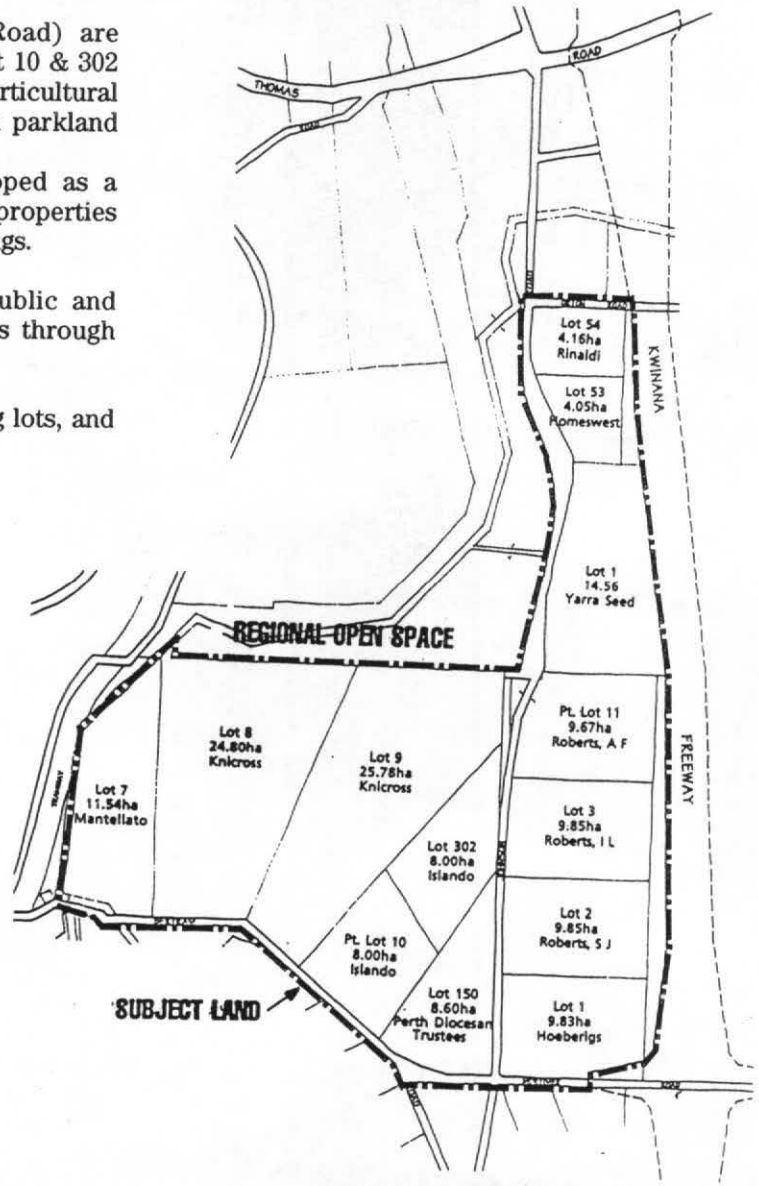
The land is located to the east of the steep sloping escarpment adjacent Parmelia/Orelia, between the localities of Wellard and The Spectacles, with Casuarina to the east, over the Freeway. The site is effectively severed by the Wellard - Spectacles Main Drain, restricting east-west movement options. Johnson Road, which is presently an important local route to the southern Baldivis locality, traverses the Study Area from north to south.

4.0 Land Use and Ownership

Peel Location 1371 (Vacant Crown Land) is undeveloped, and comprises a mix of cleared areas, natural vegetation cover and intermittent wetlands. Lot 54 (corner of Orton and Johnson Road), and Lot 150 (corner of Bertram and Johnson Road) are undeveloped and uncleared. Lots 7, 8, 9, Pt 10 & 302 Bertram Road are currently commercial horticultural operations. Lot 1 Johnson Road has been parkland cleared and are undeveloped.
Lot Pt 1 Johnson Road has been developed as a chicken farm respectively. The remaining properties have been cleared and contain private dwellings.

The only other major features are the public and private open drainage channels which pass through the site.

Figure 2 identifies the disposition of existing lots, and their respective ownership.



LAND OWNERSHIP **Figure 2**

A summary of existing ownership is set out below.

Table 1
Land Ownership

	Lot No	Area
Mantellato	Lot 7	11.54 ha
Knicross	Lot 8	24.80 ha
Knicross	Lot 9	25.78 ha
Islando	Pt 10/Lot 302	16.00 ha
Perth Diocesan Trustees	Lot 150	8.60 ha
Hoeberigs	Lot 1	9.83 ha
Roberts, SJ	Lot 2	9.85 ha
Roberts, IL	Lot 3	9.85 ha
Roberts, AF	Pt 11	9.67 ha
Yarra Seed	Lot 11	4.56 ha
Homeswest	Lot 53	4.05 ha
Rinaldi	Lot 54	4.16 ha
MRWA	Pt 12	3.50 ha
MRWA	Pt 52	1.20 ha
Total		**153.39 ha**

5.0 Physical Profile

5.1 Topography

The CLSP Area is mildly undulating. A gentle ridge runs east to west through the subject land, and the northern portions of the land adjacent to the Regional Open Space are generally flat. The lower flat areas are generally characterised by seasonal surface water held for extended periods. Project Engineers (Cossill & Webley) estimate approximately 40ha of the area will require a combination of filling and sub-soil drainage to maintain a minimum of 1.0 metres between floor levels and the water table.

5.2 Soils

The soils are of the Bassendean Association. These typically are leached grey siliceous sands overlaying an organic or iron organic hard pan. In areas subject to inundation, before the drainage system was introduced by the Water Corporation, the soils would have been acid swamp soils of the Joel series, consisting of about 1 metre of sand laden with organic matter and a pronounced organic hard pan. It is this improvement that made the land suitable for market gardens and other rural uses.

5.3 Vegetation

Vegetation is of the Bassendean Complex - central and south, with species ranging from woodlands of Eucalyptus sp, Casuarina sp, and Banksia sp to low woodlands of Melaleuca sp and sedgelands on moister sites. Following an assessment of the Study Area by the Department of Conservation & Land Management (Ref: Lyndon Mutter), areas of significant vegetation, including two rare plant species, were found on Vacant Crown Land Location 1371. This issue, and its attendant planning implications, are addressed in detail in the Planning Issues Section.

5.4 Wetlands

The Waters and Rivers Commission is in the process of reviewing its Wetland mapping data for the Perth Metropolitan Region. The review identifies one area within the study area (lot 1, Johnson Road) as resource enhancement. It is the responsibility of individual landowners with areas identified for resource enhancement to undertake at the time of subdivision further environmental assessment to determine the final extent of the wetland to be protected, and to describe any drainage or environmental repair initiatives. Water sensitive urban design techniques will need to be adopted to ensure the least impact and rehabilitation of the wetland.

6.0 Planning Background

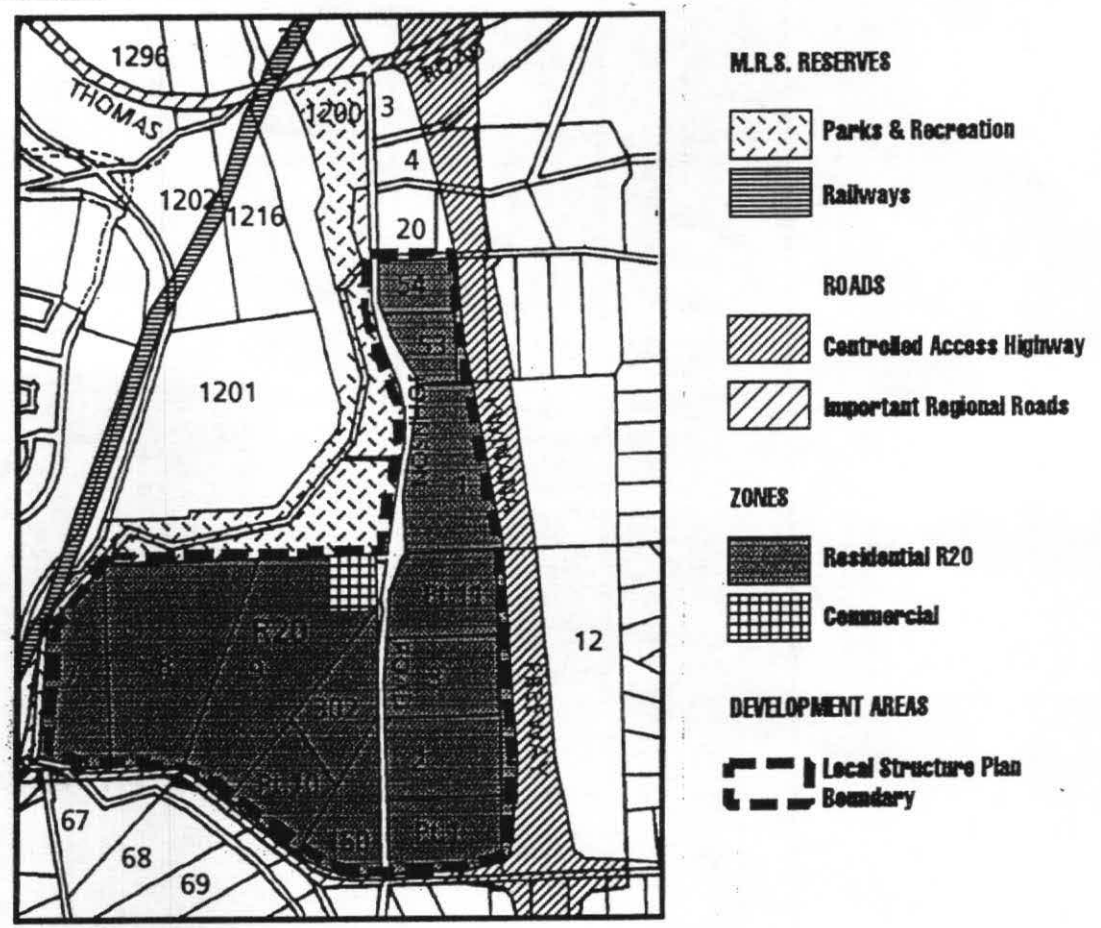
6.1 Metropolitan Region Town Planning Scheme

The CLSP Area is predominantly included within the Urban zone under the Metropolitan Region Scheme. The area is bounded to the north by Thomas Road and to the south by Bertram Road, both of which are Important Regional Road reserves within the MRS.

To the east, the study area is bounded by the Kwinana Freeway Controlled Access Highways reserve, and to the west, by the Railways reserve identified for the Perth-Mandurah rapid transit system, and a Parks & Recreation reservation under the MRS. The purpose of the Parks & Recreation reserve is to include the Wellard-Spectacles Main Drain, and for conservation purposes as detailed in sections 8.2 and 9.4 of this report.

6.2 Local Authority Town Planning Scheme

The Casuarina Structure Plan Area is covered by Town Planning Scheme No.2. Most of the land is zoned 'Residential R20'. A portion of Lot 9, where it abuts Johnson Road, is zoned Commercial. The extent of existing zonings within the CLSP area under TPS No.2 is shown in Figure 3.



ZONING **Figure 3**

6.3 Other Studies

6.3.1 Town of Kwinana Mixed Business Strategy

A portion of the Study Area has been nominated within the Town of Kwinana Mixed Business Strategy as being suitable for Mixed Business Development. The Strategy was endorsed by the Town of Kwinana on 27 September 1995.

The Town of Kwinana is also considering the inclusion of Lot 54 within the Mixed Business Development area. Given that Lot 54 is currently zoned for 'Residential R20', it has accordingly been shown as 'Residential' within the CLSP. Where future rezonings may take place to change the zoning classification of Lot 54 under TPS No.2, or any new Scheme, then the CLSP can be amended accordingly.

6.3.2 Proposed Kwinana Townsite Structure Plan

The Town of Kwinana has generally endorsed the broad landuse proposals as depicted in the Kwinana Townsite Structure Plan - November 1994. Whilst the principles have been endorsed, it is anticipated that the Structure Plan will be modified as detailed structure planning is prepared on a Area By Area Basis.

The Casuarina Local Structure Plan, whilst predominantly in accordance with the proposed Kwinana Townsite Structure Plan, incorporates some minor modifications. These include a reduction in the size of the Mixed Business area, as identified within the Town of Kwinana Mixed Business Strategy.

7.0 Existing Services and Infrastructure

7.1 Water Supply

This land can be served from the Medina Gravity Scheme Design recently completed by the Water Corporation. The Medina Gravity Scheme provides for the construction of two distribution mains to connect the site with existing water supply infrastructure in Orelia.

At least one of the above mains would need to provide for an initial water supply. Ultimately both mains are required and would be linked via a distribution main in Johnson Road.

7.2 Sewerage

The subdivision of this area will require sewerage reticulation draining to the existing pumping station located near the south western corner of Lot 7 Bertram Road.

The abovementioned pumping station has been designed to take into account the proposed development. However, depending upon the staging of the project, there may need to be some temporary works for which cost sharing arrangements between Scheme participants may be appropriate.

7.3 Drainage

The study area falls within the catchment of the Peel Main Drain. Direct or compensated drainage discharge into the Peel Main Drain will not be permitted

Landowners at the time of subdivision would be responsible for providing or making suitable arrangements to provide the necessary site and infrastructure for accommodating all drainage generated by the subdivision.

In accordance with advice from the Water and Rivers Commission it is proposed to treat the disposal of stormwater drainage using water sensitive design principles.

The Water Sensitive Urban Design and Strategic Drainage Planning Checklist, prepared by the Waters and Rivers Commission can be used by individual landowners at the detailed subdivision design phase to ensure that these principles are incorporated into subdivision designs were appropriate.

Were possible the integration of the drainage system and its improvements with open space and pedestrian movement systems is promoted.

In addition, Part IV, Clause 4.3 of Town Planning Scheme No.2 further requires the provision of a nutrient stripping detention basin/water feature in and adjacent to the Peel Main Drain.

7.4 Electricity, Gas, Telephone Services

Electricity, gas and telephone services can be readily extended to the site, provided the site is developed in an orderly manner.

7.5 Gas Pipeline

There is a high pressure natural gas line which runs on the south side of Orton Road and through the freeway reserve in an easterly direction.

7.6 Major Transport Network

7.6.1 Road Network

The Kwinana Freeway forms the eastern boundary of the Study Area with interchanges at both Thomas Road and Mortimer/Bertram Roads. Thomas Road is located to the north, Mortimer/Bertram Roads to the south and Johnson Road bisects the Study Area, linking Thomas and Mortimer/Bertram Roads.

Mortimer/Bertram Roads are major arterial links between the Kwinana Freeway and Kwinana Industrial Area, as well as servicing the district movement needs of the local residents. No direct frontage access will be permitted to these roads. Pursuant to the WA Community Code, however, the treatment of these roads as Integrator Arterials is encouraged.

There is a proposed widening for Mortimer/Bertram Roads from the freeway interchange westwards. For the most part the widening is on the northern side ranging from 14 metres to 21 metres.

Overall, the proposed road network reflects the Kwinana Townsite Structure Plan as proposed by the Town of Kwinana, particularly in respect of the Johnson Road realignment. Traffic volumes within the Structure Plan can only be confirmed when Thomas Road access and the location of the railway station are resolved. However, the objective will be to ensure that all local roads will be able to accommodate direct lot frontage.

7.6.2 Railway Corridor

The Railways reserve for the rapid transport corridor from Perth to Rockingham, and ultimately to Mandurah, forms part of the western boundary of the Study Area.

Two railway stations are proposed, which bear influence on the Casuarina Local Structure Plan.

Outside of the CLSP area, but requiring recognition in road design and access, is a full function railway station (walk on, kiss and ride, park and ride) situated on the westwards extension of Orton Road. The Department of Transport has advised that it seeks to integrate the station design with the proposed commercial precinct in this area, and will be promoting the application of Transit Oriented Development (TOD) design techniques.

Neighbourhood Connector roads from the subject CLSP area should provide for direct road and public transport access to the 'Orton Road' station.

A second station is proposed at Sutherland Parade. Apart from encouraging some late-night commercial activity at this station to provide for greater security and convenience, the station will function as a stand-alone, Park-and-Ride station.

The station will be separated from the LSP area by Regional Open Space, although the design of the local road system within Lot 7 should maximise walking access from the residential area through the ROS, and potentially provide for a linkage between any nearby neighbourhood node.

8.0 Planning Issues

8.1 Johnson Road

Johnson Road presently forms part of a major road link from Thomas Road through to Baldivis. It is anticipated that this section of road will continue to carry high levels of traffic, but it should be noted that volumes will stabilise once the Freeway Extension is completed.

The design of the Local Structure Plan should endeavour to accommodate alternative north-south routes so that not all local traffic is forced on to Johnson Road.

It is noted that the current alignment of Johnson Road provides for good legibility as a clearly recognisable north-south route, and should not be treated in a manner that may add unnecessary deviations to its alignment.

The longer term treatment of Johnson Road should also see it providing for lower traffic speeds through carriageway design and traffic calming measures.

8.2 Vacant Crown Land [Loc 1371]

As described earlier, the western boundary of the Study Area consists of a man made drain flanked by vacant Crown land included within the Parks & Recreation reserve. The Department of Conservation & Land Management [CALM] has, in the past, approached the Local Authority and the Department of Land Administration [DOLA] to have the Vacant Crown Land [VCL] vested in themselves to be managed as a conservation reserve.

Following liaison with CALM in preparing the Draft Structure Plan in 1993, an assessment of the VCL and adjoining areas was undertaken by Lyndon Mutter of CALM. A number of specific areas within the VCL were identified as having high conservation value and being worthy of preservation. Other sectors were identified as being degraded. In addition, the VCL, coupled with the drain reserves was seen as an important "environmental corridor" linking the Wellard Swamp to the Spectacles.

To recognise and protect these environmental values, the Structure Plan recognises the following features:

1. The suggested reservation for conservation purposes of all of the northern portion of VCL 1371, incorporating the areas of rare flora as identified by CALM.

2. Maintenance of an environmental corridor between Wellard Swamp and the Spectacles by;
   (i) excising a public open space linkage along the western boundary of Lot 7 Bertram Road, ensuring the potential for continuity of faunal movement along the eastern side of the drain, from the south;
   (ii) utilising the area of low environmental significance west of Johnson Road, for community purposes (recreation and primary school) which, whilst optimising the use of the land still ensures maintenance of the aforementioned environmental linkage; and
   (iii) minimising the number of roads crossing over the VCL.

8.3 Wellard Residential Cell

The land located to the south of Mortimer Road, between Wellard Swamp and the Kwinana Freeway, is included within the Urban Deferred zone. No formal structure planning has been undertaken for this site.

9.0 The Structure Plan

9.1 Casuarina Local Structure Plan

9.1.1 Statutory Basis

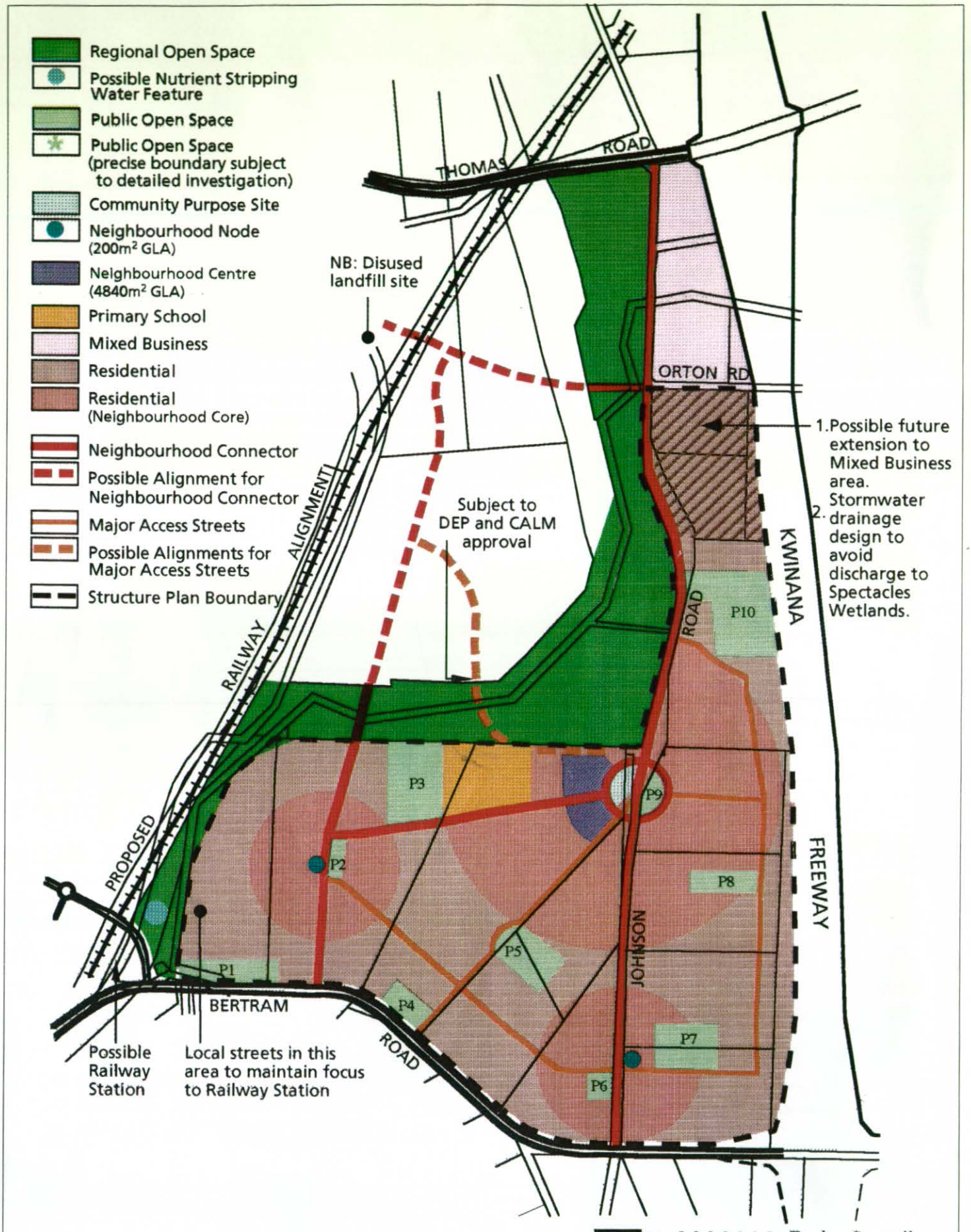
The Local Structure Plan contained within this report, and depicted in Figure 4, is the Structure Plan referred to in Schedule 4 of Town Planning Scheme No.2, Area 1 (Casuarina). Subdivision and development is to be in accordance with Figure 4. The Casuarina Local Structure Plan addresses approximately half of the area designated as Residential Development Area No.1 (RDA1) described within that Schedule. In this respect, the CLSP will enjoy the statutory weight afforded by Scheme No.2. The balance of RDA 1 will be subject to a separate structure planning exercise.

9.1.2 Form of the Structure Plan

The specific matters to be addressed by the Structure Plan are also described in the Fourth Schedule of Town Planning Scheme No.2. Succinctly, these include the following:

- The relationship of the local road network, with district and regional road networks, and traffic planning generally, and specifically designate district and local distributor roads within the Structure Plan area which may be provided for in any Plan of Subdivision for the area.
- Road linkages across vacant Crown land.
- The designation of existing roads within or abutting the Structure Plan area to be upgraded/ widened, and a standard that the designated roads shall be upgraded to.
- The relationship of the development area with adjacent residential landuses.
- Subdivisional drainage requirements, including the designation of district drainage installation and the standard and type of installation.
- General servicing requirements covering, and the designation of, routes for the installation of trunk/district infrastructure necessary for the orderly development of the area, including:
  - reticulated water;
  - sewerage;
  - power;
  - gas;
  - telephone.
- Demand for commercial and community facilities, and the preferred location of sites for these uses.
- Impact of the railway line on the landuse structure and location of bridges.
- Environmental requirements.
- Public open space distribution.
- Location of the primary school site.
- In addition, subdivision and development is to be designed and laid out so as to achieve coordination and connectivity of roads reflected on the CLSP.

The various other sketches contained in this report, including the Indicative Community Design and Neighbourhood Centre Concept, do not necessarily form a part of the Structure Plan, but have been provided to assist in its interpretation. Accordingly, subdivision design and development is to be generally in accordance with Figure 7 and the Neighbourhood Centre Concept. In this regard, the CLSP remains fixed as approved (notwithstanding minor adjustments and fine-tuning as may be necessary). Aspects of detailed design illustrated in other drawings, however, remain indicative only. It will be incumbent upon the proponent for each proposal to justify any significant departure from the indicative concepts, and any such departure should demonstrate that the principles and objectives of the Indicative Community Design and Neighbourhood Centre concept as described in this report are still being met.



DATE	SCALE	FIGURE No.	NORTH
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LOCAL STRUCTURE PLAN CASUARINA

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9.2 Community Design

9.2.1 Neighbourhood Structure

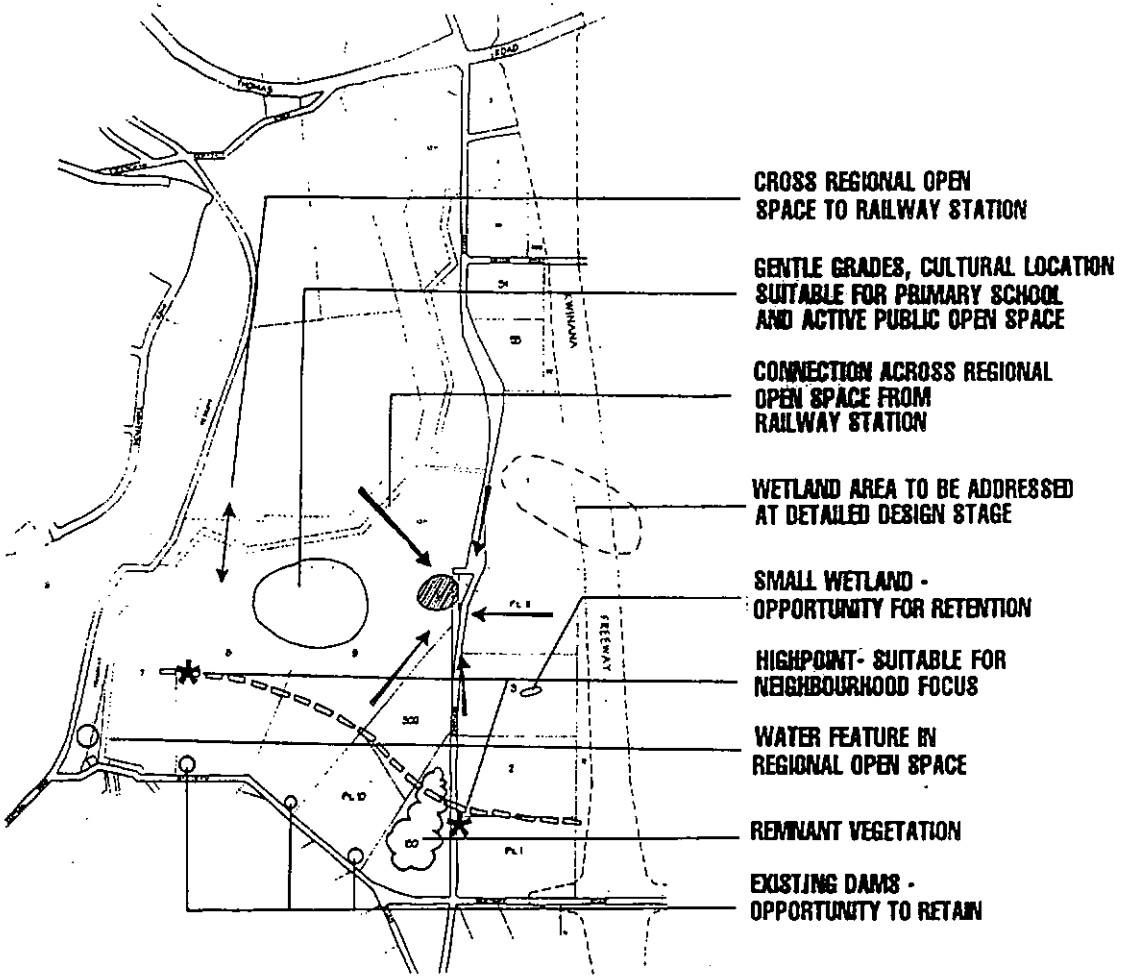
The layout for the Casuarina community subject to the CLSP has been developed through the consideration of a number of factors. Some of these have been site contextual factors, whilst other have been the outcome of site responsive design.

The process of community design has firstly been influenced by the location of the existing zoned commercial area. This site should form the focus for the design of structural elements such as the road system, residential densities and other civic and community facilities.

The "Neighbourhood Cell" surrounding the neighbourhood centre has consequently been defined by a 'Ped Shed' of 400 metres radius (or 5 minutes walk) (refer to Figure 6).

Two further neighbourhood cells (based also on 400m ped-sheds) have also been spaced equally within the balance of the CLSP area. The focal points for these neighbourhood cells have been situated on the flattened tops of the existing ridgeline so that they help to build a sense of place and common focus (refer to Figure 5).

Enlarged ped-sheds relating to the neighbourhood centre and the railway stations, which accommodate a 10 minute walking distance, have also been overlain on top of the neighbourhood structure. Additional focus in broad and detailed design should be given to these particular centres. The focus may be by



CONTEXTUAL ANALYSIS **Figure 5**

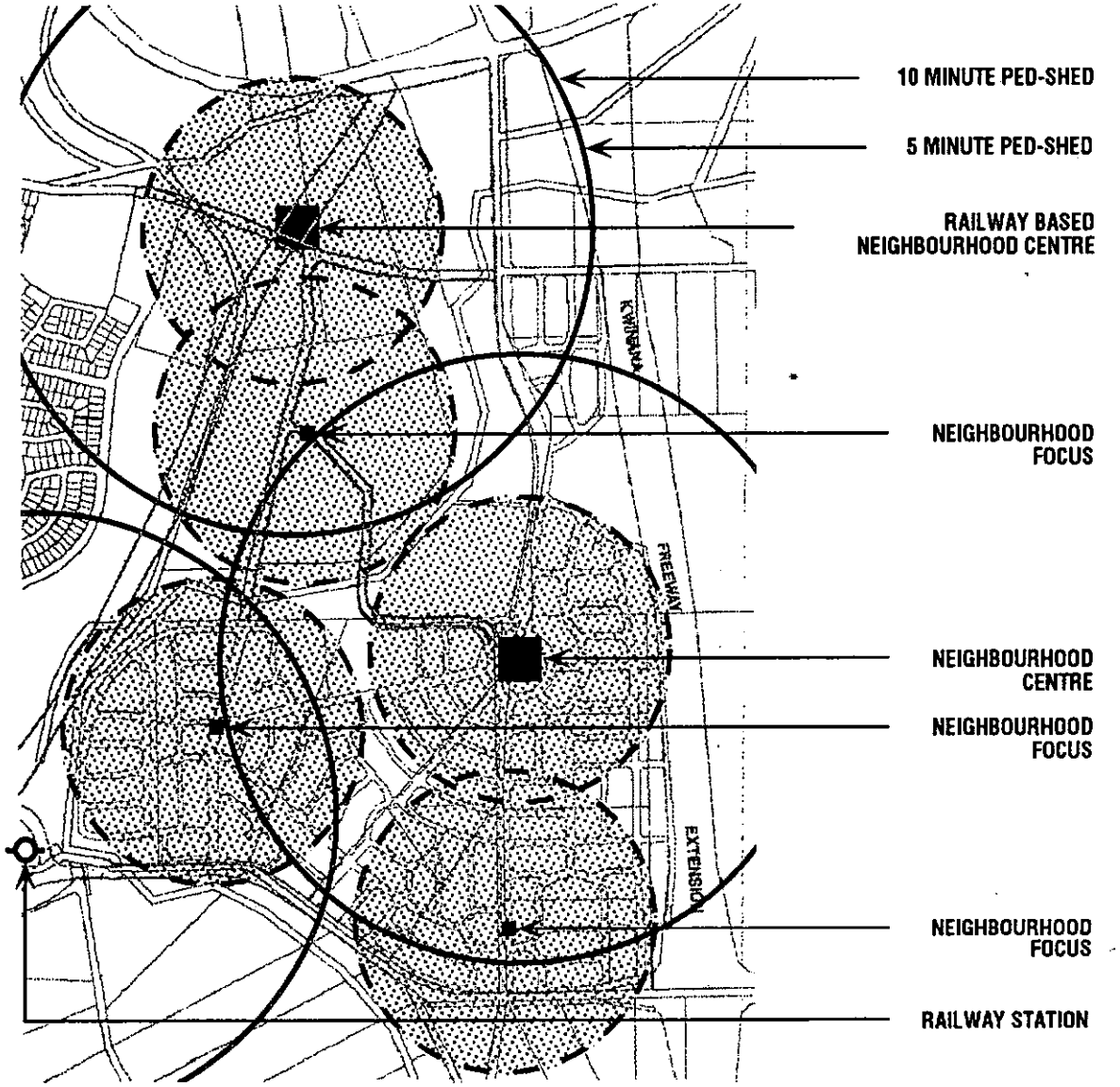
way of further maximising linkages, encouraging diversity of landuses, or facilitating increased densities.

The two minor neighbourhood cells within the CLSP area are intended to centre on a neighbourhood node each. Each Neighbourhood Node may include low key convenience facilities such as a corner store, a child care or consulting rooms, as well as a small neighbourhood park, developed as a "village square" to complement the node. This is discussed further in section 9.4.2.

9.2.2 Land Use Design

The primary school location depicted in the Indicative Community Design and the CLSP has been located midway between the centres of two neighbourhood cells in order to minimise the sterilising effect of the school site on achieving viable catchments for the respective centre or node. In addition, the position of the primary school has been influenced by need to maintain a central location within the primary school catchment comprising the whole of the Casuarina area (RDA1).

The indicative community design shown in Figure 7 and the CLSP shown in Figure 4, both identify a community purpose site situated in conjunction with the neighbourhood centre. The site has been strategically located in a highly accessible position, and contemplates design and development to establish a sense of community focus. The site has also been located so that it can contribute to an integrated main street for the neighbourhood



NEIGHBOURHOOD STRUCTURE **Figure 6**

centre precinct, as described further in section 9.6.1.

Public Open Space has been distributed on the basis of accommodating a mixture of active and passive spaces throughout each neighbourhood cell. The detailed rationale for open space location and treatment is described in section

9.2.3 Detailed Design

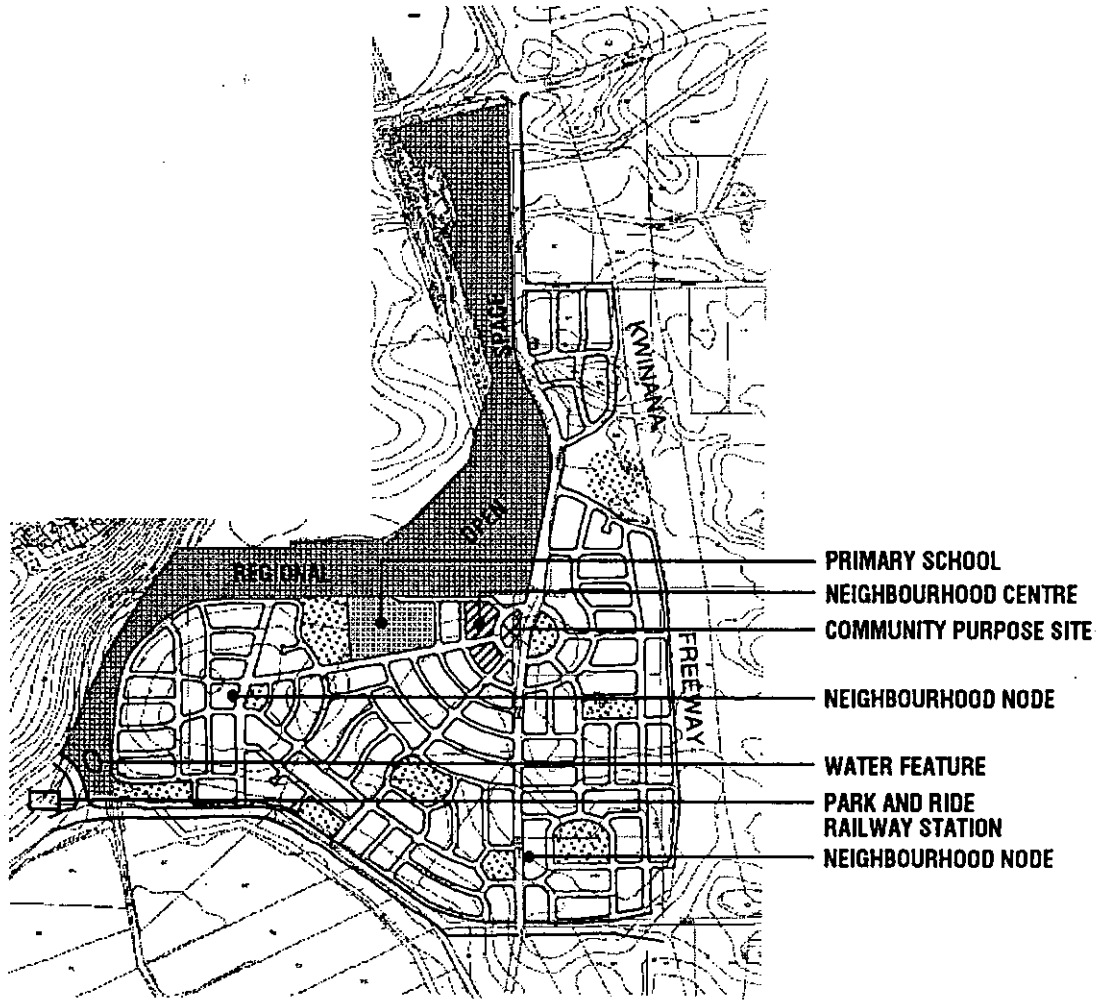
In order to assist in creating a sense of community and sense of place, the detailed design (or infilling) of the CLSP area should give focus to four district types of element unique to the subject land. These are:

- the neighbourhood centre;
- the two neighbourhood focii;
- the regional open space; and
- the railway station.

Section 9.2.1 has described the process by which the neighbourhood cells have been defined. Each of the Neighbourhood Cells focus upon either a Neighbourhood Centre or Neighbourhood Node (refer Figure 6).

The Centre and Nodes in turn define the alignment of the Neighbourhood Connector Roads (refer 9.3.3 and Figure 8). These roads directly link the focus of each neighbourhood cell, and should be so aligned as to give a clear orientation and sense of function and accessibility (legibility). Allowance is made for the further continuation of the Neighbourhood Connectors to link with the other
Neighbourhood Cells and Railway Station in RDA 1 (refer Figure 6).

The detailed street pattern should further allow for alternative localised connections, generally facilitating movement within respective neighbourhood cells, rather than between those cells.



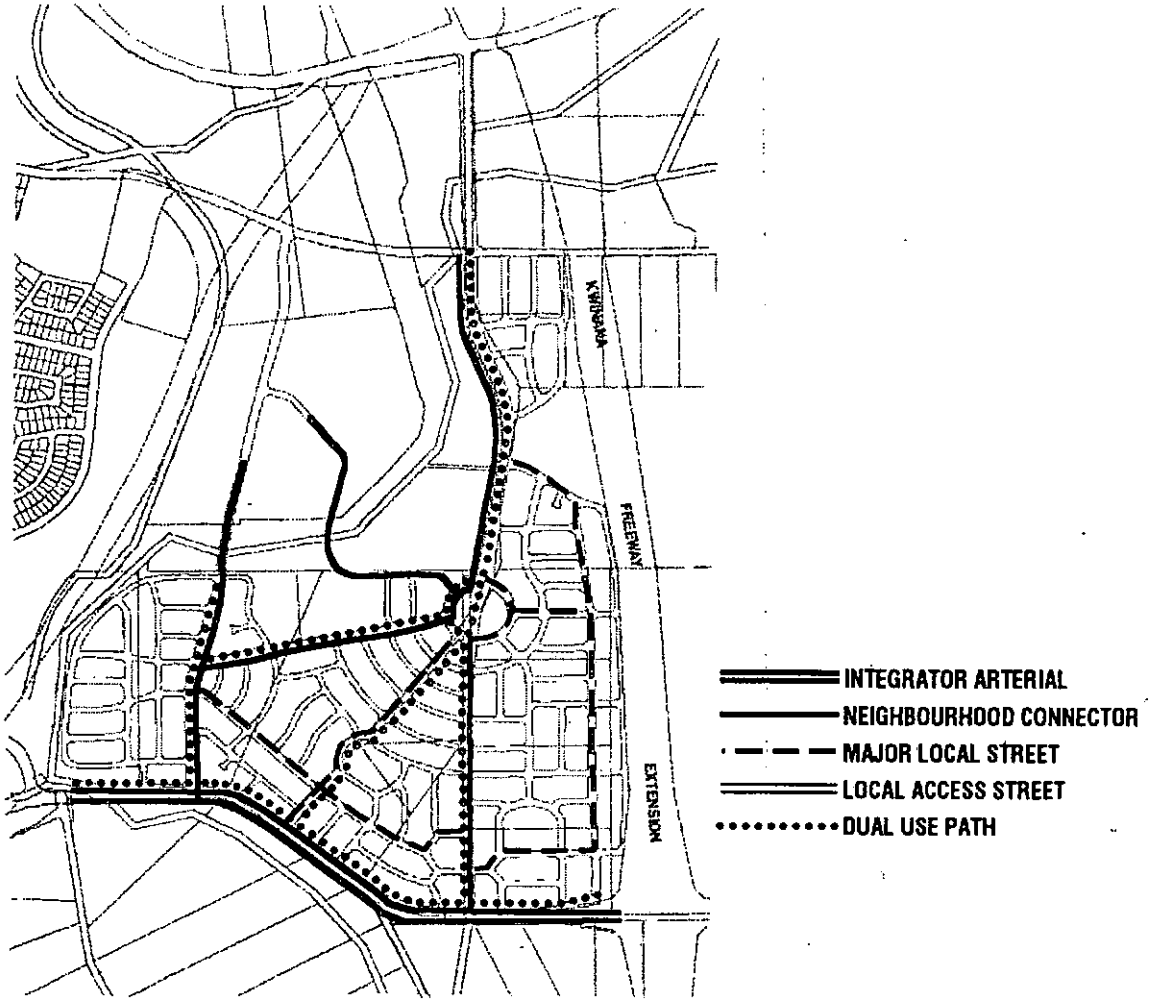
INDICATIVE COMMUNITY DESIGN **Figure 7**

This is accommodated by those roads shown as "major local streets" (refer Figure 8).
The design of local access streets should generally be gridded to maximise walkability and legibility. Inter-connected local streets will also facilitate more direct intra-neighbourhood movement for pedestrians, cyclists and motor vehicles. This will also assist in avoiding the funnelling of all traffic onto major local streets or neighbourhood connectors irrespective of trip purpose, and will assist in moderating volumes along Neighbourhood Connectors, and enhancing visibility and surveillance of pedestrians in local streets, thereby improving personal safety.

The design of Local Access Streets in particular should provide physical and perceptual connection to the Regional Open Space and the Sutherland Parade Railway Station (refer Figure 7). The alignment and design of Local Access Streets is discussed in section 9.3.5, but should discourage (not prevent) through traffic by appropriate carriageway design, horizontal deflections or curvilinear alignment. These techniques will also assist in visually defining the function of those streets, and help to create legibility.

The community design also contemplates the:

- facilitation of increased densities in proximity to the Neighbourhood Centre and Neighbourhood Nodes;
- the evolution of landuses and mixed uses over the long term (30 years or greater), facilitated by gridded street blocks;
- fine-grained, mixed use street based activity, particularly at the Neighbourhood Centre and Neighbourhood Nodes (refer 9.6); and
- the broad distribution of highly accessible Public Open Space (refer 9.4).



ROAD STRUCTURE **Figure 8**

9.3 Road Design

9.3.1 Hierarchy and Traffic Distribution

The road hierarchy described in the CLSP and the indicative community design is based on the functional hierarchy described in the Draft WA Community Code. The classifications used in the Casuarina Local Structure Plan are as follows:

Integrator arterial (important regional road - Bertram Road);
Neighbourhood connector (previously district distributor - e.g. Johnson Road);
Major access street (previously local distributor); and
Access street.

The road network described in Figure 8 has been modelled by Sinclair Knight Merz (Casuarina Local Structure Plan Traffic Impact Report - June 1999) to the nominated forecast year of 2011. The forecast daily traffic for 2011 is illustrated in Appendix B.

Succinctly, the modelling exercise shows four roads within the Structure Plan to exceed 3,000 vehicles per day. These are:

- Bertram Road (ranging from 10,886 vpd to 11,917 vpd),
- Johnson Road (ranging from 2,029 vpd to 4,975 vpd, notwithstanding a short section near Orton Road which exceeds 5,000 vpd),
- The western "north-south" neighbourhood connector (ranging between 3,756 vpd to 4,594 vpd, notwithstanding a 90m section closest to Bertram Road which rises to 5,061 vpd), and

- The east-west neighbourhood connector (ranging between 2,797 vpd to 3,557 vpd).

Volumes on most other local streets (including the major local street) range between approximately 100 vpd to about 1,000 vpd.

The Sinclair Knight Merz modelling clearly confirms that (notwithstanding discreet short sections of Johnson Road and the western "north-south" neighbourhood connector) no lot access limitations to the road network need apply. Where volumes are seen to exceed 5,000 vpd, then access control measures such as CAP systems, or simply lot orientation to avoid the placement of cross-overs to those roads may be applied as reasonable measures to minimise potential traffic conflicts.

The Sinclair Knight Merz report also identifies a number of traffic management measures which should be applied through the process of detailed subdivision and engineering design.

9.3.2 Integrator Arterial

Bertram Road is recognised to be an important regional road, and consequently cannot facilitate direct access to subdivisional lots. "Backing on" to Bertram Road is discouraged under the Community Code, and any subdivisional lots should be served by CAP systems or a service road. The road carriageway for lot access should not necessarily be entirely separate from the Bertram Road Reserve itself, and service roads should be wholly or partly accommodated within the IRR Reserve wherever possible. Bertram Road should not be designed as a barrier defining the edge of the Casuarina community, but rather as an integrating element.

9.3.3 Neighbourhood Connector

Those roads shown on the CLSP as Neighbourhood Connectors represent the primary linkages between neighbourhood cells. Their design should provide a clear, legible framework for movement within the locality, and are hence shown to be generally straight roads. The neighbourhood connectors should accommodate the potential for bus routes and dual use paths. Notionally, the preferred width for neighbourhood connectors is 20 metres Where Johnson Road is designated as a neighbourhood connector, and where the existing road reserve may be insufficient, then widenings may occur as a part of subdivision, and such widening to be made in equal measure on either side of the existing road reserve. Generally, this should require an additional 2.5m widening on each side. In other locations, Johnson Road is wider than required, and a reduction in existing road reserve may be considered.

9.3.4 Major Local Streets

The CLSP has identified a secondary network of Major Local Streets to complement the function of the neighbourhood connectors. The Major Local Streets provide secondary intra and inter neighbourhood routes. Similar to the Neighbourhood Connectors, the Major Local Streets should be reasonably legible within the road network as connecting routes, and consequently their design should give a clear sense of orientation and direction. Traffic calming mechanisms may be employed along these roads to avoid them becoming as heavily used as neighbourhood connectors. Major local streets should generally be between 18m and 20m in width.

Where a major local street provides connection with the integrator arterial, then limited movement intersections are preferred (e.g. left-in, left-out) which will assist in managing traffic volumes along that street.

9.3.5 Access Streets

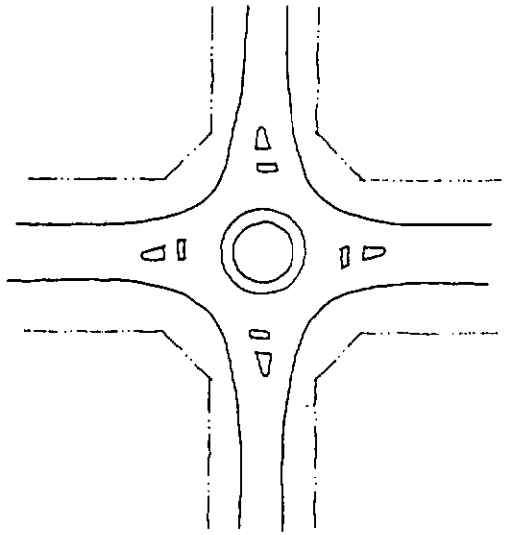
An indicative layout for Access Streets within the CLSP area is depicted in Figure 8. Access Streets may be variable in width, ranging from laneways measuring 10m (8m where they may abut public open space) through to 16m or 18m road reserves. The specific determination of street widths should be undertaken during the subdivisional design stage, and should give consideration to managing traffic flows and circulation. The horizontal and vertical design of local access streets should manage and reduce (but not prevent) through traffic.

It is preferred that the detailed design of the local street pattern excludes culs-de-sac road reserves, in favour of a permeable, deformed grid pattern. The grid may be altered to suit topographic, drainage and urban design considerations. Roads should create street blocks with preferred dimensions of 120m - 200m.

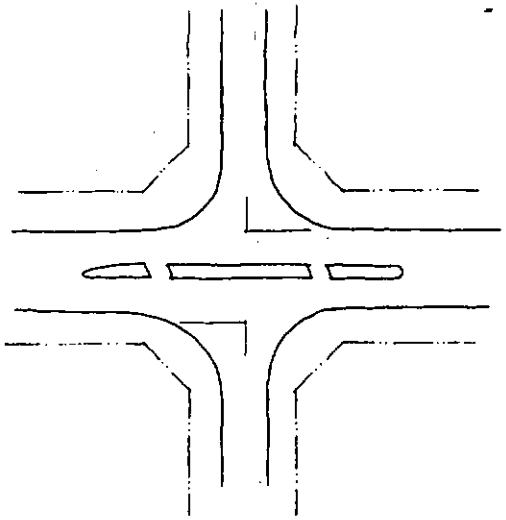
9.3.6 Intersections

In order to facilitate greater legibility, permeability and robustness (particularly with regard to protecting long term opportunities for reviewing traffic management initiatives), the creation of four-way road reserve junctions is encouraged. The detailed design of carriageways at four-way road reserve junctions can be varied to suit site circumstances. Possible treatments include:

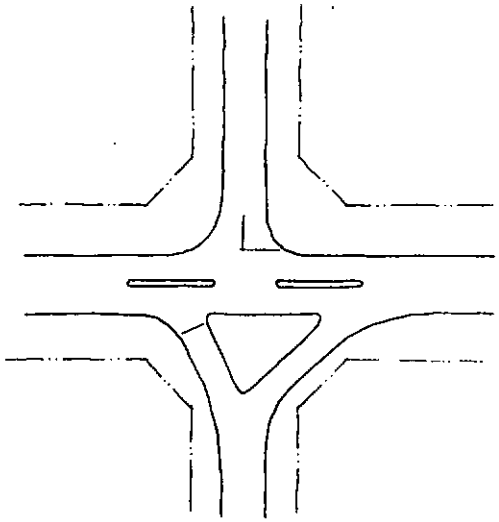
- Roundabouts;
- Left-in, left-out junctions;
- Combined left-in, left-out/full movement junctions;
- Cul-de-saced carriageways within intersecting road reserves (not culs-de-sac);
- Full movement, stop sign controlled and non-controlled four-way intersections (low volume



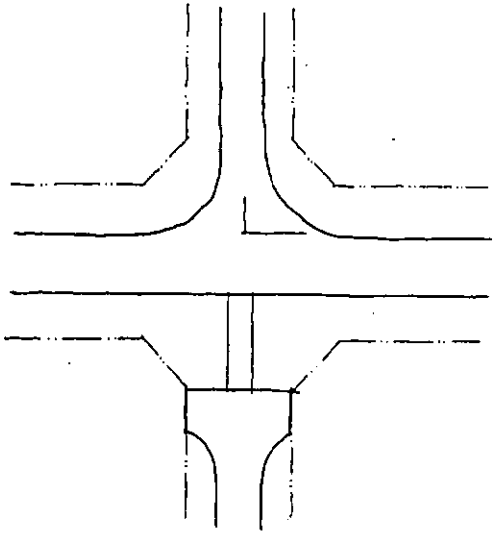
4 WAY ROUNDABOUT



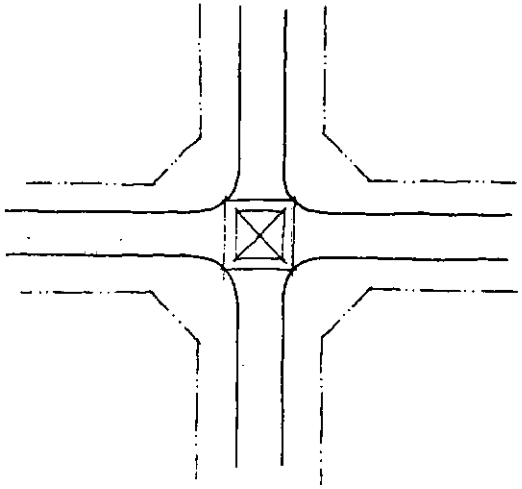
LEFT-IN, LEFT-OUT



FULL MOVEMENT T-JUNCTION
WITH LEFT-IN, LEFT-OUT
(For low volume Streets,
left-out should not exceed
70° - 80°.)



FULL MOVEMENT T-JUNCTION
COMBINED WITH CEL-DE-SAC



FULL MOVEMENT
4 WAY INTERSECTION
(For low volume Street.)

INDICATIVE EXAMPLES OF INTERSECTION TREATMENTS **Figure 9**

streets only). Examples of intersection types are illustrated in Figure 9.

9.3.7 Dual Use Paths

As described in Section 9.3.1, the traffic modelling undertaken for the Structure Plan area has identified only four roads within which traffic volumes are likely to exceed 2,000 vehicles per day. These are:

- Bertram Road
- Johnson Road,
- the western most "north-south" neighbourhood connector, and
- the "east-west" neighbourhood connector.

Pursuant to the Liveable Neighbourhood Community Design Code (Element 2, R35) cycling should be generally accommodated on road, shared with cars where traffic volumes are less than 3,000 vehicles per day. Given however, the anticipated attractiveness of the major local street running alongside the eastern boundary of lot 9 for cycling access to the Neighbourhood Centre, the Town of Kwinana has determined these roads should also accommodate dual use paths. Roads requiring the provision of dual use paths are illustrated in Figure 8.

9.4 Public Open Space

9.4.1 Allocation and Walkability

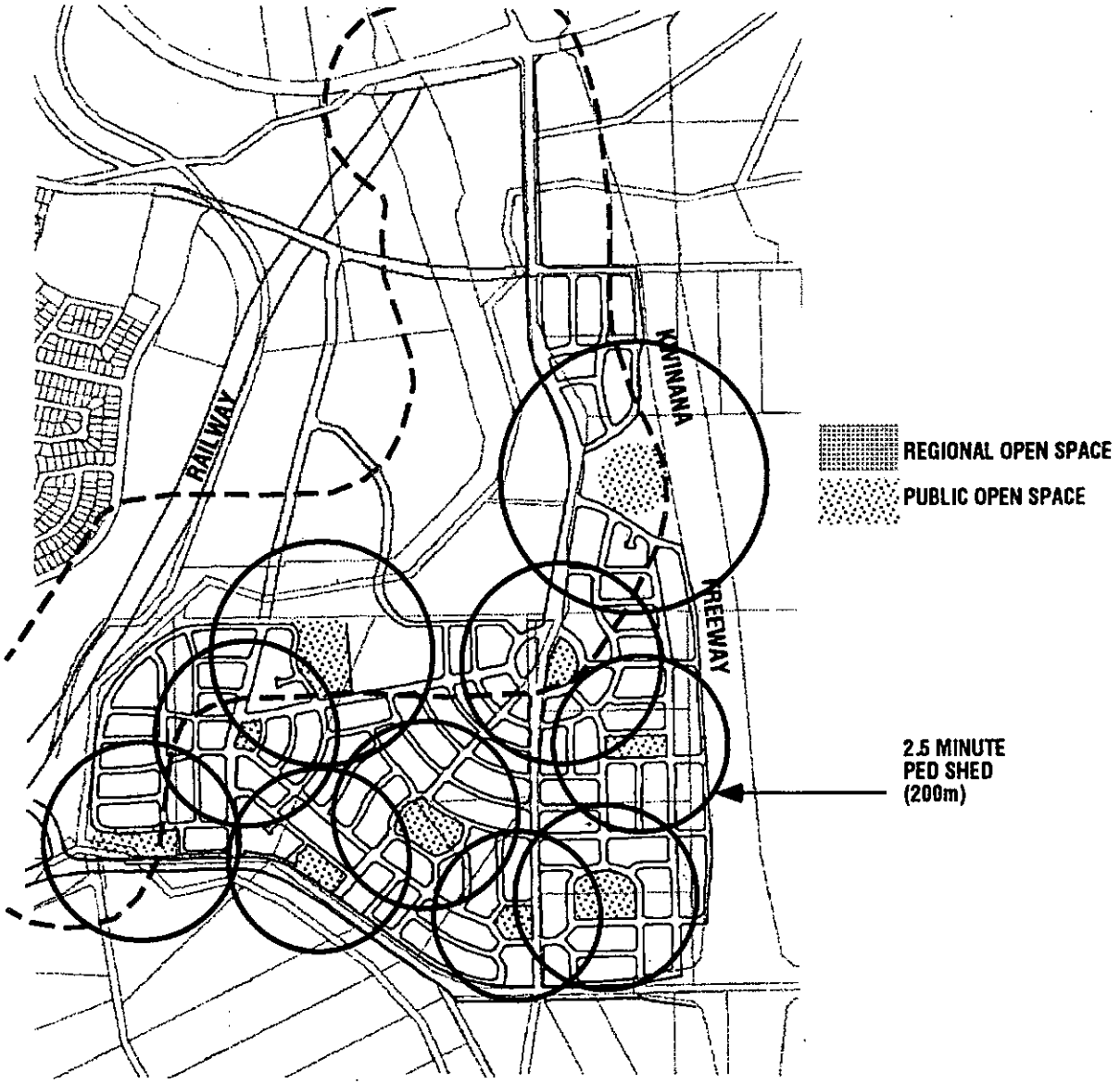
Public Open Space has been distributed within the CLSP on the basis of providing a highly walkable and accessible distribution of parkland. Accordingly, POS distribution has been allocated to maximise the number of lots within 200m (or 2.5 minutes) walking distance of a park (refer to Figure 10). In this regard, the Regional Open Space which bounds a portion of the CLSP area is assumed to perform some passive open space functions to complement Local Open Space provision.

Public Open Space has also been laid out with consideration to ensuring that each landowner contributes no less than ten percent (10%) of their gross subdivisible area in local POS.

Table 2 overleaf identifies individual POS contributions broken down on a landownership basis. It should be noted that there are three exceptions to the 'in-kind" POS provision shown in the Table, namely:

i) portions of lots 12 and 15, due to their location and diminutive size cannot contribute useable 'in-kind' POS, and therefore are required to provide Open Space by cash-in-lieu (as per condition 3.9 of the Structure Plan

ii) lot 1, (POS area P10) which contains a wetland, may be required to set aside an amount of Open Space greater than the minimum 10%. (refer to 9.4.2, P10), and



POS STRUCTURE **Figure 10**

iii) lots 53 and 54, due to their proximity to ROS and POS area P10 (refer to 9.4.2 - Area P10 have a diminished need for 'in-kind' open space, and may contribute Open Space as cash-in-lieu, with such contributions being used by the Town of Kwinana towards the acquisition of additional land in Lot 1 for POS.

Where a subdivider does not propose to provide the minimum Public Open Space requirement equivalent to 10% of the gross subdivisible area, that landowner shall enter into a legally binding agreement with Council and if required, with an adjoining subdivider (binding successors in title) prior to subdivision which achieves the following:

i) Ensures that at full development a minimum of 10% of the gross subdivisible area is provided within the Structure Plan Area at no cost to Council;
ii) Ensures that Public Open Space is provided for in terms of size, location and shape, in accordance with the Structure Plan and such agreements may include the following;
   - Land swaps,
   - Cash in lieu payment or land valuation or formulae for payment between - land owners, and
   - Such other mechanism approved by Council to the satisfaction of Council.

Where subdivision in accordance with the Casuarina Structure Plan results in the provision of Public Open Space less than 10% of the gross subdivisible area, the subdividing landowner shall contribute a cash in lieu contribution to an amount equivalent to the market value of 10% of the gross subdivisible area plus administration and legal costs as agreed by the Council and the Western Australian Planning Commission.

It is also noted that the nutrient stripping basin/ water feature described in Schedule 4 of Town Planning Scheme No.2 is notionally proposed within the regional open space spine, in proximity to Sutherland Parade. In addition, possible sites accommodating drainage from future subdivision may be incorporated into or adjacent to the Regional Open Space. In other instances, drainage may be incorporated within areas of local open space, as described further in 9.4.2.

TABLE 2 PUBLIC OPEN SPACE SCHEDULE

Lot No	Owner	Lot Area (ha)	Deductions				Gross Subdivisible Area	POS Due
			Road Widening	School	Commercial	ROS		
1	Hoeberigs	9.83	0.46***	-	-	-	9.37	0.94
2	Roberts, SJ	9.85	-	-	-	-	9.85	0.98
3	Roberts, IL	9.85	-	-	-	-	9.85	0.98
Pt 11	Roberts, AL	9.67	-	-	-	-	9.67	0.97
1	Yarra Seed	14.56	-	-	-	-	14.56	1.46
53	Homeswest	4.05	-	-	-	-	4.05 ~~1.05~~	0.4**
54	Rinaldi	4.16	-	-	-	-	4.16	0.42**
7	Mantellato	11.54	0.16***	-	-	0.46	10.92	1.09
8 & 9	Knicross	50.58	0.74***	4.0	1.56***	0.12	44.16	4.42*
P10 & 302	Islando	16.00	0.56***	-	-	-	15.44	1.54
150	Diocesan Trust	8.60	0.30***	-	-	-	8.3	0.83
Pt 12	MRWA	3.50	-	-	-	-	3.5	0.35**
Pt 52	MRWA	1.20	-	-	-	-	1.2	0.12**
	TOTAL	**153.39**	2.22 ~~0.22~~***	**4.0**	**1.56*** **	**0.58**	**145.03**	**14.5**

NOTES:
* includes community purpose site
** to be given up as cash-in-lieu as per condition of 3.9 of the Structure Plan Approval
*** areas are subject to survey

9.4.2 POS Rationale

In addition to an overall distribution of open space to create highly accessible parkland facilities for the community, a number of other site specific considerations have been taken into account in the definition and determination of individual local open spaces. These are described in detail in the following pages. In all instances however, Public Open Space provision shall be in accordance with Town of Kwinana Policy 5.3.3 'Public Open Space' (as amended).

POS Description:
Area P1

Approximate Area:
1.09ha

Function:
Passive Recreation/Drainage

Rationale:
Area P1 is located to serve the south-western portion of the Structure Plan area. It is situated on relatively gentle contours, and currently supports some remnant vegetation and orcharding, a portion of which could be retained upon development. The site is located to enable integration with the regional open space to the west. The site also has potential for accommodating drainage if required.

Other Design Considerations:
The shape and proportion of the final design for Area P1 should accommodate useable passive recreation areas. Some of the existing vegetation within the site could be retained, if acceptable to Council. Direct linkage with the regional open space to the west should be facilitated, and road reserves should define all other edges. The design of local streets in proximity to Area P1 should endeavour to maximise walkable access. Area P1 should form the focal point for the alignment of at least some local streets. All residential lots adjacent to Area P1 should orientate towards the park to maximise surveillance.

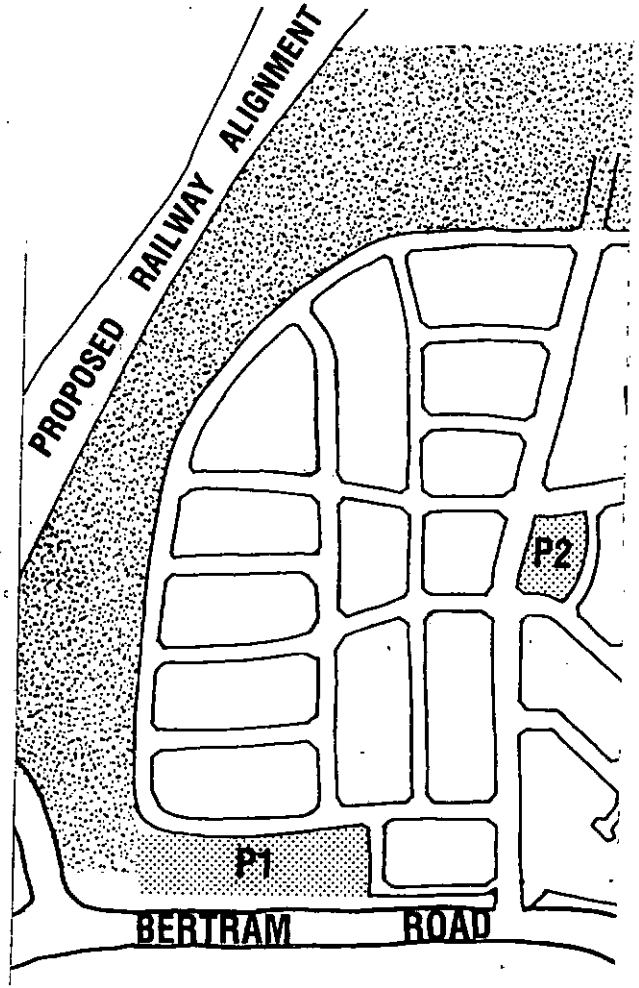
POS Description:
Area P2

Approximate Area:
0.4ha

Function:
Village Square

Rationale:
Area P2 is located to serve as a village square, juxtaposed with a neighbourhood node, and is intended to be highly accessible from all areas within the western half of the structure plan area. The park is intended as a civic space and meeting place for the local community. It is located on a ridgetop, and enjoys relatively flat grades.

Other Design Considerations:
A number of axial roads focus on portions of the park, and these locations should be ultimately developed to incorporate landmark elements. The park may be developed in a more formal style to reflect its civic purpose. Opportunities for public art should be explored. The park should be defined by road reserves on all sides, and all residential lots should be designed to orientate towards it. The design of any neighbourhood facilities such as a corner store, child care, consulting rooms or any other similar use should establish a sympathetic relationship with the village square through built form, paving and landscaping.



POS AREA P1 AND P2 **Figure 11**

POS Description:
Area P3

Approximate Area:
2.7ha

Function:
Active Recreation/Drainage

Rationale:
Area P3 is located on a neighbourhood connector road to maximise access for active sport events. The site is situated on relatively flat land, with a total fall of 4m from south to north. The site abuts regional open space to the north, and a primary school site to the east.

Other Design Considerations:
The shape and proportion of Area P3 should be adequate to accommodate a full size football field wholly within its boundaries. Some sharing of playing fields with the adjoining primary school site is also desirable. Landscaping of the park should integrate with the regional open space and school site. Road reserves should define the edge of the park to the west and south respectively, and adjacent residential lots should orientate towards the park.

As POS area P3 transverses two existing lots, the subdivision design and layout shall ensure contiguous open space areas.

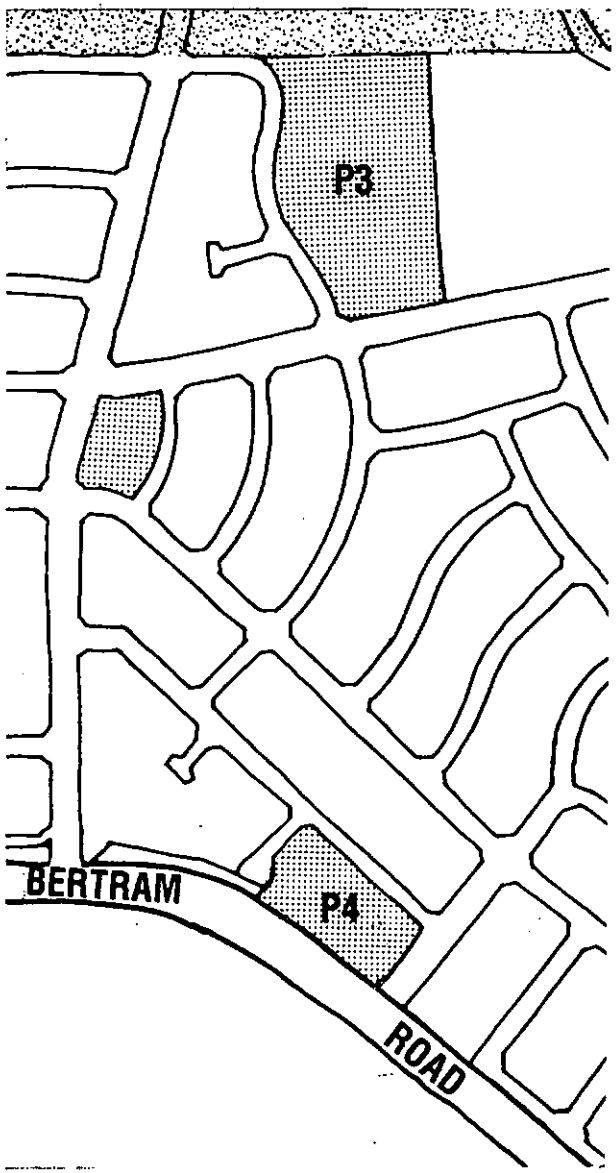
POS Description:
Area P4

Approximate Area:
0.8ha

Function:
Passive Recreation/Drainage

Rationale:
Area P4 has been situated to partly accommodate an existing dam. The site has the potential for redevelopment to incorporate a reduced water feature. The park is situated to serve the mid-southern portion of the Structure Plan area. The park is also intended to serve a threshold function at the corner of Bertram Road and a major access street.

Other Design Considerations:
The shape and proportions of Area P4 are relatively flexible, but should be adequate to accommodate useable areas for passive recreation. Partial filling of the dam should ensure that extensive areas of flat grades are achieved. Ultimate landscaping of the park should remain informal. The site should be bounded on all sides by road reserves, and adjacent residential lots should orientate towards the park



POS AREA P3 AND P4 **Figure 12**

POS Description
Area P5 (formerly P5 and P6)

Approximate Area:
1.8ha

Function:
Passive Recreation/Drainage

Rationale:
Area P6 is situated on the southern side of the east-west ridge, and enjoys direct access by a major access street. It is located over the common boundary between part Lot 10 and Lots 9 and 302 in order to maximise its potential area.

Other Design Considerations:
The shape and proportions of the site are flexible. Nevertheless, as POS area P5 traverses three existing lots, the subdivision design and layout shall ensure that contiguous open space is achieved. The site should be defined by road reserves on all boundaries, and adjacent lots should orientate towards the park.

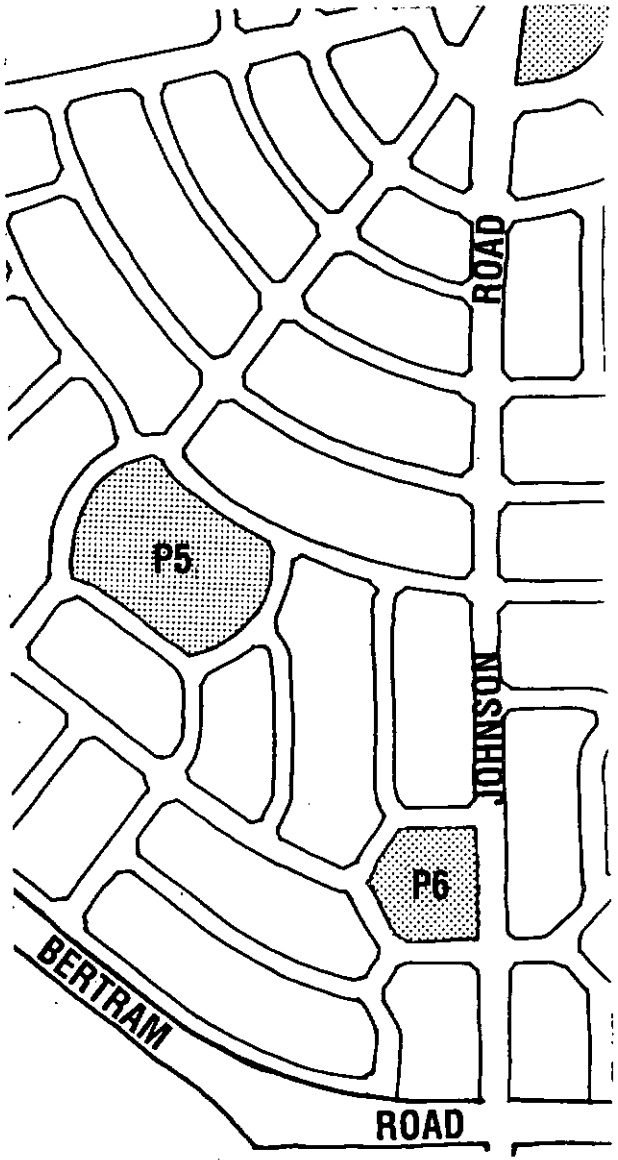
POS Description:
Area P6 (formerly P7)

Approximate Area:
0.8ha

Function:
Village Square/Drainage

Rationale:
Area P6 is located to serve as a village square, juxtaposed with a neighbourhood node, and is intended to be highly accessible from all areas within the western half of the structure plan area. The park is intended as a civic space and meeting place for the local community. It enjoys relatively flat grades and is well wooded.

Other Design Considerations:
A number of axial roads (Neighbourhood Connector and Major Access Streets) focus on portions of the park, and these locations should be ultimately developed to incorporate landmark elements. The park may be developed in a more formal style to reflect its civic purpose, and opportunities for public art should be explored to complement the Neighbourhood Node. The park should be defined by road reserves on all sides, and all residential lots should be designed to orientate towards it. The design of any neighbourhood facilities such as a corner store, child care, consulting rooms or any other similar use should establish a sympathetic relationship with the village square through built form, paving and landscaping. Landscape design of the park should endeavour to preserve the existing tree cover on site.



POS AREA P5 AND P6 **Figure 13**

POS Description
Area P7 (formerly P8)

Approximate Area:
1.9ha

Function:
Active Recreation/Drainage

Rationale:
Area P7 is nominated in a location gaining direct frontage to a major access street to facilitate good access for organised sport activities. It is shown in a shallow valley formation on the northern side of the east-west ridge, and is situated over the common boundary between Lots Part 1 & 2 to maximise the amount of area assembled.

Other Design Considerations:
The shape and proportion of Area P8 should be designed to accommodate an active playing field. The site should be bounded on all sides by road reserves, and residential lots should be orientated towards the park. As POS area P7 traverses two existing lots, the subdivision design and layout shall ensure that contiguous open space is achieved.

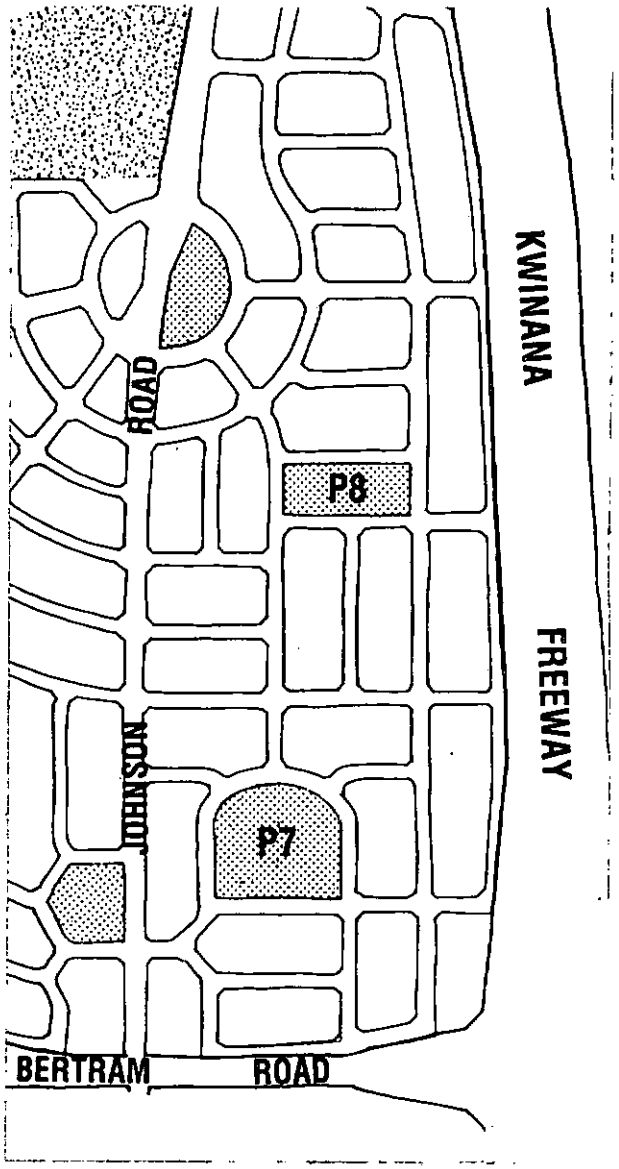
POS Description:
Area P8 (formerly P9)

Approximate Area:
1.0ha

Function:
Passive Recreation/Drainage

Rationale:
Area P8 has been situated to accommodate a low-lying damp area and remnant vegetation. The site is generally flat and serves the mid-eastern portion of the Structure Plan area. The site presents the opportunity to accommodate some drainage function.

Other Design Considerations:
The shape and proportions of the site should be adequate to protect the remnant vegetation, and accommodate the possible use of part of the land for drainage and/or a water feature. Due to the proximity of Area P8 to the neighbourhood centre, local streets could be orientated to provide direct physical and perceptual connection to the neighbourhood centre and town square. The landscaping of the park should be generally informal. The site should be bounded on all sides by road reserves, and adjacent residential lots should be orientated towards the park.



POS AREA P7 AND P8 **Figure 14**

POS Description:
Area P9 (formerly P10)

Approximate Area:
1.0ha

Function:
Town Square

Rationale:
Area P9 is intended to relate directly to the Casuarina Town Centre. It is situated in proximity to the junction of the Johnson Road neighbourhood connector and the east-west neighbourhood connector, and is embraced by a semi-circular connector road. Its position and configuration is heavily governed by urban design considerations in order to achieve a unified town centre area. The site presents the opportunity to establish a relationship with the designated community purpose site ("town hall", "recreation centre" or other civic use) on the western site of Johnson Road. The park is situated in a key focal point along several axial road alignments.

Other Design Considerations:
The landscaping of the park should exploit the opportunities presented by the multiple axii which focus upon it. It could initially be developed as an entry statement to the adjacent land release, and in the long term be developed and upgraded to accommodate various civic elements including cultural planning projects. The site should be bounded on all sides by road reserves, and adjacent residential lots should orientate towards the park. Where possible, local streets should also orientate towards the site. A high degree of formalism in the landscape of the park is encouraged.

POS Description:
Area P10 (formerly P11)

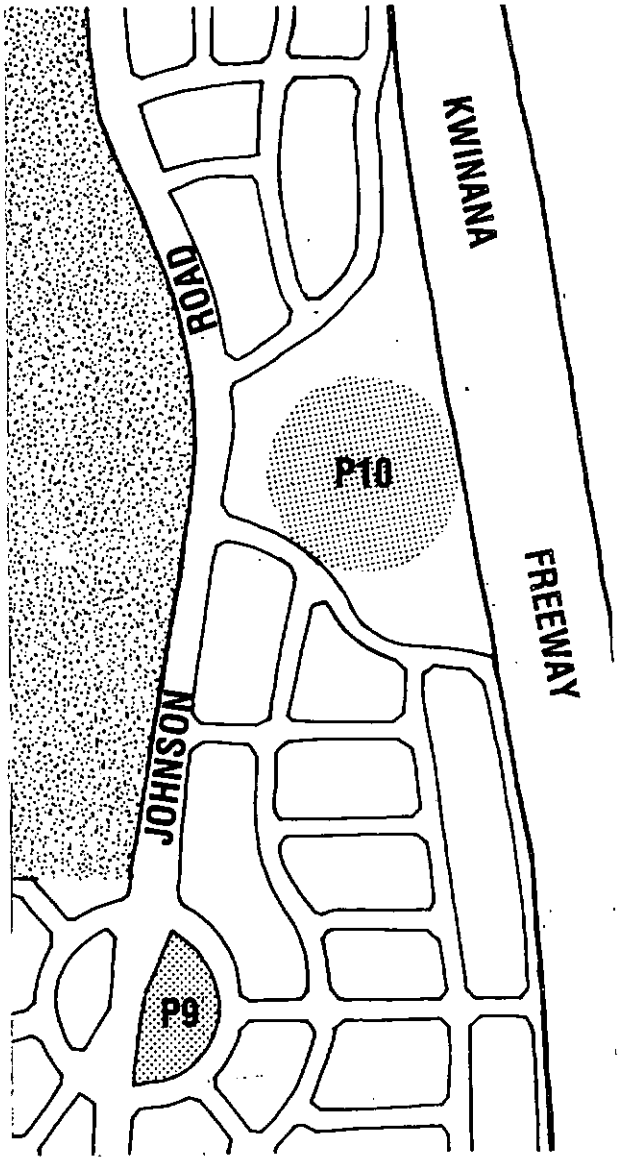
Approximate Area:
To be determined

Function:
Passive Recreation/Conservation

Rationale:
Area P10 (formerly P11, and referred to in condition 3.11 of the Structure Plan approval) is situated in a location exhibiting some wetland elements. The wetlands will be substantially impacted by the building of the Kwinana Freeway, but some retention within local open space is desirable.

Other Design Considerations:
The shape, size and proportions of Area P10 should be determined following detailed site survey, and liaison with CALM and DEP. The extent of area required may exceed the 10% statutorily due from Lot 1, the acquisition of land to make up any balance should be obtained from cash-in-lieu contributions where subdivided holdings have provided no in-kind local open space (e.g. Lots 53 & 54), or have provided less than their due requirement.

As a means of defining the exact location and extent of Public Open Space are P10 reflected on the Casuarina Structure Plan, the subdividing landowner shall prior to subdivision, engage an environmental consultant to determine the satisfaction of the Water and Rivers Commission, the edge of the wetland area notionally located on Figure 4 of he Casuarina Structure Plan to form the basis of the delineation of the Public Open Space.9.5



POS AREA P9 AND P10 **Figure 15**

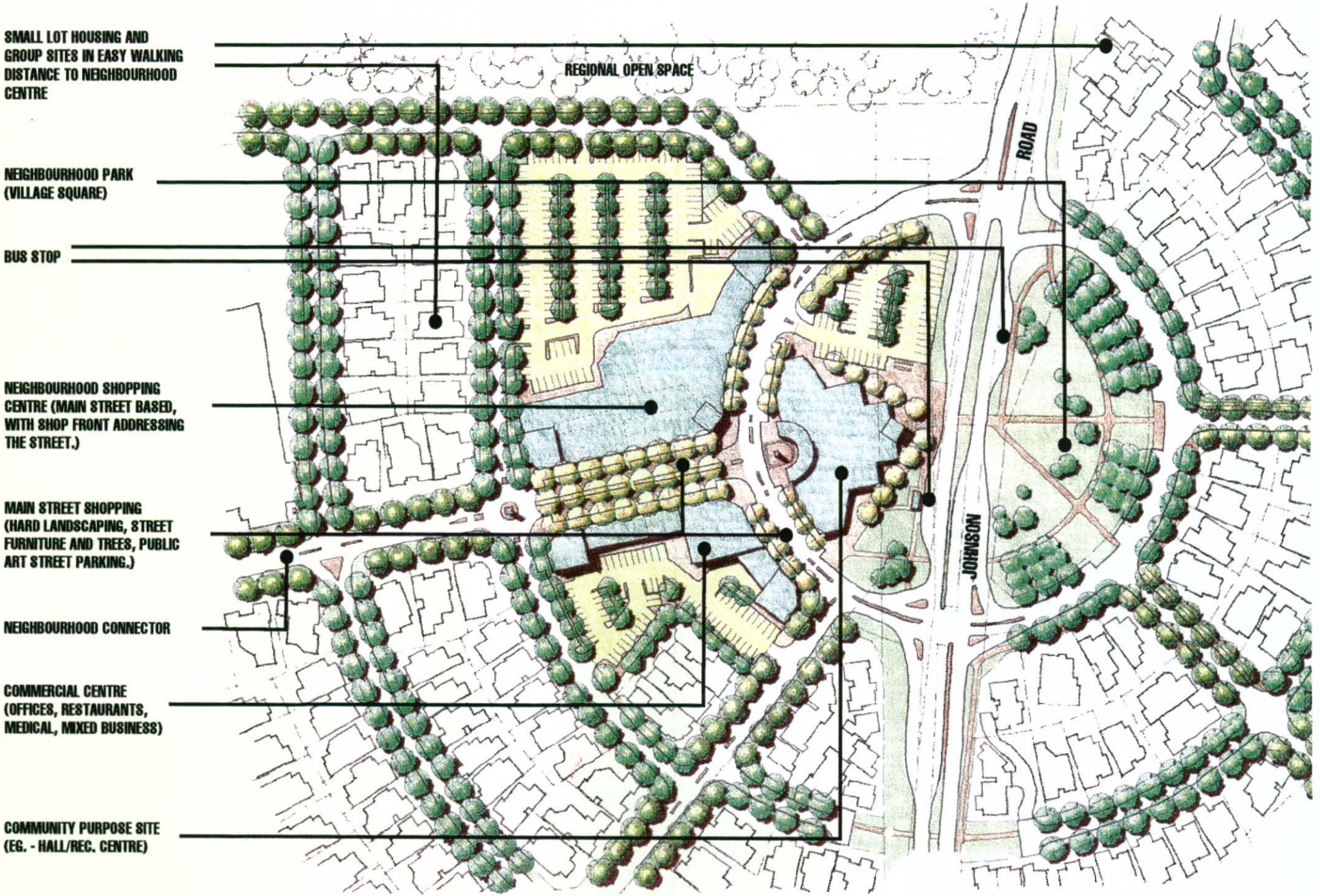
9.4.3 Vegetation

The Structure Plan approval dated May 13, 1998 required the proponents of the Structure Plan to prepare and submit, prior to subdivision, an existing vegetation map identifying trees or clumps of trees worthy of preservation.

A Vegetation Plan has been prepared and is contained within Appendix C. The Plan identifies areas where:

i) existing vegetation can be retained within proposed Public Open Space,
ii) existing vegetation can be selectively retained within development sites wherever possible (g – incorporation into carparks), and
iii) existing vegetation which may be selectively retained within residential lots or road reserves, where possible, at the subdividers, builders or Council's discretion.

At present, the Town of Kwinana has not adopted any comprehensive design guidelines to achieve (ii) and (iii) above.



NEIGHBOURHOOD CENTRE CONCEPT Figure 16

9.5 Schools

9.5.1 Primary School

The Education Department has determined that one primary school serving the Casuarina locality is required. The siting of the school has been undertaken in consultation with the Department, and a final position which is centrally located to the whole of the locality, and highly accessible by neighbourhood connectors, has been agreed upon.

In addition, the primary school site is situated on relatively flat land, is regular in shape, and bounded on three sides by roads reserves. The fourth (western) boundary abuts public open space (Area P3) which is intended for active recreation, and may be integrated with school grounds.

The Department's confirmation of the acceptability of the site is attached in Appendix D. Sufficient vehicle parking on the Primary School site is to be provided off the road carriageway either on the school site or within a widened road reserve.

9.6 Neighbourhood Centre & Nodes

9.6.1 Neighbourhood Centre Precincts

In accordance with the "new urbanist" concepts, which are given reference in the Liveable Neighbourhoods Community Design Code, the CLSP has pre-designed a precinct which lends itself to development as a main street shopping environment.

The possible detailed design of the precinct is illustrated in Figure 16.

The design protects Johnson Road as a primary neighbourhood connector, but establishes the neighbourhood centre precinct in a site immediately to the west of, and abutting, Johnson Road. This is intended to assist in managing traffic in a potential main street environment. The precinct contemplates a circular road pattern at its hub, almost identical (but slightly larger than) Piccadilly Circle, already constructed in Joondalup City North. The design enables opportunities to maximise accessibility through allowing radial roads to focus on the neighbourhood centre, thereby contributing to a sense of place for the community, and enhancing the viability and economic sustainability of the neighbourhood centre itself. The "Circle" is centred upon Johnson Road, and is intended to accommodate:

- a community purpose site (e.g. a hall or recreation centre);
- a bus stop or terminus;
- a village square.

In addition, the commercial sites themselves have been designed so that they may be developed to create a main street shopping environment. The main street should terminate at, and focus upon, the community purpose site (so that a neighbourhood hall or similar structure can "read" as a local landmark), whilst the street environment itself is fronted by relatively fine-grained, street-based shop fronts. The main street environment can also provide opportunities for the integration of community art and other outputs from local cultural planning processes in the future.

Some street treatments themselves may be developed at the point of subdivision (e.g. sidewalks, street trees, decorative street lights) and the shop and commercial frontages created as and when the commercial sites themselves are developed. The sites depicted are sufficiently large to accommodate over 4,840m^2 net leasable area of retail floorspace, plus a further 1,000m^2 of other non-retail commercial uses (such as banks, offices, restaurants, dry cleaning, laundromats etc).
It should be noted, however, that the creation of a main street shopping environment may require amendments to Town Planning Scheme No.2 (with regard to setbacks) and the possible formulation of urban design guidelines in order to achieve acceptable architectural qualities for the street facades.

The sites identified for commercial uses have been pre-designed so that they may accommodate conventional "big box" development where, for whatever reason, a main street environment cannot be attained.

9.6.2 Neighbourhood Focii

Two additional neighbourhood nodes are identified within the CLSP. These should not be interpreted as being neighbourhood centres, but rather preferred locations for low key convenience or community based facilities. They should accommodate no more than a corner store and/or other community facilities such as a child care centre or consulting rooms. Retail floorspace within the Neighbourhood Nodes shall not exceed 200 m^2 GLA.

As with the neighbourhood centre, however, Council is encouraged to promote the development of these sites so that they may architecturally create local landmarks and natural neighbourhood focal points. In each instance, the sites are also complemented by village squares (POS areas P2 and P7). The neighbourhood nodes should accommodate public transport and be designated bus stop locations.

9.7 Residential Densities & Population

9.7.1 Lot Sizes

The Town of Kwinana Town Planning Scheme No.2 designates an R20 Coding for the Residential zoned land within the CLSP area. It is anticipated that this density will not be achieved as a "flat" density, but rather as an average density across the whole of the site.

Some mixture of lot sizes is encouraged, with smaller lots (notionally the equivalent of R30) being facilitated within proximity of the neighbourhood centre or the neighbourhood nodes (refer to Residential Neighbourhood Core in Figure 4). This may require subsequent recoding to facilitate to smaller lots. The Neighbourhood Core areas R20 lots, whilst areas towards the periphery of the neighbourhood cells may be developed to lower densities such as the equivalent of R15.

9.7.2 Anticipated Lot Yields & Population

The anticipated dwelling yield from the CLSP area ranges between 1,800 units at an average density of R20, down to 1,500 units if lower, more conventional lot sizes averaging 600m^2 are eventually developed.

Assuming an occupancy rate of 3.0, this will yield a population for the CLSP of between 4,500 to 5,400 persons.

10.0 Conclusion

This report has detailed the broad planning framework and opportunities and constraints associated with the development of the Casuarina Structure Plan area. The Structure Plan will contribute to the successful implementation of development of the area.

In view of the details provided through this report and accompanying Structure Plan, the planning mechanisms that have been introduced to the Town of Kwinana Town Planning Scheme No.2, we now seek Council and Ministry approval to the Structure Plan to facilitate the subdivision and development of land within the Structure Plan area.

APPENDIX A

STRUCTURE PLAN APPROVAL

TOWN OF KWINANA

COUNCIL CHAMBERS, KWINANA TOWN CENTRE
GILMORE AVENUE. BOX 21, KWINANA, 6966. TELEPHONE 9419 2222 FACSIMILE 9439 0222

25 MAY 1998

DS:KMO

PLEASE QUOTE K470

YOUR REF:

TAYLOR BURRELL
PLANNING CONSULTANTS
137 ROBERTS ROAD
SUBIACO WA 6008

Attention: Peter Clemitis

Dear Sir

RE: CASUARINA STRUCTURE PLAN

Thankyou for your new Application to Commence Development in relation to the Casuarina Structure Plan.

I advise that Council considered the matter at it's Ordinary Meeting of 13th May 1998 and resolved:

1. Treat the request for variation to condition as a fresh application to commence development.

2. Under clause 2.6 of the Scheme waive the advertising requirement for the Structure Plan on the basis of the extensive advertising process previously undertaken and that no substantive change to the Structure Plan has occurred.

3. Grant approval to commence development to the Casuarina Structure Plan subject to the following conditions:

3.1 Subdivision and development to be in accordance with figure 4 of the Casuarina Structure Plan.

3.2 Subdivision and development to be generally in accordance with figure 7 of the Casuarina Structure Plan - indicative community design and neighbourhood concept.

3.3 Subdivision design and development shall achieve the design criteria of the Casuarina Structure Plan, Indicative Community Design and Neighbourhood Centre Concept.

TOWN OF KWINANA PROGREDIMUR

PLEASE ADDRESS ALL COMMUNICATIONS TO THE CHIEF EXECUTIVE OFFICER

3.4 Subdivision and development to be designed and laid out, so as to achieve co-ordination and connectivity of roads reflected on the Casuarina Structure Plan and to achieve the general road and lot structure reflected on the Indicative Community Design and Neighbourhood Centre Concept.

3.5 Subdivision and development to be assigned and laid out so as to provide Public Open Space Areas indicated on the Structure Plan at the rate of not less than 10% of gross subdivisible area in approximate locations and dimensions as reflected on the Structure Plan.

3.6 Public Open Space area P2 reflected on the Structure Plan shall be increased to a minimum of 4000m^2 in area and no Public Open Space shall be less than 4000m^2 in area.

3.7 Public Open Space provision shall be in accordance with Council Policy 5.3.3 "Public Open Space" (as amended).

3.8 Where Public Open Space areas reflected on the Casuarina Structure Plan, traverse current lot boundaries, subdivision design and layout shall ensure contiguous open space areas, of a size and approximate location generally as reflected on the Casuarina Structure Plan and in accordance with Council Policy 5.3.3 (as amended).

3.9 a) Where a subdivider does not propose to provide the minimum Public Open Space requirement equivalent to 10% of the gross subdivisible area, that landowner shall enter into a legally binding agreement with Council and if required, with an adjoining subdivider (binding successors in title) prior to subdivision which achieves the following:

i) Ensures that at full development a minimum of 10% of the grose subdivisable area is provided for within the Structure Plan Area at no cost to Council;

ii) Ensures that Public Open Space is provided for in terms of size, location and shape, in accordance with the Structure Plan and such agreements may include the following;
- Land swaps,
- Cash in lieu payment or land valuation or formulae for payment between - land owners,
- Such other mechanism approved by Council to the satisfaction of Council,
- or failing such agreement;

b) Where subdivision in accordance with the Casuarina Structure Plan results in the provision of Public Open Space less than 10% of the gross subdivisable area, the subdividing landowner shall contribute a cash in lieu contribution to an amount equivalent to the market value of 10% of the gross subdivisable area plus administration and legal costs as agreed by the Council and the Western Australian Planning Commission.

3.10 The proponent preparing and submitting to Council a detailed schedule of Public Open Space contributions from each land parcel within the Structure Plan Area and listing;

a) Owners name and address.

b) Lot no. and certificate of title details.

c) Area of the subject land parcel and exact area equivalent to 10% of the gross subdivision area.

d) Exact area of land to be ceded free of cost to the crown at the time of subdivision for the purposes of Public Open Space in accordance with the Casuarina Structure Plan.

e) Exact area of land to be the subject of a cash in lieu equivalent at the time of subdivision in accordance with the Casuarina Structure Plan and;

3.11 In the case of definition of the location and extent of Public Open Space area P11 reflected on the Casuarina Structure Plan;

a) As a means of defining the exact location and extent of Public Open Space area P11 reflected on the Casuarina Structure Plan, the subdividing landowner shall prior to subdivision, engage an environmental consultant to determine the satisfaction of the Water and Rivers Commission, the edge of the wetland area notionally located on figure 4 of the Casuarina Structure Plan to form the basis of the delineation of the Public Open Space.

b) The Structure Plan being modified to reflect a notional P.O.S. linkage between P.O.S. area and Crown Lot 1205 subject to the outcomes of the study referred to in the footnotes.

3.12 The Structure Plan being modified to reflect Lots 53 and 54 Johnson Road Casuarina as "Possible future extension to Mixed Business Area".

3.13 The eastern most road annotated on the Casuarina Structure Plan being annotated as "alternative routes" being deleted and the western most route through Crown Lot 1205 to require the approval of Conservation And Land Management and The Department Of Environmental Protection.

3.14 Subdivision application lodged for individual land parcels within the Casuarina Structure Plan Area shall;

a) Represent a subdivision for the entire subject,

b) Demonstrate conclusively that the subdivision accords and assists in the achievement of the Structure Plan layout and objectives,

c) Demonstrates that subdivision layout does not compromise, but instead facilitates subdivision of adjacent unsubdivided land parcels and complements existing subdivisions on adjacent land and should include demonstrating that effective subdivision can be achieved.

3.15 The subdivider shall at the time of subdivision of lots enter restrictive covenants on title prohibiting reflective roofing material on lots created up until such time as a Scheme Amendment prohibiting reflective roofing is granted final approval.

3.16 The proponents of the Structure Plan preparing and submitting prior to subdivision a plan of earthworks for the Structure Plan Area, demonstrating intended bulk earthworks, areas of fill and alteration of levels for Council approval. Subdivisable earthworks shall generally be in accordance with the approved plan. Earthworks throughout the Structure Plan Area shall as far as practicable preserve the existing natural landform.

3.17 The proponents of the Structure Plan preparing and submitting prior to subdivision an existing vegetation map identifying trees for clumps of trees worthy of preservation and shall identify vegetation in the subdivision design and subdivision works process for the approval of Council. Subdivisional works shall be undertaken so as to ensure preservation of vegetation reflected on the approval plan.

3.18 The proponents of the Structure Plan preparing and submitting a traffic modeling study based on the road network reflected on the Casuarina Structure Plan and taking account of traffic flows through the Structure Plan Area emanating from outside the Structure Plan Area.

3.19 Subdividing landowners shall submit individual traffic modeling studies with application for subdivisions having regard to the traffic modeling study referred to in condition 18 above and to the traffic modeling studies prepared for adjacent subdivided lots and may have regard to the general road layout reflected in the Indicative Community Design.

3.20 Public Open Space Area P3 being of sufficient size and configuration so as to accommodate a senior oval/playing field at the time of subdivision of Lot 8 Bertram Road.

3.21 Public Open Space Area P8 being sufficient size and configuration to accommodate a playing field as agreed by Council at the time of subdivision of Lots 1 and 2 Johnson Road.

3.22. A notation being placed on the Structure Plan recognising the possibility of a station of Challenger Avenue in the long term and the need to maintain a focus of roads towards the site.

3.23 Subdivision, development and retail floorspace provision and neighbourhood nodes to be in accordance with the Western Australian Planning Commission Metropolitan Centres Policy and Council's Retail (as amended). Such provision shall not result in a total retail floorspace for the existing Residential Zoned Area east of the Transit Reserve (including land zoned Urban deferred under the Metropolitan Region Scheme) of greater than 4840m2 of GLA unless otherwise approved by Council having regard to it's Retail Structure Plan.

3.24 Retail floorspace at the neighbourhood nodes identified on the Casuarina Structure Plan shall not exceed 200m2 of GLA unless otherwise approved by Council having regard to its Retail Structure Plan.

3.25 The proponent submitting an overall drainage strategy for the Structure Plan Area demonstrating compliance with water sensitive design principles prior to subdivision.

3.26 Subdividing landowners to contribute to the cost of upgrading of Johnson Road and Bertram Road as agreed by the WAPC adjacent to their landholding to a standard necessary to accommodate residential traffic standards including traffic calming and shall provide as agreed by the WAPC necessary road widening free of cost at the time of subdivision.

3.27. Roads a and b on attachment 16 neighbourhood collector roads to be constructed to single dual carriageway standard.

3.28 All dual carriageways to be landscaped and reticulated to a standard specified by Council.

3.29 All dual carriageway roads shall be constructed with a dual path both sides of the carriage way.

3.30 The proponent submitting a pedestrian cyclist movement strategy plan for the Structure Plan Area prior to subdivision.

3.31 Sufficient vehicle parking on the primary school site reflected on the Structure Plan to be provided off the road carriageway either on the school site or within a widened Road Reserve.

3.32 The provision of a site free of cost to Council for the provision of community facilities being not less than 5000 sqm in accordance with the neighbourhood centre concept and as part of the 10% Public Open Space contribution.

3.33 Subdividing landowners to implement measures to screen light from the Structure Plan Area from the Bollard Bullrush Swamp thereby reducing the effect of light attractors on midges.

3.34 Vegetation planting to be undertaken by subdividing landowners in accordance with the statement of planning policy no. 2 - "Peel Harvey" Coastal Plain Catchment.

3.35 Subdivision and development to be in accordance with the principles of "water sensitive design".

3.36 Subdividing landowners contributing to the cost of a nutrient stripping artificial wetland reflected on the Structure Plan as agreed with by Council and the Western Australian Planning Commission at the time of subdivision.

3.37 All subdivisional areas to be provided with underground power.

3.38 Stormwater drainage within the mixed business area to be designed to ensure that stormwater runoff from the road and paved areas is discharged southwards and away from the Spectacles Wetlands and the Structure Plan map to be annotated. "stormwater drainage design to avoid discharge to Spectacles Wetlands."

3.39 An additional annotation to the Structure Plan for land east of Sicklemore Road, near the intersection of Durrant Avenue to read 'disused landfill site'.

footnotes:

a. Engage an environmental consultant to determine the average annual maximum groundwater level (AAMGL) for the site and locate the area of land where the AAMGL is less then 2 metres from the surface.

b. Provide a buffer to the satisfaction of Council on the advice of the Waters And Rivers Commission that incorporates a shallow vegetated swale between the edge of the wetland and any development. The swale should also have the capacity to contain all overflow from soakage's as a result of runoff generated in the catchment due to a 1 in 10 year ARI storm.

c. Stormwater drainage should not be directed towards the wetland, under any circumstances.

d. Should the AAMGL be greater than 2 metres from the surface and soil conditions allow, then all road runoff should be directed towards soakwells with the capacity to contain the first 20mm of rainfall, and all runoff from residential roofs should be directed to soakwells located on each lot, or such other method as agreed to by Council.

e. Developable land where the AAMGL is less than 2 metres from the surface should have subsoil drains installed at the AAMGL to prevent a rise in groundwater due to urbanisation. Additionally, there should be a minimum vertical distance of 1.2 metres between the building pad and the AAMGL. This separation is achieved by utilising a combination of subsoil drainage and fill, or such other method as agreed to by Council

f. Longitudinal gradients of roads should not exceed 4% and where gradients are in excess of this are unavoidable measures shall be taken to prevent stormwater runoff from carriageways to properties including for properties lower than the pavement 150mm kerb, 2 5m of verge to raise 2% above the top of the kerb.

In addition Council further resolved:

4. That Council modify clause 1.5 of policy 4.2.7 to read:

   "Community Facilities Sites will normally be part of the 10% contribution of Public Open Space".

5. That Council seek a commitment from the proponent to develop/landscape Public Open Space areas during subdivision.

Following the endorsement of the Structure Plan by the Western Australian Planning Commission, please submit modified plans to reflect the conditions of approval

Council appreciates you willingness to make yourselves available during the public exhibition period to explain aspects of the proposal and your recognition of the communities needs.

Thankyou for your consideration of this matter. Should you require further information regarding this matter please do not hesitate to contact Council's Town Planning Department on 9419 2222.

Yours faithfully

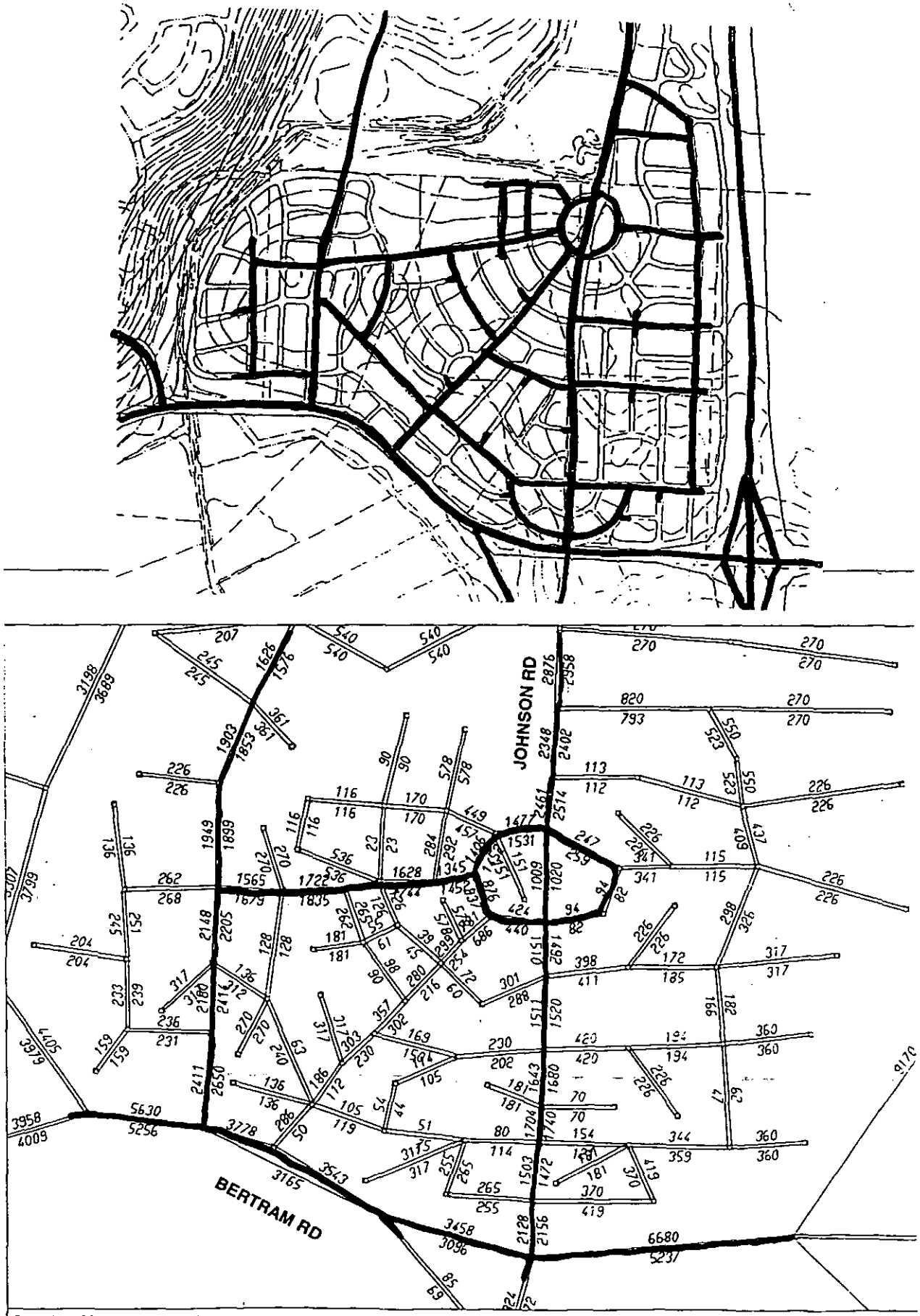
DOUG SMITH
MANAGER PLANNING SERVICES

cc Damien Maloney
Kevin Sullivan and Associates

Gary McKeown
Western Australian Planning Commission

APPENDIX B

FORECAST DAILY TRAFFIC FOR 2011



SINCLAIR KNIGHT MERZ	CASUARINA - Traffic Impact Report FORECAST DAILY TRAFFIC 2011 - BASE NETWORK	Figure 3.3 DE01182

APPENDIX C

VEGETATION PLAN

APPENDIX D

EDUCATION DEPARTMENT ACCEPTANCE OF PRIMARY SCHOOL SITE

09/06/97 10:06 61 9 264 4779 FACILITIES P & P 001/00
08/06 '97 10:08 FAX 61 9 264 4779

MINISTRY OF EDUCATION
151 Royal Street, East Perth, Western Australia 6004
Telephone: (09) 264 4111 Fax: (09) 264 5005

FACILITIES POLICY AND PLANNING BRANCH

FROM	TO
Sender's Fax Number (09) 264 4779	Receiver's Fax Number 382 4586
Name HUGH BARNETT	Name Peter Cremitis
Location FACILITIES POLICY & PLANNING BRANCH	Location Taylor Burrell
Position LAND PLANNING OFFICER	Position
Office Telephone Number 264 4431	Office Telephone Number

SUBJECT	
Title Proposed Primary School Site – Casuarina	
Number of Pages (inc. facesheet) 1	Your Reference
Date 9 June 1997	Our Reference 557/93 Vol 1

MESSAGE

Peter

It is confirmed that the size, shape, access and topography for the proposed school site in Casuarina is acceptable to the Education Department.

Please do not hesitate to contact me should you wish to discuss the matter further.

Regards

Hugh Barnett

1

Existing tree cover to be retained in areas of proposed public open space. Where earthworking (cut or fill) may be carried out within POS, then detailed earthwork design should minimise ground contour changes around existing trees to achieve their retention.

2

Selected specimens of remnant trees to be retained within development sites, by:

* Carrying out an on-site survey pickup (Feature survey) of trees within development sites, and
* Incorporating such trees wherever reasonably practical within the development site plan for those sites (eg, within landscaping areas, car parking, pedestrian spaces, etc). The site plan should demonstrate reasonable effort to retain existing trees.

Where design guidelines may be prepared for development sites, they should incorporate the above tree conservation guidelines.

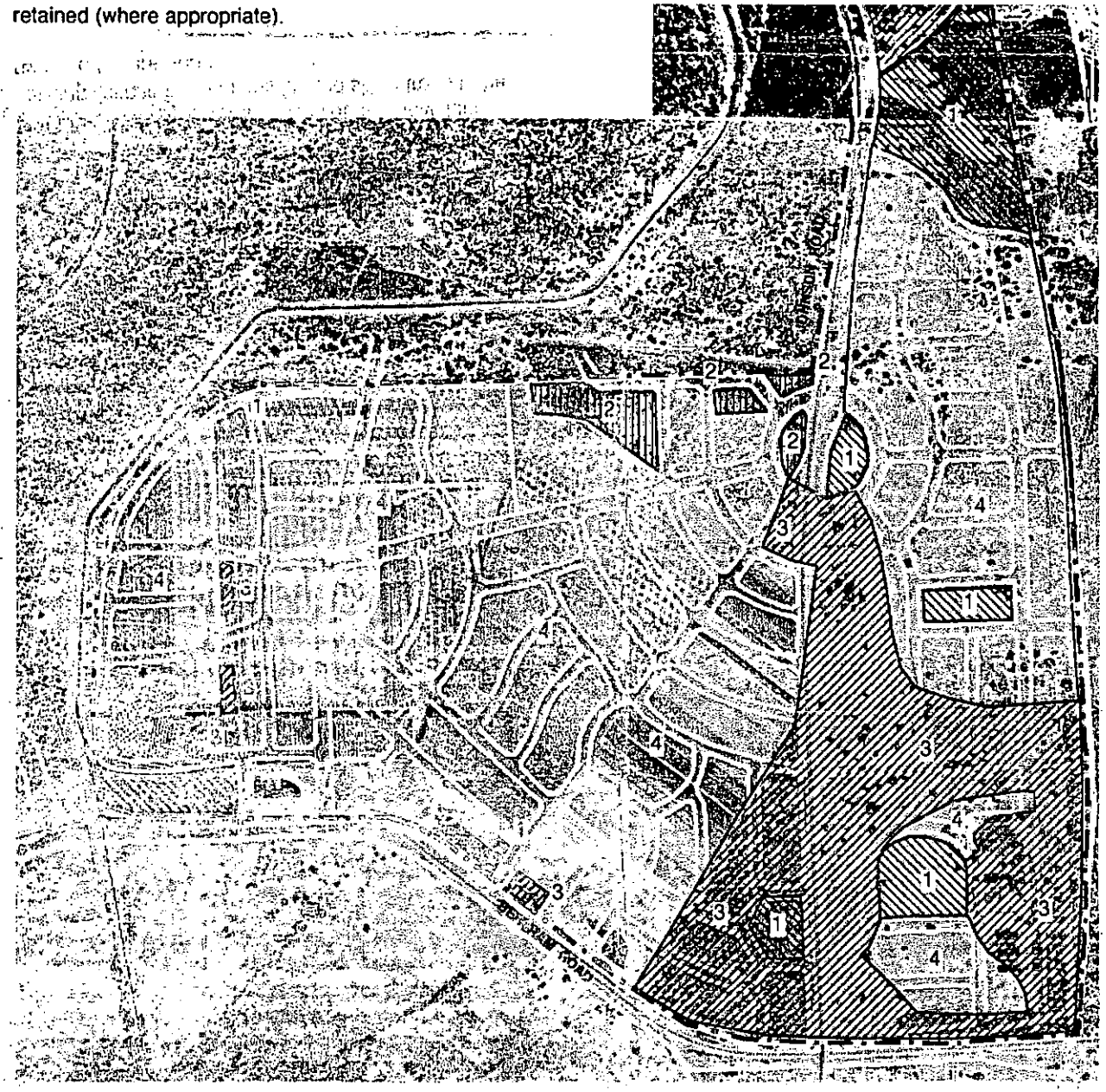
3

Town of Kwinna to encourage selected tree retention wherever reasonably practical within road reserves by subdividers/builders.Individual building licence applications should show trees to be retained (where appropriate)

4

Areas subject to possible loss of remnant tree cover due to earthworks. Where however, individual specimens are retained, then Town of Kwinana to encourage selected tree retention wherever reasonably practical within road reserves by subdividers, and within building blocks by purchasers/builders. Individual

retained (where appropriate).



CASUARINA STRUCTURE PLAN

VEGETATION PLAN

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