



NEERABUP INDUSTRIAL AREA

Structure Plan No. 17 | August 2020

NEERABUP INDUSTRIAL AREA
AGREED STRUCTURE PLAN
(As Amended)

Structure Plan No. 17
Adopted: 11 January 2005

This Structure Plan was prepared under the provisions of Part 9 of City of Wanneroo District Planning Scheme No. 2

IT IS CERTIFIED THAT AMENDMENT NO. 6 TO NEERABUP INDUSTRIAL AREA STRUCTURE PLAN NO. 17 WAS APPROVED BY RESOLUTION OF THE WESTERN AUSTRALIAN PLANNING COMMISSION ON: **9 OCTOBER 2020**

Signed for and on behalf of the Western Australian Planning Commission

A handwritten signature in black ink, appearing to read 'Rigali', is written over a horizontal line. The signature is stylized and cursive.

an officer of the Commission duly authorised by the Commission pursuant to Section 16 of *the Planning and Development Act 2005* for that purpose.

This structure plan is prepared under the provisions of the City of Wanneroo District Planning Scheme No. 2.

IT IS CERTIFIED THAT THIS STRUCTURE PLAN WAS APPROVED BY
RESOLUTION OF THE WESTERN AUSTRALIAN PLANNING COMMISSION
ON:

11 January 2005

In accordance with Schedule 2, Part 4, Clause 28 (2) and refer to Part 1, 2. (b) of the *Planning and Development (Local Planning Schemes) Regulations 2015*.

Date of Expiry: 19 October 2025

NEERABUP INDUSTRIAL AREA STRUCTURE PLAN NO. 17

August 2020

WAPC Reference: SPN/0813M-3

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Rev 14	10.08.20	Matt Raymond - element	Matt Raymond - element	

RECORD OF AMENDMENTS MADE TO THE NEERABUP INDUSTRIAL AREA
AGREED STRUCTURE PLAN NO. 17

Amendment No.	Description of Amendment	Finally Endorsed by Council	Finally Endorsed by WAPC
2	Makes provisions for some design guidelines applicable to a portion of the Agreed Structure Plan known as Meridian Park and addition of Plan 6 to illustrate the Meridian Park area.	03.06.2008	18.08.2008
3	Realignment of 'Road B' and intersection with Pederick Road.	05.08.2011	12.10.2011
4	<p>Deleting Plan 2 Neerabup Industrial Area Final Surface Contour Plan (Sept 2004) and replace with the updated Plan 2 Neerabup Industrial Area Final Surface Contour Plan (August 2015)- Drawing No.5920-00-SK128 Rev F.</p> <p>Plan 1 and Figure 8.1 being modified to delineate and annotate the 98ha area within the northern part of the site as "Proposed Conservation Areas Subject to Environmental Review" so as to match the delineation and annotation on the Final Surface Contour Plan. Plan 1 and the Final Surface Contour Plan being modified to delineate and annotate the 47ha area within the south eastern part of the site as "Reserve for Conservation".</p> <p>Deleting Figure 6.1 Neerabup Industrial Area Final Surface Contour Plan (Sept 2004) and replace with the updated Figure 6.1 Neerabup Industrial Area Final Surface Contour Plan (August 2015) - Drawing No.5920-00-SK128 Rev F.</p> <p>Amend Part 1 – Statutory Planning Section to align with the <i>Planning and Development (Local Planning Schemes) Regulations 2015</i>.</p> <p>Part 1 following section 11.0 the following section being added: 12.0 Bushfire and include Appendix 9 – Bushfire Management Plan (Strategen, June 2017)</p>	19.12.2016	25 August 2017
5	Make provisions for additional land uses applicable to Lots 1001 and 1021 Greenwich Parade.		20 December 2019

6	<p>Rectify existing mapping anomalies of LSP 17 Map and Figure 8.1 where the 'Service Industrial' and 'General Industrial' designations do not correctly align with the lot cadastral boundaries.</p> <p>Modify the LSP 17 Map and Figure 8.1 to replace the 'Service Industrial' designation for portions of Lot 9006 abutting future Pinnacle Drive (south of Avery Street) with the 'General Industrial' designation such that it is consistent with the City of Wanneroo District Planning Scheme No. 2 zoning map.</p> <p>On the LSP 17 Map and Figure 8.1, reinstate the 30 metre wide road reserve for the full length of Warman Street.</p>		9 October 2020
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Plan 3	Indicative Movement Network
Plan 4	Cell Works
Plan 5	Collector Roads
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Figure 1.1	Context
Figure 2.1	Basic Raw Materials Policy
Figure 3.1	MRS Zonings
Figure 3.2	Zoning City of Wanneroo District Planning Scheme No. 2
Figure 3.3	Current Land Ownership
Figure 4.1	Aerial Photograph
Figure 4.2	Groundwater Priority Source Protection Areas
Figure 5.1	Opportunities and Constraints
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Figure 6.1	Final Surface Contour Plan
Figure 7.1	Indicative Development Concept
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Figure 8.1	Structure Plan
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APPENDICES

Appendix 1	Consultation
Appendix 2	Flynn Drive Industrial Area District Structure Plan
Appendix 3	Flynn Drive Structure Plan
Appendix 4	Neerabup Industrial Area Structure Plan Review
Appendix 5	DEP Advice
Appendix 6	Flynn Drive Traffic Assessment
Appendix 7	Western Power Correspondence
Appendix 8	Bushfire Management Plan

PART 1 - IMPLEMENTATION

1.0 STRUCTURE PLAN AREA

The Structure Plan applies to the land contained within the inner edge of the broken black line shown on the Structure Plan map.

Subject Area

The Structure Plan area comprises approximately 1,000 hectares.

2.0 STRUCTURE PLAN CONTENT

This Structure Plan comprises:

- Implementation (Part 1)
- Explanatory and Technical Appendices (Part 2)

3.0 INTERPRETATION

"LandCorp" means the Western Australian Land Authority.

"The City" means the City of Wanneroo.

"The Scheme" means the City of Wanneroo District Planning Scheme No. 2.

"Deemed Provisions" means Schedule 2 of the Planning and Development (Local Planning Schemes) Regulations 2015'

Unless otherwise specified in this Structure Plan, a word or expression used in this Structure Plan should have the same respective meaning given in the Scheme.

4.0 OPERATION DATE

In accordance with clause 28 of the Deemed Provisions, the approval of the Structure Plan commenced on 19 October 2015.

5.0 RELATIONSHIP WITH THE SCHEME

In accordance with clause 9.8 of the Scheme:

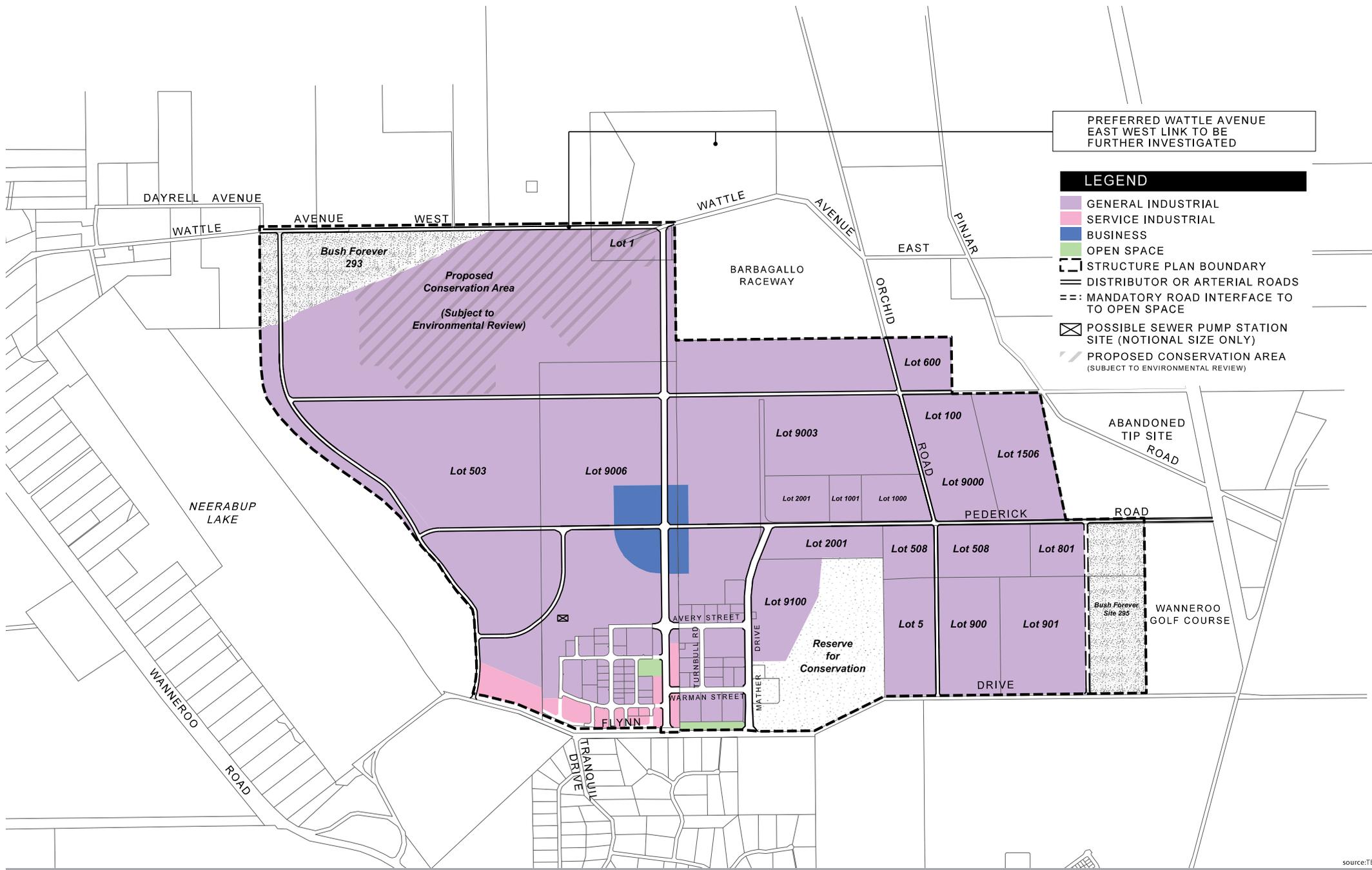
- a) In accordance with clause 27 of the Deemed Provisions, a decision-maker for an application for development approval or subdivision approval within the Structure Plan area is to have due regard to, but is not bound by, the Structure Plan when deciding the application.
- b) Land use permissibility, subdivision and development is to be in accordance with the corresponding Zone under The Scheme, except for the land use Shop in the Business area as per Clause 8.2.3, Part 2 and Lots 1001 and 1021 Greenwich Parade additional land uses as outlined in Clause 14.2, Part 1.

6.0 LOCAL STRUCTURE PLAN MAP

Plan 1: The 'Structure Plan' illustrates the road structure and land use precincts proposed for the Structure Plan area. The map defines the following precincts:

1. General Industrial
2. Service Industrial
3. Business

In addition, an area of 5,000 m² of open space shall be located in or near the Business Park on either Lot 22 or Lot 4.



Plan 1 - Local Structure Plan

Neerabup Industrial Area

Date: 15 Sep 2020
 Scale: 1:20k @ A3
 Drawing No. 715-341 CP-1 A
 Staff: MR_GW



source:TBB

7.0 SURFACE CONTOUR LEVELS

Plan 2: The 'Final Surface Contour Plan' illustrates the final surface levels which must be achieved prior to subdivision and/or development on-site. Where any resource extraction is undertaken within the Structure Plan area, these levels must be complied with at the completion of extraction.

Council may approve a variation to the Final Surface Contour Plan, if it is satisfied that such a variation:

1. complies with the design criteria contained in section 6.5 of the Explanatory Report; and
2. will not adversely affect the ability of adjoining properties to conform to the Final Surface Contour Plan.

Council shall not approve any extraction where the proposed final surface level has a vertical separation distance of less than:

- 1.2 metres from Average Annual Maximum Groundwater Level; or
- 2.0 metres from groundwater contours shown in the Water and Rivers Commission Groundwater Atlas; or
- such other distance as approved or required by the Department of Environment Water and Rivers;

whichever is the greater distance.

8.0 MOVEMENT NETWORK MAP

Plan 3: 'Indicative Movement Network', illustrates the internal road structure proposed within the Structure Plan area. This map is indicative and provides a guide to the detail road design. The movement network may be varied subject to Council and Western Australian Planning Commission approval through either the Structure Plan or subdivision process where consistent with principles of **Plan 3**.

9.0 LAND CLEARING

Prior to the clearing of natural vegetation and habitat, Council may require flora and fauna surveys to be undertaken.

If priority or threatened species are identified, the proponent will be required to liaise with CALM to ensure that appropriate management strategies are developed.

10.0 PINJAR TIP SITE LEACHATE PLUME

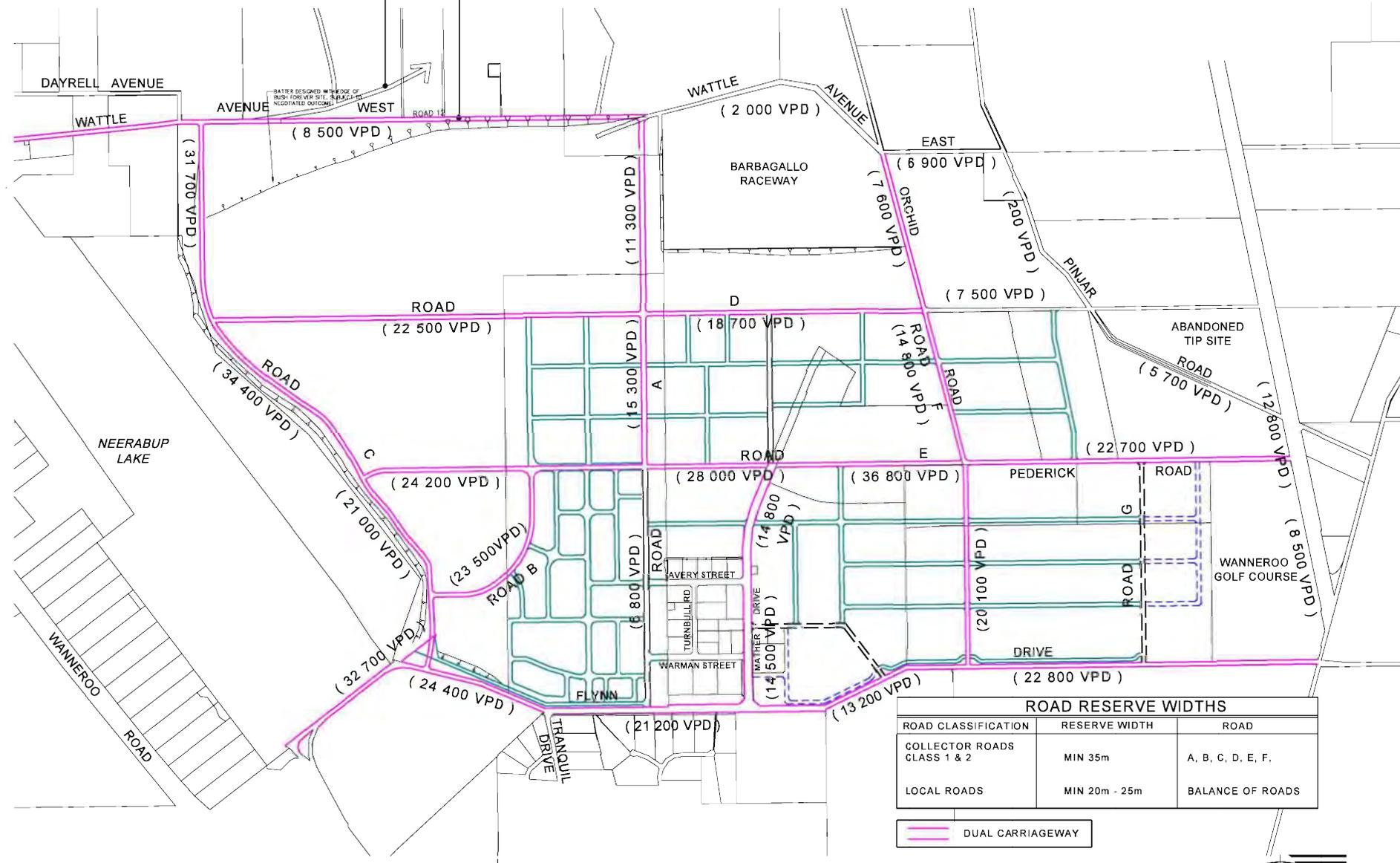
Within the land identified as being affected by the Pinjar Tip Site Leachate Plume in Figure 5.1 of the Explanatory Report, or by such other subsequent study as may be undertaken by Council, conditions will be imposed on any development approval, and recommended on any subdivision application, to ensure that prospective purchasers of land or development are appropriately informed of the potential impacts of the plume.

11.0 CELL WORKS

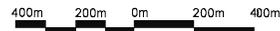
Each owner within the Structure Plan area shall be responsible for contributions towards shared infrastructure costs, referred to as Cell Works. The final details of those infrastructure items for the Cell Works, for example road upgrading and engineering standards and the actual costs shall be determined through a separate Scheme Amendment process, in consultation with the landowners, Council and the Western Australian Planning Commission. Generally however, the contributions shall be in accordance with the principles of this part of the Structure Plan, as outlined below.

1. In accordance with the City of Wanneroo DPS the method of apportionment shall be on the basis of each owners proportion of the gross subdividable area.
2. The Cell Works shall generally include contributions to:
 - External and internal roads and upgrading as illustrated on **Plan 4**, including land, earthworks, construction costs and drainage.

PREFERRED WATTLE AVENUE
EAST WEST LINK TO BE
FURTHER INVESTIGATED



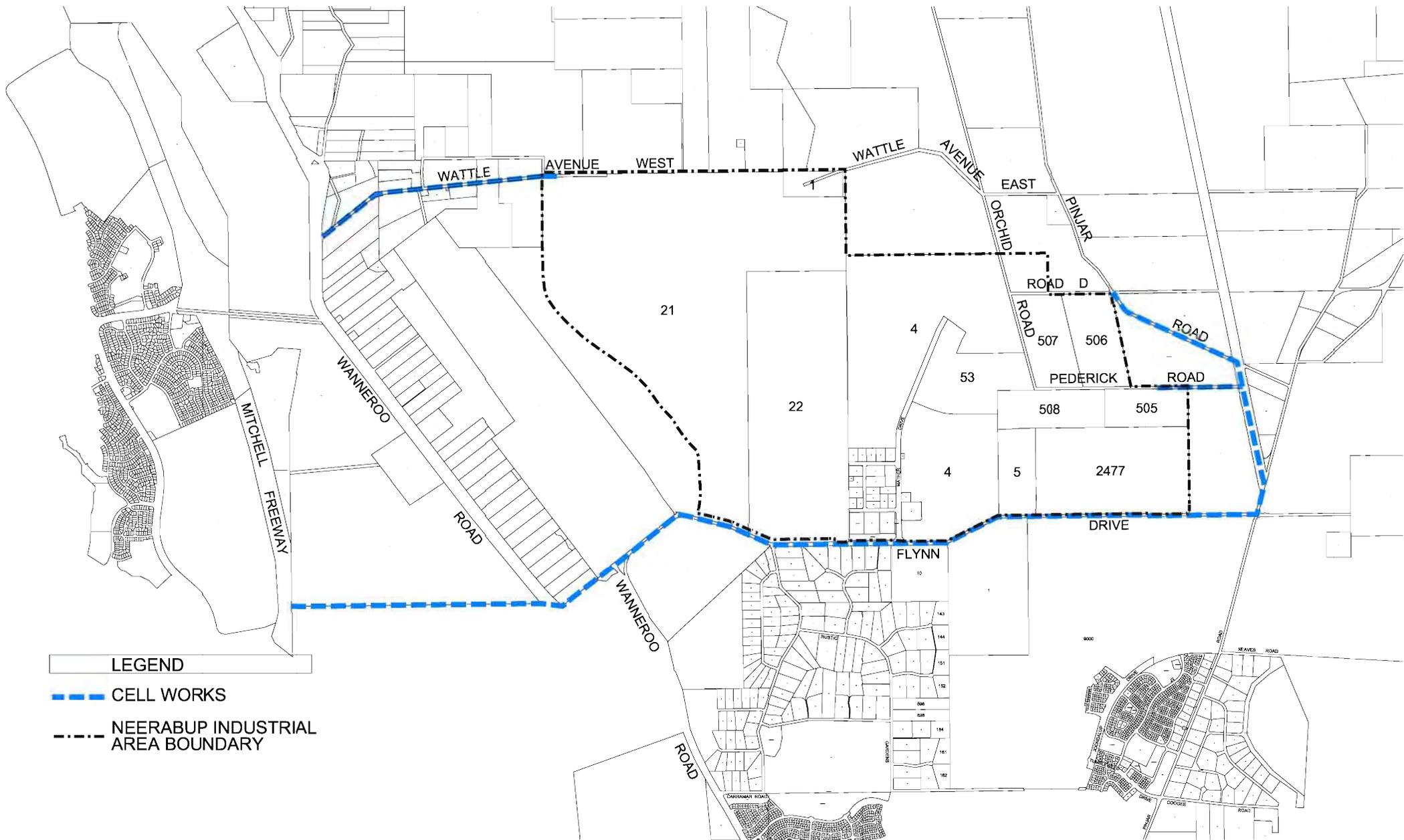
NEERABUP INDUSTRIAL AREA INDICATIVE MOVEMENT NETWORK



PLAN 3

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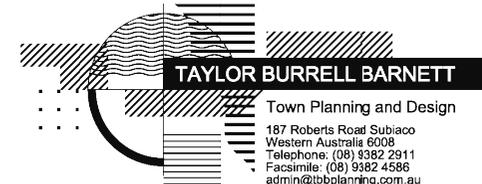
- LEGEND**
-  CELL WORKS
 -  NEERABUP INDUSTRIAL AREA BOUNDARY

PROJECT

NEERABUP INDUSTRIAL AREA CELL WORKS



PLAN 4



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- Major road intersection treatment i.e. lights or roundabout.
- Public Open Space.
- Cost of Structure Plan preparation and associated studies and Scheme Amt including Design Guidelines and Landscape Master Plan, Service Concept Plan, Drainage and Nutrient Management Plan and Flora and Fauna Study for strategic roads.
- Administration costs.

In relation to the Flynn Drive extension to the Freeway, Council considers a one-third contribution to be appropriate. The detail of the percentage contribution will be determined in more detail through the Scheme Amendment process.

12.0 BUSHFIRE

An updated Bushfire Management Plan is to be provided with the lodgement of subdivision applications demonstrating compliance with the Bushfire Protection Criteria set out in the WAPC *Guidelines for Planning in Bushfire Prone Areas*, and having regard to the outcomes of the Bushfire Management Plan (Strategen Environmental, August 2016) provided at Appendix 8 of this Structure Plan report.

13.0 ADDITIONAL PLANS AND GUIDELINES

13.1 Design Guidelines and Landscape Master Plan

Prior to subdivision commencing within the Structure Plan Area, Design Guidelines and a Landscape Master Plan should be prepared, addressing the key elements of the Structure Plan, including, but not limited to:

- Main estate entries;
- The core business area;
- Areas adjacent to the Lake Neerabup Parks and Recreation reserve; and
- Service Industrial areas fronting Flynn Drive.

The cost of preparing the Design Guidelines and the Landscape Master Plan shall be included as a Cell Work under the developer contribution arrangement.

13.2 Service Concept Plans

Prior to subdivision or development commencing within the Structure Plan area service concept plans should be prepared for sewer, water, electric power, drainage, gas and communication services, and such plans should be endorsed by the appropriate government authorities. The concept plans should be based on a total development philosophy and provide a basis for integrating individual developments.

The cost of preparing the concept plans and achieving government endorsements shall be included as a Cell Work under the developer contribution arrangement.

13.3 Drainage, Nutrient and Water Management Plan

Prior to subdivision or development commencing within the Structure Plan area, a Drainage, Nutrient and Water Management Plan should be prepared, and such plan should, if considered necessary by Council, include a contingency plan to ensure the protection of Lake Neerabup.

The cost of preparing the Drainage and Nutrient Management Plan shall be included as a Cell Work under the developer contribution arrangement.

13.4 Dieback Hygiene Plan

Prior to subdivision or development commencing within the Structure Plan area, a Dieback Hygiene Plan should be prepared.

14.0 PROVISIONS

14.1 General Industrial

The permissibility of uses and development shall be in accordance with the provisions of the General Industrial Zone. Notwithstanding the uses permitted under the Scheme, Industry - Hazardous will not be favoured within this precinct.

14.2 Service Industrial

The permissibility of uses and development shall be in accordance with the provisions of the Service Industrial Zone.

If not included elsewhere in this Structure Plan, the permissibility of uses and development should be in accordance with the provisions of the Service Industrial zone.

Lots 1001 and 1021 Greenwich Parade are landmark sites at the entry of the Meridian Park and NIA Stage 1. Recognising the sites' prominence, there is capacity to support a range of complimentary business uses, which are conducive to servicing the Structure Plan area.

In addition to those land uses permitted within the Service Industrial zone under the Scheme, the following land uses are permitted as discretionary uses for Lots 1001 and 1021:

- Office
- Restaurant/Café
- Shop
- Medical Centre
- Take away food outlet

To ensure development is of a scale sympathetic to the local amenity, delivers a local focal point that provides for the daily needs of complementary industrial workforce activities, and does not detract from neighboring retail centres, planning decision makers are to have due regard to Table 1 development standards and Clause 16.1 of this Structure Plan, together with Scheme requirements, as well as the relevant matters outlined in Clause 67 of the Deemed Provisions.

Table 1: Additional Land Uses for Lot 1001 and 1021

Land Use	Permissibility	Development Standard
Office	D	Limited to no more than 700sq.m net lettable area (NLA) across both Lots 1001 and 1021 Greenwich Parade.
Restaurant/Cafe	D	Limited to a combined total of 1,000sq.m NLA across both Lots 1001 and 1021 Greenwich Parade. Individual premises are not to exceed 500sq.m gross floor area per lot.
Take Away Food Outlet	D	
Medical Centre	D	Limited to no more than 4 health practitioners, and ancillary dispensary premise used to sell goods by retail of a personal and medical nature. The dispensary is to be ancillary to the medical centre and be limited to a total floorspace of 150sq.m NLA across both Lots 1001 and 1021 Greenwich Parade.
Shop	D	Restricted to premises that offers the service and/or retail of mail distribution/collection (post office), baked goods (bakery), hardware/trade supplies, costume and video hire, hire services, banking services (bank) and dry cleaning (laundry). Is not to offer the sale of goods, by retail or hire, unrelated to these services.

Where practicable, co-locating complimentary business services through horizontal and vertical integration, whose ground floor is directly accessible and can be seen from the street or public space which it faces is encouraged to ensure development creates an attractive facade to the street.

14.3 Business

The permissibility of uses and development shall be in accordance with the provisions of the Business Zone.

14.3.1 Barbagallo Raceway Noise

In relation to land situated within the Raceway Noise Influence Area, as identified in Figure 5.1 of the Explanatory Report, it is possible that some noise sensitive uses may be affected by excessive noise levels if they operate on Sundays.

In the event that Council considers that a proposal involves a use which might be so affected, Council may require the proponent to prepare a suitable noise management strategy, or demonstrate that the use will not be adversely affected by the Raceway activities.

15.0 ROAD SUBDIVISIONAL REQUIREMENTS

All owners shall be required to construct Collector Roads A, C, D, E and F as illustrated in **Plan 3**.

Each owner's proportional contribution shall be generally as outlined in **Table 1** below; this may be in the form of a 100% contribution where it is wholly located on an individual's holding, or 50% where it is shared or merely a road upgrade and there is an existing carriageway and road reservation.

Table 1: Landowners Contribution to Collector Roads

Lot No.	Road (refer Plan 5)	Road Width or Road Widening / Land Required	Comment No.
21	A2	35 m	1
	C	35 m	
	D1	35 m	

Lot No.	Road (refer Plan 5)	Road Width or Road Widening / Land Required	Comment No.
	E1	35 m	
22	A1	35 m	1
	D2	35 m	
	E2	35 m	
4	D3	35 m	1
	D4	7.5 m	2
	E3	35 m	1
	F1	15 m	
	F2	7.5 m	2
53	E4	35 m	1
	E5	17.5 m	2
	F3	7.5 m	
240	NIL		
5	F5	17.5 m	2
505	E8	7.5 m	2
	E9	15 m	1
506	E7	7.5 m	2
	E8	7.5 m	
	D5	15 m	1
507	D4	7.5 m	2
	E6	7.5 m	
	F1	7.5 m	
	F3	7.5 m	
	D5	15 m	1
508	E5	17.5 m	1
	E6	7.5 m	2
	E7	7.5 m	

Lot No.	Road (refer Plan 5)	Road Width or Road Widening / Land Required	Comment No.
	F4	17.5 m	1
2477	F5	35 m	2
1	A3	35 m	1

Comments:

- 1 Contribution to land in accordance with the width specified plus 100% contribution to full earthworks, one carriageway and drainage.
- 2 Contribution to land in accordance with the width specified plus 50% contribution to full earthworks, one carriageway and drainage.

Notes:

- a) Refer to **Plan 5** for road numbers.
- b) All other internal roads will be required as part of standard subdivisional requirements.
- c) This table must be updated where landowners create and sell superlots.

16.0 PROVISIONS RELATING TO MERIDIAN PARK

The following sub-clauses apply to lots created within the area illustrated in **Plan 6** and known as 'Meridian Park'.

16.1 Landmark Sites

Landmark Site(s) shall be identified at the subdivision stage and be subject to a Detailed Area Plan as a condition of subdivision approval. Prior to the clearance of subdivision containing landmark site(s), Detailed Area Plans shall be submitted by the developer for the approval of the City. No development shall commence on a landmark site other than in conformity with an Agreed Detailed Area Plan.

16.2 Parking Provisions

On-street parking, where provided, can be offset against the City of Wanneroo District Planning Scheme No. 2 parking requirements for the adjacent development across the entire site and not for individual tenancies.

16.3 Rainwater Tanks

Rainwater tanks are to be located behind the setback area and integrated into the building or appropriately screened from view of the street or other public space.

16.4 Energy Efficiency

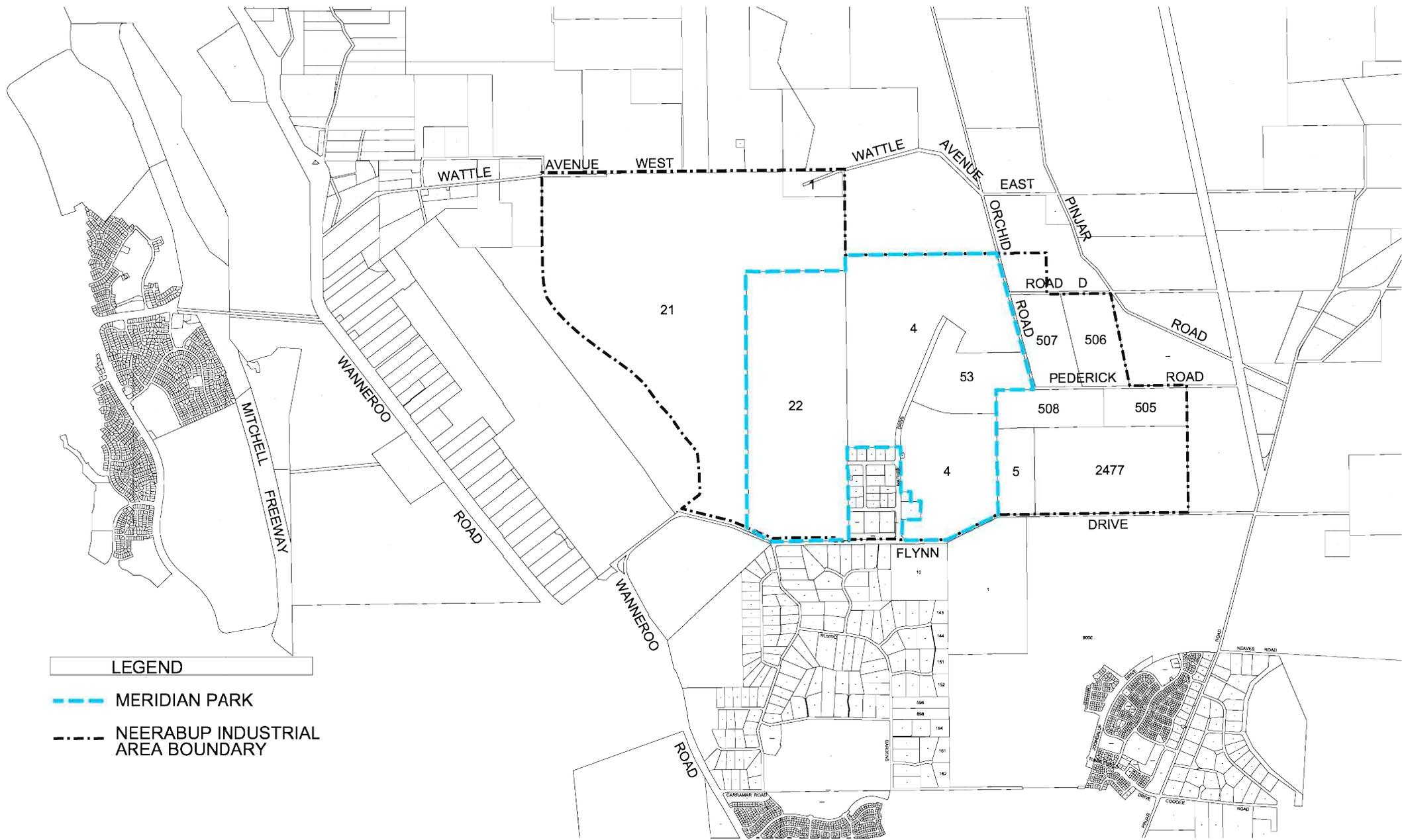
All buildings to comply with Section J (Energy Efficiency) of the Building Code of Australia.

16.5 Fencing

Front fencing shall be 'open style' and integrated with the building where possible.

16.6 Landscaping

Applications for Approval to Commence Development shall include a 'Landscaping Plan' which promotes the use of drought tolerant planting.



LEGEND

- - - - MERIDIAN PARK
- . - . - NEERABUP INDUSTRIAL AREA BOUNDARY

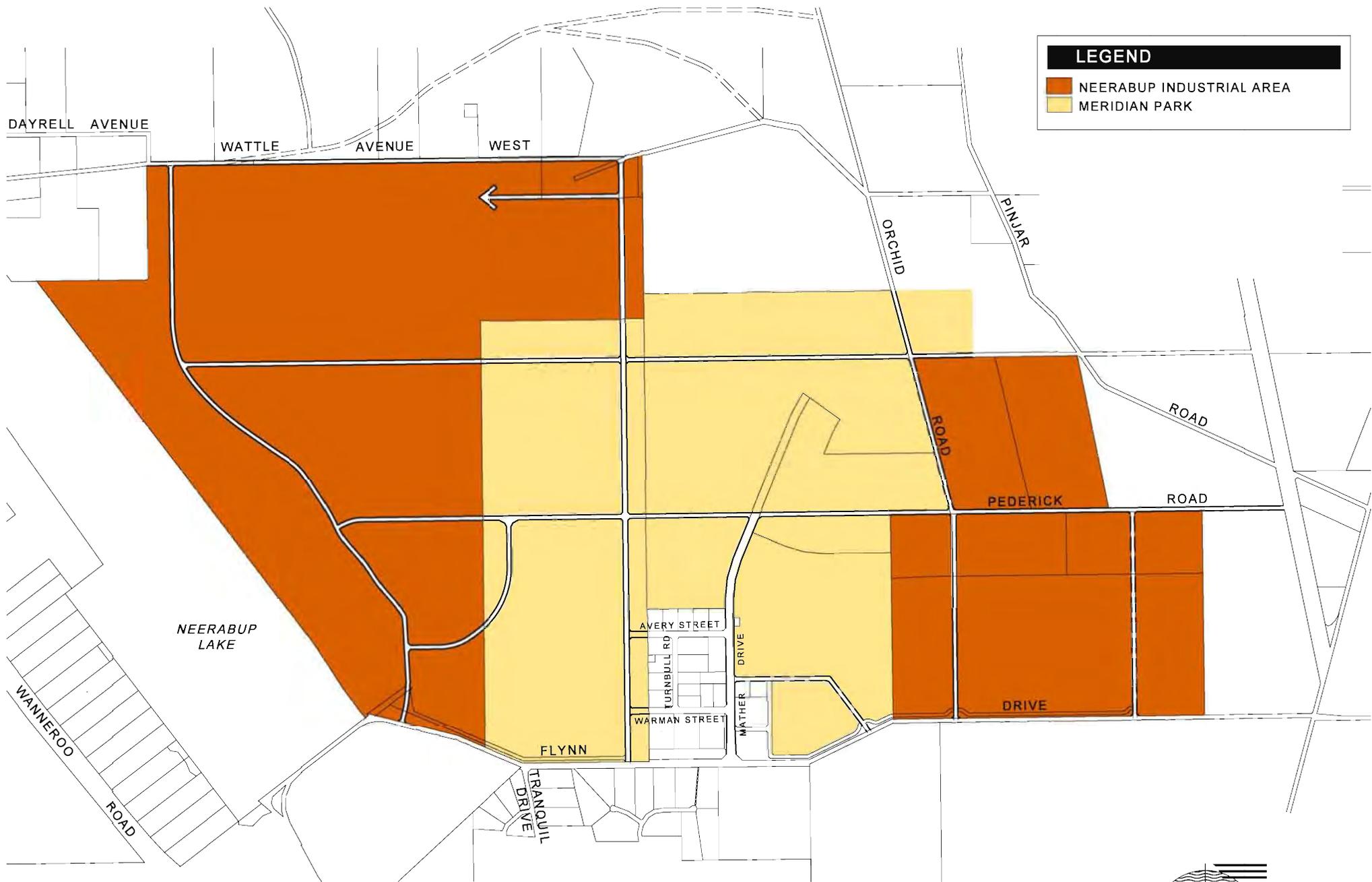
NEERABUP INDUSTRIAL AREA MERIDIAN PARK



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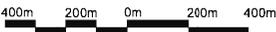
SINCLAIR KNIGHT MERZ



LEGEND

- NEERABUP INDUSTRIAL AREA
- MERIDIAN PARK

**NEERABUP INDUSTRIAL AREA
MERIDIAN PARK**



NORTH



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16.7 Glazing

The street elevation of the proposed building is to include a high percentage of glazing to contribute to and activate the façade and complying with the Energy Efficiency provisions of the Building Code of Australia.

16.8 Natural Lighting

Subject to compliance with the Energy Efficiency provisions of the Building Code of Australia, natural lighting should be provided to the uppermost floor area of all buildings by incorporating strategically placed windows and light shelves, light wells and/or awning reflectors to capture light.

- Minimum 50% of the total floor area of all buildings to have access to natural light from skylights, light shelves, light wells and northern glazed windows.
- Minimum of 15% of the total roof area to be fitted with skylights designed, shaded and/or oriented to minimise heat gain during the summer months.
- Minimum 20% of the northern façade to be glazed or provided with openings to allow daylight to infiltrate internal floor areas. Provide awnings or other architectural elements to adequately shade direct summer light. Best Practice Recommendations.

16.9 Inclusion of Blade Walls

The inclusion of blade walls protruding a maximum of 3 metres into the 6 metre front setback area may be acceptable, subject to the main portion of the building being setback behind the 6 metre setback line.

16.10 Architectural Endorsement

All applications for planning approval within Meridian Park Industrial Estate shall be accompanied by an endorsement of LandCorp via its appointed 'Estate Architect'.

PART 2 - EXPLANATORY AND TECHNICAL APPENDICES

1.0 INTRODUCTION

The Neerabup Industrial Area (NIA) represents an opportunity for the development of a strategic General Industrial estate within the North West Corridor. Various proposals for Structure Plans including a Structure Plan review have been prepared for the site with varying outcomes and recommendations. This report represents a synthesis of the previous studies, and further consultation with key stakeholders, to determine the preferred structure for future development. Importantly, this study also assesses the resource extraction areas to determine the preferred ultimate site levels to facilitate industrial development.

The study therefore, produces two outcomes:

1. Structure Plan and Report
2. Final Surface Contour Plan

The Neerabup Industrial Area Structure Plan and report have been prepared to accord with the requirements of Part 9 of the City of Wanneroo District Planning Scheme No. 2 (DPS2).

The Structure Plan has been prepared by Taylor Burrell Barnett Town planning and design, in conjunction with Sinclair Knight Merz including engineering and environmental inputs. The preparation of the Structure Plan has been informed by consultation with existing landowners and key stakeholders. The consultation process and outcomes is discussed in **Appendix 1**.

1.1 Location

The NIA comprises approximately 1,000 ha of predominantly General Industrial land. The subject land is located approximately 30 km north of the Perth City Centre, and 4 kilometres north east of the Joondalup City Centre. **Figure 1.1** illustrates the location of the subject land.

The study area is bounded by Wattle Avenue and Barbagallo Raceway to the north, Lake Neerabup to the west, Flynn Drive to the south, and Orchid Road/Pederick Road/Wanneroo Golf Course to the east.

The site is strategically located within the North West Corridor with excellent existing and future road linkages.

Overall, the area shows attractive locational attributes for industrial land development within the short term 3-5 years and extending longer term 20-50 years.

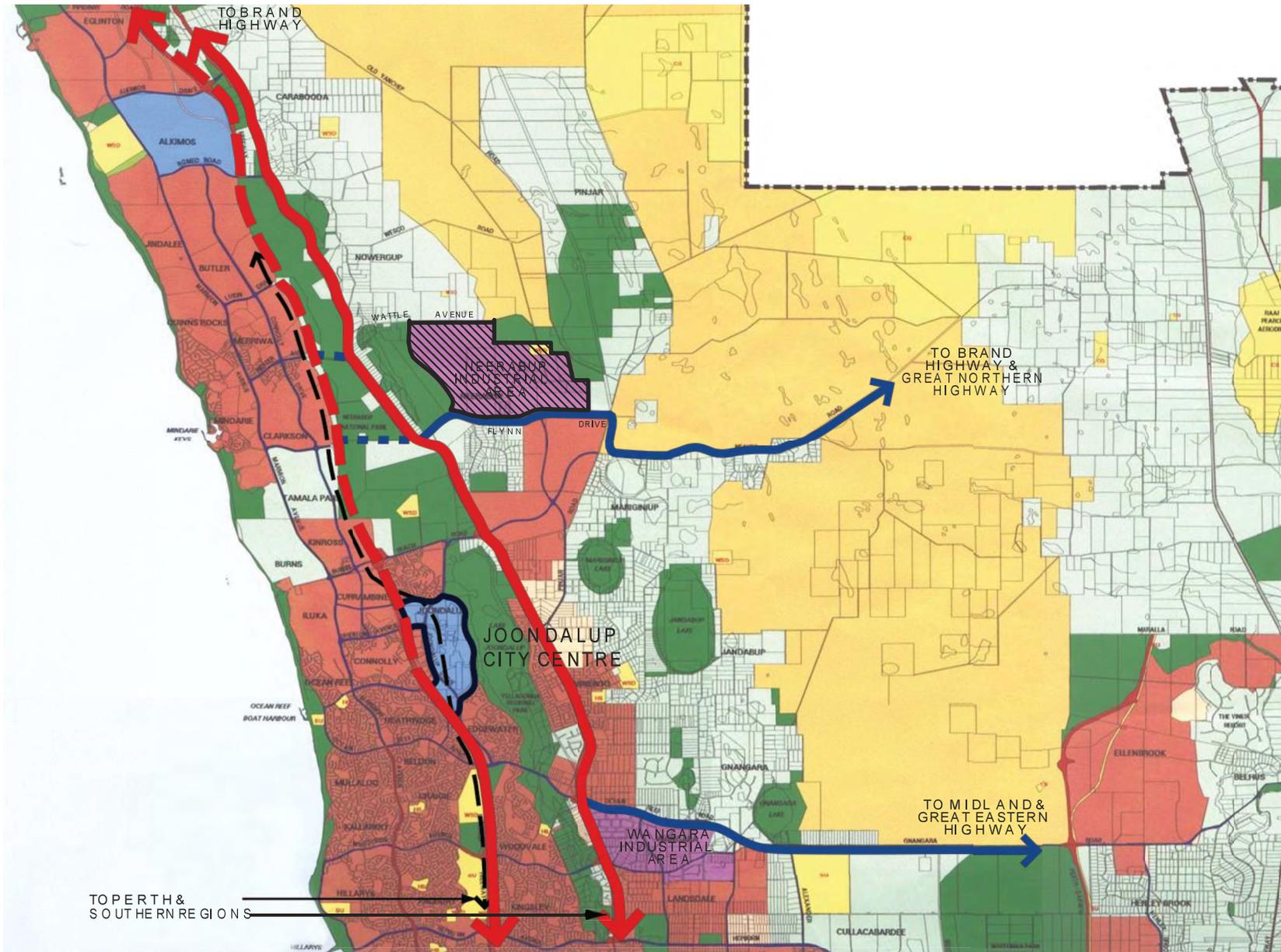
1.2 Preliminary Consultation

As mentioned, the preparation of the Structure Plan was preceded by a process of consultation with landowners and other stakeholders. Subsequently, a preliminary draft of the Neerabup Industrial Area Structure Plan was circulated to key stakeholders, including the City of Wanneroo, Department for Planning and Infrastructure (DPI), other state government authorities and landowners within the study area.

Some preliminary comments have been received from Council and state government stakeholders and, where appropriate, those comments have been further addressed in the final report.

In addition, follow-up consultation with landowners indicated that some further review was required, particularly in terms of development staging, and total extraction volumes. The key outcomes arising from the preliminary consultation with landowners may be summarised as follows:

- II) Cockburn Cement, the owner of Lot 21, proposes to develop a lime clinker plant to extract and process the lime resource from within its land holdings, (as well as other land holdings in the Nowergup area to the north). At this stage, Cockburn Cement has indicated that the proposed clinker plant is unlikely to be built within the next 10-15 years. Cockburn Cement have conducted site investigations to determine the extent of resource within their land and the Final Surface Contours reflect the advice received from their investigation.



LEGEND

- IMP OR TANT NORTH-S OUTH LINK S
- IMP OR TANT LATE R AL LINK S
- E X I S T I N G A N D F U T U R E R A I L W A Y
- P A R K S A N D R E C R E A T I O N
- S T A T E F O R E S T S
- U R B A N
- U R B A N D E F E R R E D
- C E N T R A L C I T Y A R E A
- I N D U S T R I A L
- S P E C I A L I N D U S T R I A L R U R A L
- R U R A L
- P R I V A T E R E C R E A T I O N
- R U R A L - W A T E R P R O T E C T I O N
- P U B L I C P U R P O S E S

**NEERABUP INDUSTRIAL AREA
CO N T E X T**



FIGURE 1.1

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Lot 22 (adjacent to Lot 21) will be available for resource extraction for a longer period than originally anticipated (although the existing quarrying activities in the southern portion of the site have now been completed and this area is presently undergoing rehabilitation).

Some landowners in the eastern sector (particularly Lot 5 and Lot 2477) are willing to make land available for industrial development in the short term.

As a consequence of these outcomes, the following key changes were made to the Final Structure Plan:

- i) The detail currently shown over Lot 21 includes the minimum structural elements (in terms of land use, road layout and finished levels) necessary to ensure proper integration between Lot 21 and the balance of the Structure Plan area. The indicative internal road layout is only shown to the boundary of Lot 21 to ensure proper integration between Lot 21 and the balance of the Structure Plan area.
- ii) An increase in the minimum finished surface contours within the eastern sector to reduce extraction timeframes and enable the more timely release of land for industrial development.
- iii) Minor changes to the road structure and staging plan to reflect items i) and ii).

2.0 RELEVANT STUDIES

2.1 Overview Strategic Planning Documents

Various strategic planning documents have been prepared which specifically address the significance of the Neerabup Industrial Area for Industrial Use. Of relevance is the North West Corridor Structure Plan (Department of Planning and Urban Development 1992).

The Northwest Corridor Structure Plan was prepared to accommodate part of the long term growth of the Perth Metropolitan Region in the North West Corridor. This included examining the need for future housing development, local employment, retail and commercial centres, efficient transportation networks and protection of areas of significant environmental qualities. The Structure Plan identified Neerabup as a strategic industrial area for larger scale industrial activities centrally located to serve the North West Corridor.

2.2 Basic Raw Materials Policy (WAPC July 2000) Statement of Planning Policy No. 10

The Basic Raw Materials Policy has been prepared by the Western Australian Planning Commission (WAPC) to facilitate the extraction of basic raw materials close to the major markets in the Metropolitan Region and to avoid sensitive development close to basic raw materials resources which could otherwise inhibit extraction of the resource. The objectives of the policy are to:

- Identify the location and extent of known basic raw materials resources;
- Protect Priority Resource Locations, Key Extraction Areas and Extraction Areas from being developed for incompatible land uses which could limit future land exploitation;
- Ensure that the use and development of land for the extraction of basic raw materials does not adversely affect the environment or the amenity in the locality of the operation during or after extraction; and

- Provide a consistent planning approval process for extractive industry proposals including the early consideration of sequential land uses.

The central and western portion of the Neerabup Industrial Area is identified as a limestone/limesand resource and is identified as a Priority Resource Location being known areas of high resource potential which should be held available for current and future extraction as illustrated in **Figure 2.1**. The eastern portion fronting Flynn Drive is identified as sand resource, again a Priority Resource Location. The basic raw materials policy does acknowledge that this area is also partly constrained by Bush Forever.

Within the NIA, the Basic Raw Materials Policy recognises the need for staged excavation to prepare the site for future industrial use.

2.3 Structure Planning

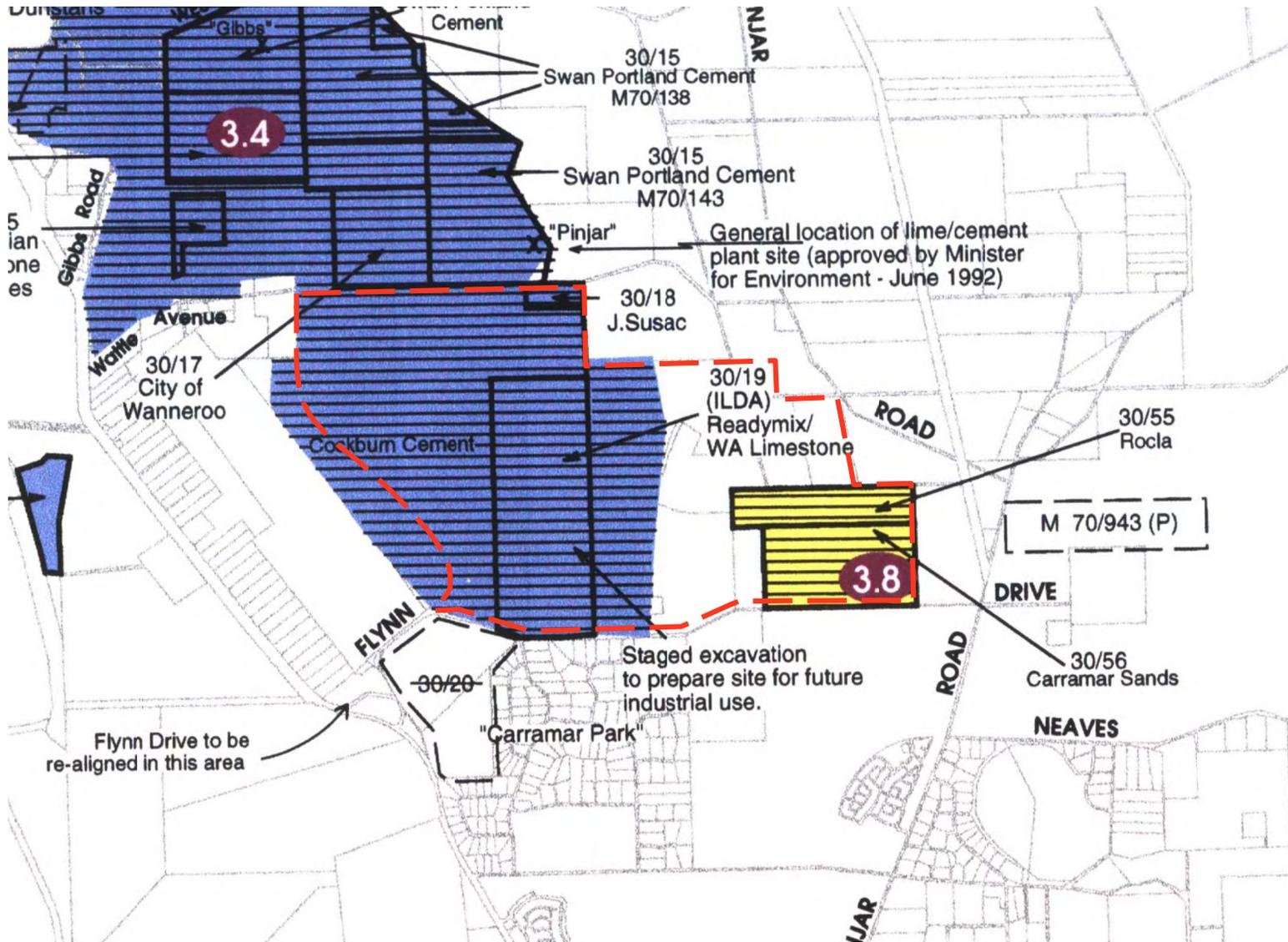
Since 1995, the NIA has been the subject of two separate Structure Plan proposals, and a Structure Plan review. The following is a brief summary of those studies.

2.3.1 Flynn Drive Industrial Area District Structure Plan

The first Structure Plan proposal, the Flynn Drive Industrial Area District Structure Plan (FDIADSP) prepared by Richard Pawluk and Associates et al, comprised a comprehensive overview of the physical environmental characteristics of the site and its environs and proposed a broad Structure Plan identifying the following key elements:

- Strong east/west links to the regional road system, complemented by north/south link roads between Flynn Drive to the south and the extension of Wattle Avenue to the north;
- A relatively permeable notional internal road layout; and
- A variety of land uses, with a predominance of General Industry, complemented by "Garden Industry" Light Industry, Mixed Business and Commercial.

A copy of the FDIADSP is illustrated in **Appendix 2**.



- LEGEND**
- APPLICATION AREA
 - LIMESTONE / LIMESAND RESOURCE
 - SAND RESOURCE
 - PRIORITY RESOURCE LOCATION
Known areas of high resource potential which should be held available for current and future extraction
 - EXTRACTION AREA
Areas of existing extractive industry operation
 - 30/55 WAPC REFERENCE NO.
 - TENEMENT EXPIRED
 - M 70/945 DME REFERENCE NO.
 - (P) PENDING
 - ENVIRONMENTAL AND CONSERVATION REFERENCE
(Bushplan Forever Site 295)

NEERABUP INDUSTRIAL AREA
BASIC RAW MATERIALS POLICY



FIGURE 2.1

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The FDIADSP addressed the key environmental issues, in particular buffer requirements from surrounding residential development as well as the Barbagello Raceway, and the wetland reserve requirements associated with Lake Neerabup.

The FDIADSP also addressed the potential of the area for the extraction of limestone and sand resources. The project engineers for the study, Sinclair Knight Merz, provided indicative finished surface levels, aiming to achieve an optimum between maximising resource extraction, and achieving appropriate surface grades for industrial development.

The report also addressed, in very general terms, the possible staging and servicing of the next stages of development in the short term.

2.3.2 *Flynn Drive Structure Plan*

In 1998, the City of Wanneroo commissioned the preparation of a new Structure Plan, Flynn Drive Structure Plan (FDSP) encompassing the NIA, and Nowergup and parts of Carabooda to the north, an area encompassing approximately 2,426 hectares, (refer **Appendix 3**).

This plan was prepared by Planwest (WA) Pty Ltd, in association with Bowman Bishaw Gorham and Ewing Engineers. The Structure Plan, as it related to the NIA, proposed a substantially different design philosophy to that promoted by the FDIADSP. In broad terms, the fundamental differences were:

- A stronger north/south emphasis in the road system, which appears to have the disadvantage of encouraging regional industrial traffic through residential areas to the south with less direct movement of such traffic onto the surrounding regional road system;
- The internal road system which, whilst only notional, was not as permeable and efficient for industrial traffic as the original FDIADSP; and
- Proposed less General Industrial land to be created.

2.3.3 *Neerabup Industrial Area Structure Plan Review*

An independent review was commissioned by LandCorp and undertaken by SMEC Australia, with the primary aim being to review the two previously mentioned Structure Plans, and to present recommendations on the most appropriate direction to progress planning to the next stage. A copy of the plan is illustrated in **Appendix 4**.

In presenting recommendations, the SMEC report indicated a clear preference for the original FDIADSP based on the following reasons:

- It provided a legible and regular road circulation system that discouraged the potential intrusion of industrial traffic into adjoining residential areas.
- The reliance on the use of existing roads such as Flynn Drive and the extension of Wattle Avenue provided further efficiencies for the development of the area.

It offered a pragmatic approach to one of the key objectives for the area, being the facilitation of the early release of industrial lots.

The SMEC report also identified a number of emerging issues which were significant to the NIA Structure Planning exercise. These included:

- The State Government's Bushplan initiative (now Bush Forever);
- Changing philosophies for regional road planning which encouraged permeability at the risk of introducing industrial traffic into residential areas;
- Management of noise and risk issues associated with development abutting motor sport venues; and
- The reduction of the reserve of General Industrial land held in estates through the region by the intrusion of Commercial and Mixed Business type uses.

The SMEC report recognised the ongoing importance of Basic Raw Materials policy as an interim factor in achieving the end objective of creating a high quality and modern industrial estate.

3.0 EXISTING ZONING & TENURE

3.1 Metropolitan Region Scheme Zoning

The Neerabup Industrial Area is predominantly zoned Industrial under the provisions of the Metropolitan Region Scheme (MRS). The only exception to this is a Public Purposes reserve in the north-eastern corner. It has now been determined that this reserve is no longer required (refer Section 5.8). The WAPC has recently initiated an amendment to the MRS to rezone the land to Industrial. The proposal is contained in Amendment No. 1037/33 North West Districts Omnibus No. 5, which commenced advertising on 11 December 2001.

Flynn Drive, forming the southern boundary of the Structure Plan, is an Other Regional Road Reservation. Lake Neerabup abutting the site to the west is included within Parks and Recreation Reservation, as is the western part of Lot 21. To the northeast abutting the site, there are various motor sports venues, which are also contained in Parks and Recreation Reservation.

The zoning and reservations for the land are identified within **Figure 3.1**.

3.2 Local Zoning

The land is subject to the provisions of the City of Wanneroo District Planning Scheme No. 2 (DPS 2), under which it is predominantly zoned Industrial Development. **Figure 3.2** shows existing zoning under DPS 2.

This zone is intended to facilitate future industrial development and provide for the comprehensive planning of larger areas for industrial and employment purposes.

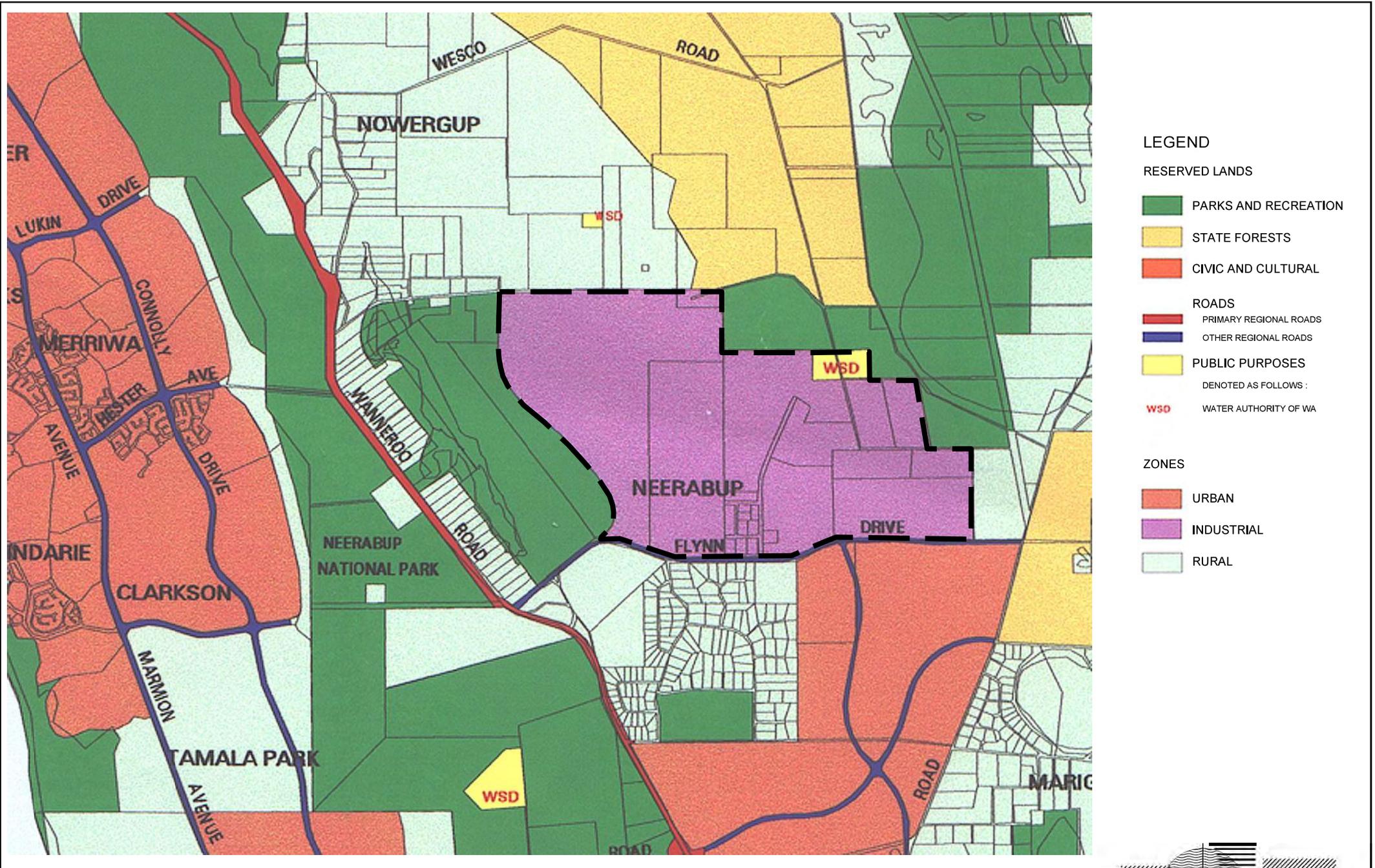
A key feature of the zone is the requirement that a Structure Plan be prepared and adopted, prior to any development or subdivision, to form the basis for consideration of all future subdivision and development proposals.

The major part of Lot 22 and the existing Mather Drive industrial area is zoned General Industrial, which is a continuation of a similar zoning under the previous Town Planning Scheme No. 1.

Consistent with the MRS, there is a Public Purpose reservation in the north-eastern corner of the site. When the MRS amendment (referred to in Section 3.1) is completed, the Public Purpose reservation under DPS 2 will be automatically removed, leaving the affected land unzoned. It will be necessary to undertake a subsequent amendment to the local scheme to apply a zoning consistent with the MRS. Given the zoning already applying to the balance of the study area, it would be appropriate to rezone the land to Industrial Development zone.

3.3 Current Land Ownership

The most recent land ownership is illustrated in **Figure 3.3**. The majority of the land is under private ownership although about 40% is owned by LandCorp and the City of Wanneroo.



- LEGEND**
- RESERVED LANDS**
- PARKS AND RECREATION
 - STATE FORESTS
 - CIVIC AND CULTURAL
- ROADS**
- PRIMARY REGIONAL ROADS
 - OTHER REGIONAL ROADS
- PUBLIC PURPOSES**
- DENOTED AS FOLLOWS :
- WSD** WATER AUTHORITY OF WA
- ZONES**
- URBAN
 - INDUSTRIAL
 - RURAL

NEERABUP INDUSTRIAL AREA
MRS ZONINGS

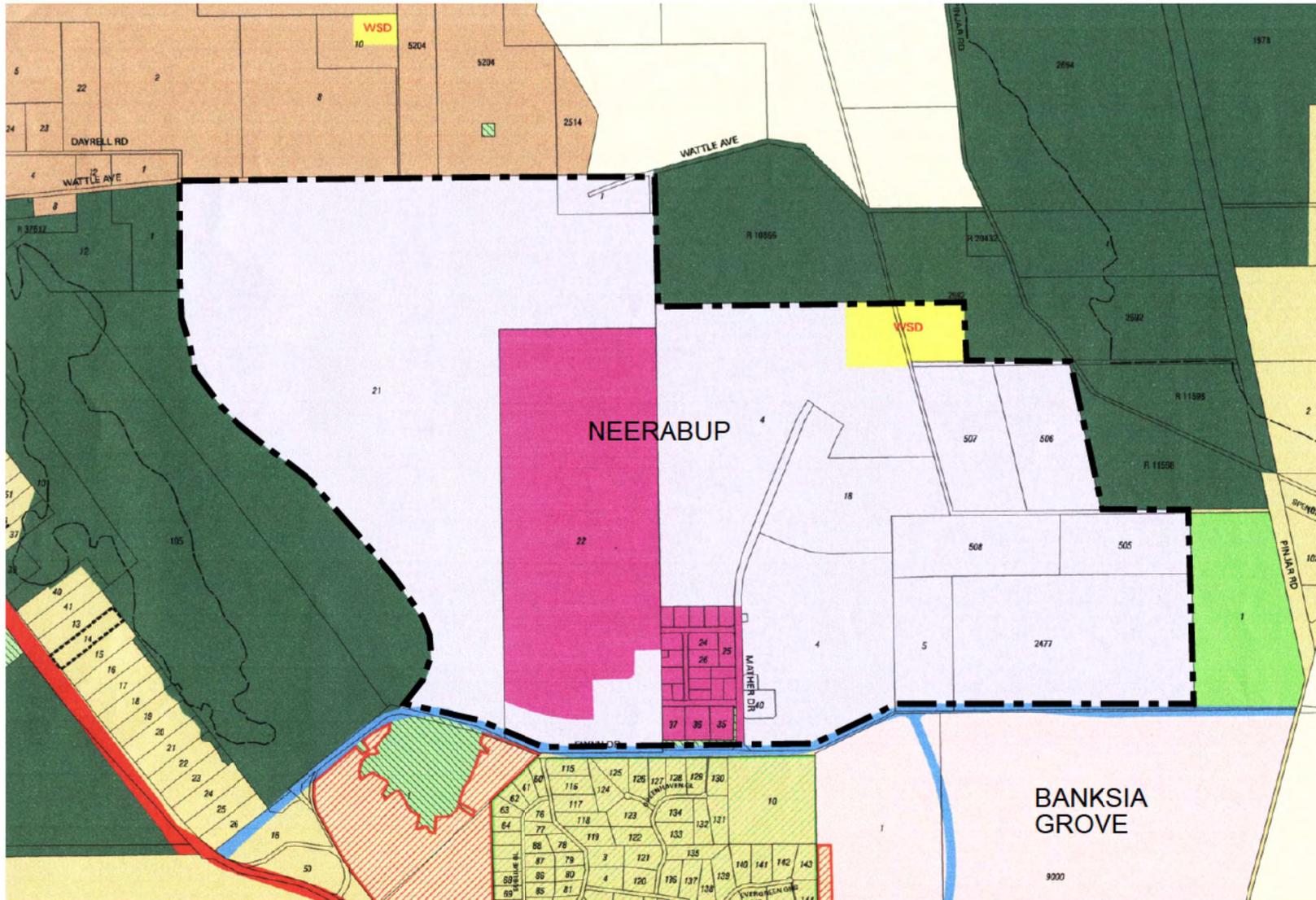


FIGURE 3.1

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LEGEND

METROPOLITAN REGION SCHEME RESERVES

- PARKS AND RECREATION
- RESTRICTED PUBLIC ACCESS
- STATE FORESTS
- PRIMARY REGIONAL ROADS
- OTHER REGIONAL ROADS
- PUBLIC PURPOSES

LOCAL SCHEME RESERVES

- PARKS AND RECREATION

ZONES

- SPECIAL RESIDENTIAL
- GENERAL INDUSTRY
- PRIVATE CLUBS / RECREATION
- URBAN DEVELOPMENT
- INDUSTRIAL DEVELOPMENT
- GENERAL RURAL
- SPECIAL RURAL
- ADDITIONAL USE RESTRICTED USE

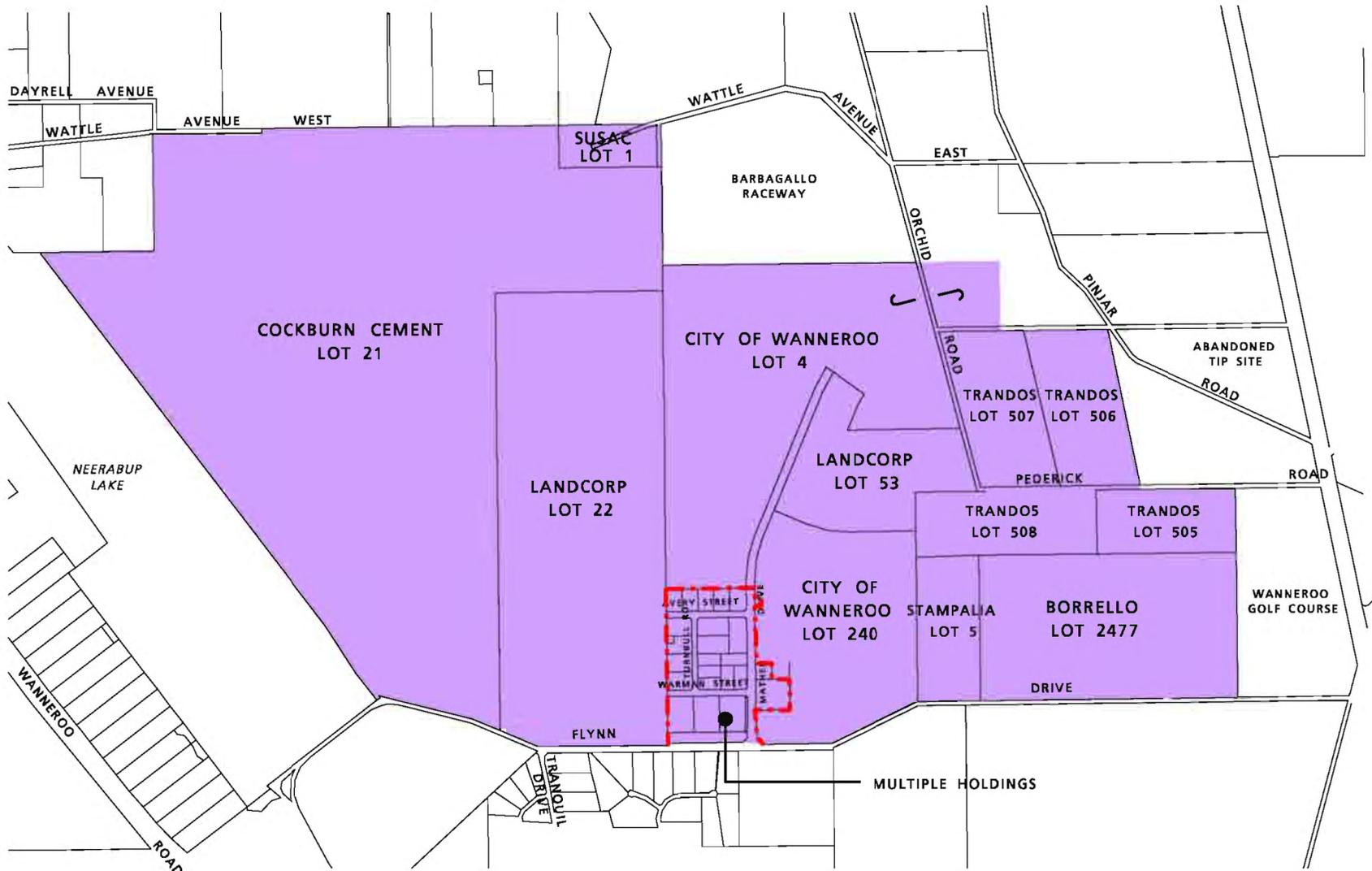
**NEERABUP INDUSTRIAL AREA
ZONING CITY OF WANNEROO DISTRICT PLANNING SCHEME NO. 2**



FIGURE 3.2

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LEGEND

STRUCTURE PLAN AREA

OWNER / LOT No.

LANDCORP LOT 53

**NEERABUP INDUSTRIAL AREA
CURRENT LAND OWNERSHIP**



NORTH



FIGURE 3.3

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4.0 SITE DESCRIPTION

4.1 Overview

The Neerabup Industrial Area is strategically located in close proximity to existing and future transport routes.

To the southeast of the NIA, significant future residential development is proposed within the urban cell known as Banksia Grove. Residential estates along the coastal strip of the North West Corridor (including the suburbs of Clarkson, Merriwa, Kinross, Mindarie) are currently developing approximately 3 km to the west of the Industrial Area (refer **Figure 1.1**).

4.2 Movement Network

4.2.1 External Road Network

4.2.1.1 Existing Road Network

The Neerabup Industrial Area is bounded to the south by Flynn Drive, which links Wanneroo Road in the west to Pinjar Road in the east. Pinjar Road in turn links to Neaves Road, which provides the most direct link to the east and the Great Northern Highway at Bullsbrook. Access to the south and north is currently provided by Wanneroo Road, which in turn also provides access to the Mitchell Freeway either at Hodges Drive or Ocean Reef Road.

To the west, indirect links to Marmion Avenue are via Quinns and Hester Roads and Burns Beach Road to the south. The Mitchell Freeway currently ends at Hodges Drive.

Wattle Avenue East and West currently provide access to north of the site from Pinjar Road and Wanneroo Road respectively. Wattle Avenue, however, does not connect to provide through access from Pinjar Road to Wanneroo Road. Whilst previously contemplated, the connection of Wattle Avenue East and West is not considered to be a requirement of the Structure Plan as Road A will provide better permanent access arrangements for the Barbagallo Raceway which has been experiencing traffic congestion problems during major events. At present the only permanent public road access to the

Raceway is from Wattle Avenue East; however, the City has recently permitted the Raceway to construct a temporary access road from Mather Drive, which alleviates, at least temporarily, the existing traffic problems.

4.2.1.2 Future Road Network

A number of road proposals have been identified in the Metropolitan Region Scheme and North West Corridor Structure Plan. Of relevance to this Structure Plan are the following:

Metropolitan Region Scheme Roads

- i) An east-west regional road connection between Neaves Road and Burns Beach Road south of Flynn Drive (classified as an "Other Regional Road").
- ii) A north-south regional road connection between Pinjar Road (at Clarkson Avenue) and Flynn Drive east of Mather Drive (also an "Other Regional Road").
- iii) A realignment of Flynn Drive at the western end and the inclusion of Flynn Drive on the MRS as an Other Regional Road.
- iv) An MRS amendment was prepared for the following:
 - Mitchell Freeway extension from Burns Beach Road to Romeo Road (as a Primary Regional Road)
 - Neerabup Road between Wanneroo Road and Mitchell Freeway ("Other Regional Road")
 - Hester Avenue between the Mitchell Freeway and Wanneroo Road ("Other Regional Road")

North West Corridor Structure Plan Roads

- A connection of Wattle Roads East and West to create an "Other Regional Road", between Wanneroo Road and Pinjar Road (forecast to carry 5,000 vpd).
- A north-south link on the western boundary of the Neerabup Industrial Area.

- An east-west link through the centre of the Neerabup Industrial Area, linking the previous proposal and Pinjar Road.
- A north-south road through the centre of the Neerabup Industrial Area between Flynn Drive and (ultimately) linking into Wanneroo Road just south of Pipidinny Road (forecast to carry 15,000 vpd).

These last four proposals are viewed as probable long term roads in the North-West Corridor Structure Plan.

The suitability of the above roads was outlined in the traffic report for the FDIADSP. These reasons are still valid and discussed further below:

Neaves Road - Burns Beach Road

Provides an important east-west strategic link between the future Mitchell Freeway and future development in the North-East Corridor.

Neerabup North-South Road

Provides a district distributor road connection at an appropriate offset from and parallel to Wanneroo Road for residential and industrial traffic accessing Joondalup (an important commercial and employment centre) via Burns Beach Road and destinations to the south-east via Wanneroo Road, Hepburn Avenue and the Tonkin Highway.

Wattle Avenue

Wattle Avenue west forms a district distributor road link facilitating movements between the northern part of the industrial area and the Mitchell Freeway via the proposed east-west link (Hester Avenue). It is intended to extend Wattle Avenue West to the north along the edge of the Bush Forever site to then ultimately link with Orchid Road or Wattle Avenue East. This will primarily facilitate access to developments north of Wattle Avenue. As previously mentioned in section 4.2.1, Mather Drive and Road A will provide alternate access to the Barbagallo Raceway which is of considerable concern to the Western Australian Sporting Car Club.

Neerabup Road - Flynn Drive Connection

This link is considered important as the main access link from the industrial area to the Mitchell Freeway. It also provides a link to the east and to the Great Northern Highway via Pinjar Road and Neaves Road.

4.3 Geology

Existing geological knowledge of the Neerabup Industrial Area (NIA) is limited to surface geological mapping by the Geological Survey of Western Australia (Yanchep and Muchea 1:50,000 Environmental Geological Series). In addition, bore logs provided by the Water and Rivers Commission for the Flynn Drive Structure Plan identified one borehole in the southern portion of the study area and two at the northern edge. At the southern bore, karstic limestone was encountered at heights of 20-70 metres AHD and depths of 0-65 metres below ground level. Karsts were recorded at up to 35 metres above the water table.

The geology map divides the area into two types of Tamala limestone:

- Ls1 A light yellowish brown, fine to coarse grained, sub-angular to well-rounded quartz, trace of feldspar, shell debris, variably lithified, surface kankar, of Aeolian origin.
- Ls2 As Ls1, abundant karstic phenomena including caves, dolines, swallows.

The Tamala limestone is a sandy limestone deposited in the Pleistocene and of Aeolian origin. It was probably laid down in dunes and resolution of shell fragments caused it to become variably cemented. Generally the surface above the Tamala limestone is characterised by a deeply leached sand from which the carbonate has been removed often to be deposited on the underlying limestone surface as a hard calcrete layer. In some cases the solution of carbonate may continue to depth creating karstic cavities particularly where the limestone has more carbonate cement. This effect is unpredictable.

The division in the mapping appears arbitrary and based purely on surface expression. It is unlikely that there are separate units with one liable to developing karst and one without karst features. The Tamala limestone is likely to develop karstic cavities and the most likely areas for these to have developed are where there are other cavities/caves in the local area.

Therefore, the presence of caves in the vicinity of the NIA is considered to indicate that there may be further undiscovered caves within the study area. Some 15 kilometres to the north extensive caves are developed into similar rocks in the Yanchep National Park. In the Margaret River area caves again in similar material have remained undiscovered until relatively recent times.

4.4 Surface Hydrology/Wetlands

There are two wetlands mapped within the vicinity of the NIA, Lake Neerabup and Lake Pinjar. Both are protected by the *Environmental Protection (Swan Coastal Plain Lakes) Policy 1992* refer **Figure 4.1**. The EPP protects these wetlands from mining, drainage, effluent disposal and filling (SMEC 1999). Both of these lakes have multiple management categories prescribed by the Water and Rivers Commission (WRC) and each category will cover different areas around each lake.

Lake Pinjar is located to the east of the NIA with only a small area contacting the boundary of the Structure Plan area. The open water of the lake and its adjacent bushland cover an area of approximately 735 ha. The WRC management objectives include some areas that have been set aside for Conservation and others for Multiple Use. The Australian Heritage Commission lists Lake Pinjar as an Indicative Place.

Neerabup Lake, the smaller of the two, is situated along the western boundary of the site. It covers an area of 242 ha, bushland inclusive. The WRC management objectives are for Conservation and also for Resource Enhancement, that is, the restoration and enhancement of natural attributes and functions through maintenance and management.

Previously a 250m buffer zone was recommended between the eastern shore of the lake and the NIA (Pawluk & Associates et al, 1995). This buffer zone lies within the existing MRS alignment, which was confirmed as adequate for the protection of Lake Neerabup and its representative habitats (SMEC, 1999).

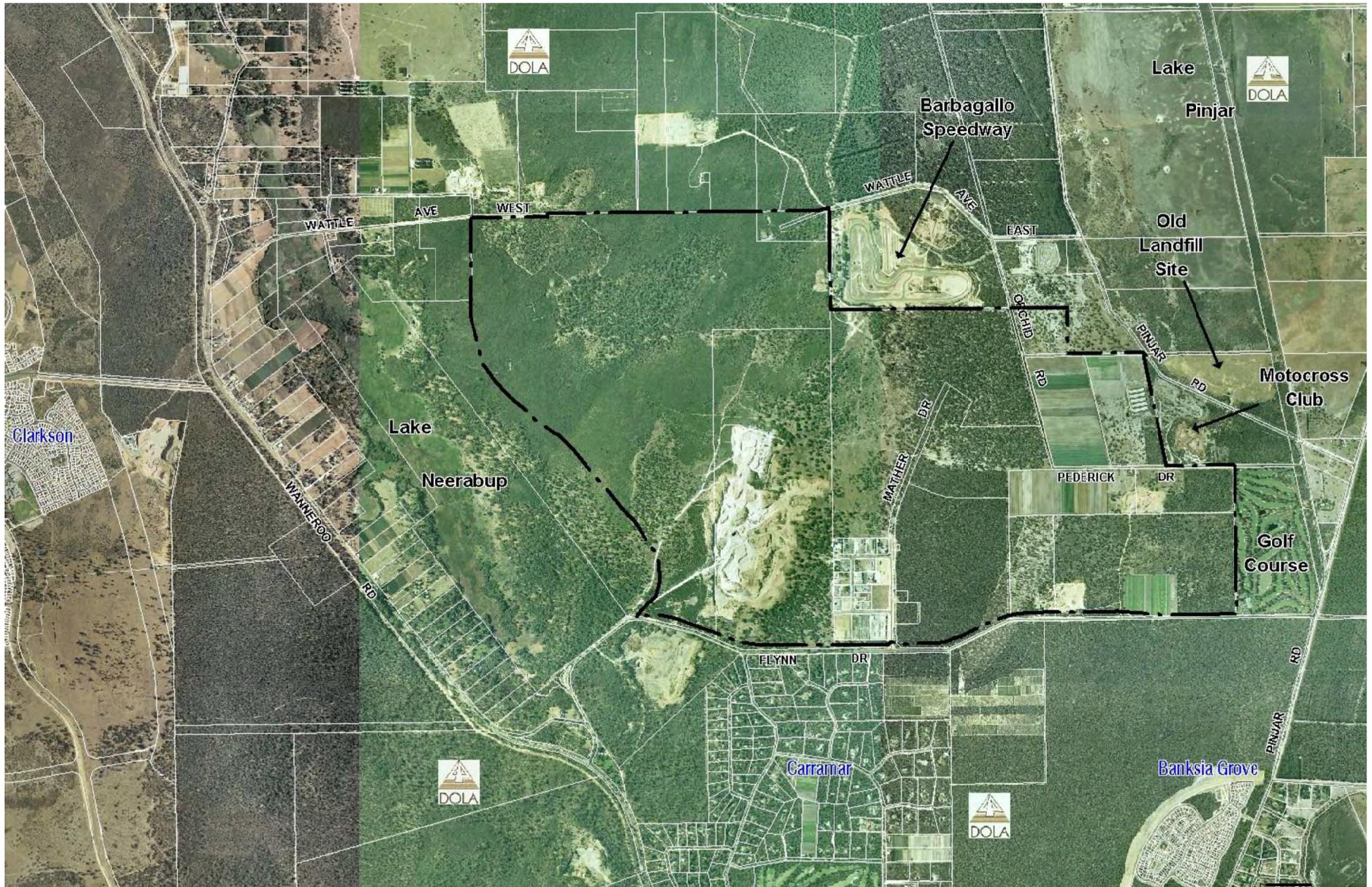
4.5 Hydrogeology

It is estimated that there is a strong westerly flow of groundwater beneath the NIA, due to the high transmissivity of the limestone soils and also the relatively steep gradient in Average Annual Maximum Groundwater Levels (AAMGLs) (Planwest et al., 1999).

The NIA falls within a proposed Priority 3 Protection Area of the Perth Underground Water Pollution Control Area (refer **Figure 4.2**). General and light industry are compatible land uses within Priority 3 Protection Areas, however heavy industry and power stations are not (Planwest et al., 1999). Under the Priority 3 requirements, the NIA would need to be provided with deep sewerage (Planwest et al., 1999). To the north-east and east of the NIA are existing Priority 1 and 2 Source Protection Areas, which prohibit any industrial land uses.

The Draft Gnangara Land Use and Management Strategy (1999) proposes a change in the boundaries of the Priority 1 Source Protection Area, however this does not affect the proposed Priority 3 status of the NIA.

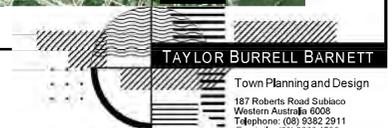
There is an abandoned putrescible landfill site located immediately east of Pinjar Road (refer **Figure 5.1**) below which a plume of leachate is spreading west towards the NIA (City of Wanneroo, pers. comm.). The landfill was previously operated by the City of Wanneroo and has been closed since the mid-eighties. Sampling of groundwater quality has been undertaken, and it is estimated that the leachate plume may extend as far west as Orchid Road (City of Wanneroo, pers. comm.). The presence of the plume should not prevent most industries from operating within the NIA, as the estate should be serviced with reticulated water, however it does present an issue of future liability for the future industries. This liability will need to be fully disclosed between the industries, landowners/developers and the City of Wanneroo.



NEERABUP INDUSTRIAL AREA
AERIAL PHOTOGRAPH



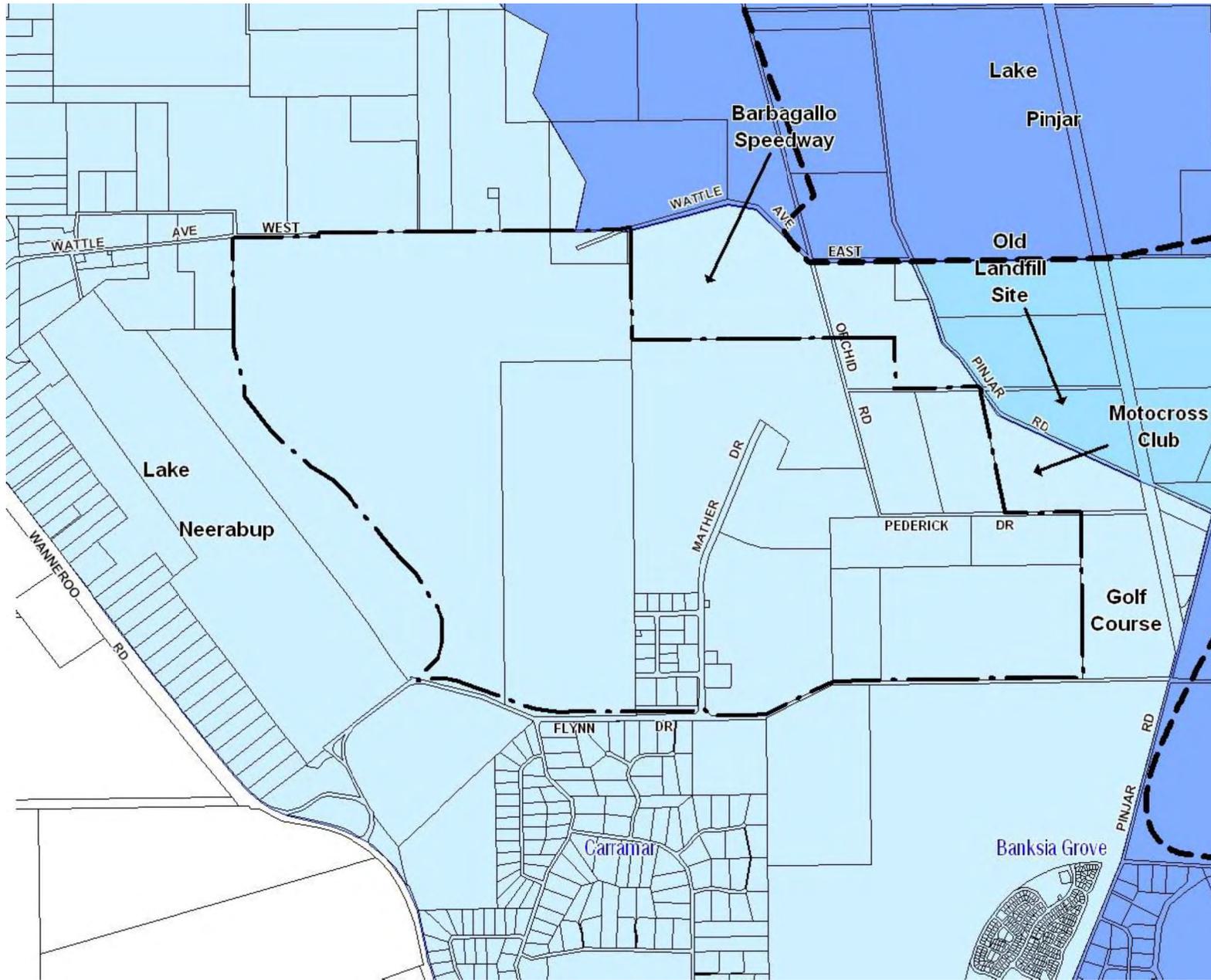
FIGURE 4.1



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LEGEND

-  STRUCTURE PLAN BOUNDARY
-  CADASTRAL BOUNDARY
-  PROPOSED PRIORITY 1 BOUNDARY

GROUNDWATER

-  PRIORITY 1
-  PRIORITY 2
-  PRIORITY 3

**NEERABUP INDUSTRIAL AREA
GROUNDWATER PRIORITY SOURCE PROTECTION AREAS**



FIGURE 4.2



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5.0 OPPORTUNITIES & CONSTRAINTS

The site is characterised by a number of issues which are relevant in the Structure Plan formulation process and may ultimately influence the design outcome. The following is a summary of the key issues, many of which are also graphically depicted in **Figure 5.1**.

5.1 Air Quality

Air quality constraints are related to the potential impacts of industry on nearby areas in terms of emissions from stacks, odours and also the generation of dust. Given the typical industries to be established within the NIA, emissions should not be an issue (this is more related to heavy industry). Similarly, most general and light industry should not create odours. The soils in the area are typically medium to coarse grained sands, thus the potential for dust generation is low (Pawluk & Associates *et al.*, 1995). Dust may still be generated from on-site stockpiles, unpaved access roads, and also stack emissions.

In the event that an industry is proposed that is likely to generate potential impacts due to emissions, modelling of the emissions or odours would occur as part of the approvals process, and an acceptable placement of the particular industry determined from the results. Emission reduction measures may also be required to satisfy air quality standards.

5.2 Noise

5.2.1 Noise From Barbagallo Raceway

The issue of potential noise impact from the Barbagallo Raceway has been the subject of ongoing consultation with the Department of Environmental Protection (DEP). Under the Environmental Protection (Noise) Regulations 1997, noise levels considered tolerable for industrial land uses should not exceed 65 dB(A). DEP advice indicated that acoustic modelling based on a major raceway event (Australian Touring Car Championships) placed the 65 dB(A) noise contour at approximately 1500m from the Raceway Boundary. The most recent written advice from the DEP in this respect is contained in **Appendix 5**.

In summary, the DEP acknowledges that most land uses proposed to be accommodated within the NIA will not be adversely affected by noise from the Barbagallo Raceway, primarily for two reasons:

- i) General Industrial uses are not considered to be noise sensitive premises; and
- ii) The main high noise generating events at the raceway occur on occasional weekends, when most of the industrial and associated uses are closed.

The DEP advice listed some land uses which may be regarded as noise sensitive and therefore possibly not suitable within 1,500 metres of the raceway; those uses included auction rooms, landscape supplies, vehicle sales/hire, convenience stores, service station etc. These uses are, in any case, generally considered inappropriate within the General Industrial area, however they may be suitable within the Service Industrial areas or the Business core. Parts of these precincts are proposed to be located closer than 1,500 metres from the raceway.

If the DEP advice were strictly applied, therefore, there are some uses within the Service Industrial, and Business precincts which could be considered unsuitable within 1,500 metres of the raceway, if such uses operated on the weekends.

Recent enquiries with the management of the Barbagallo Raceway have indicated that, apart from the Australian Touring Car Championship, the other events likely to generate high noise levels are club meetings which are generally held on one Sunday per month, with a total of eight events per year.

Based on this advice from the Raceway, it appears that the potential for conflict between the raceway and possible noise sensitive premises within the NIA is likely to be primarily confined to Sundays, and only on nine occasions per year. Whilst some businesses may be operational at sometime during the weekend, few would be open on Sundays, and therefore the frequency of potential conflict is minimal.

In summary, it is considered that a 1,500m noise contour may be overly conservative. Furthermore, given that the potential impact would generally be confined to eight Sundays per year the possibility of a noise conflict occurring at any distance is likely to be negligible.

OPEN CAVE WITH APPARENT ABORIGINAL HERITAGE SIGNIFICANCE

BUSH FOREVER SITE 293 IDENTIFIED TO CREATE LINK TO NEERABUP NATIONAL PARK

EXISTING PARKS & RECREATION RESERVE - NEERABUP LAKE ENVIRONS. CONSIDER LAND USE INTERFACE

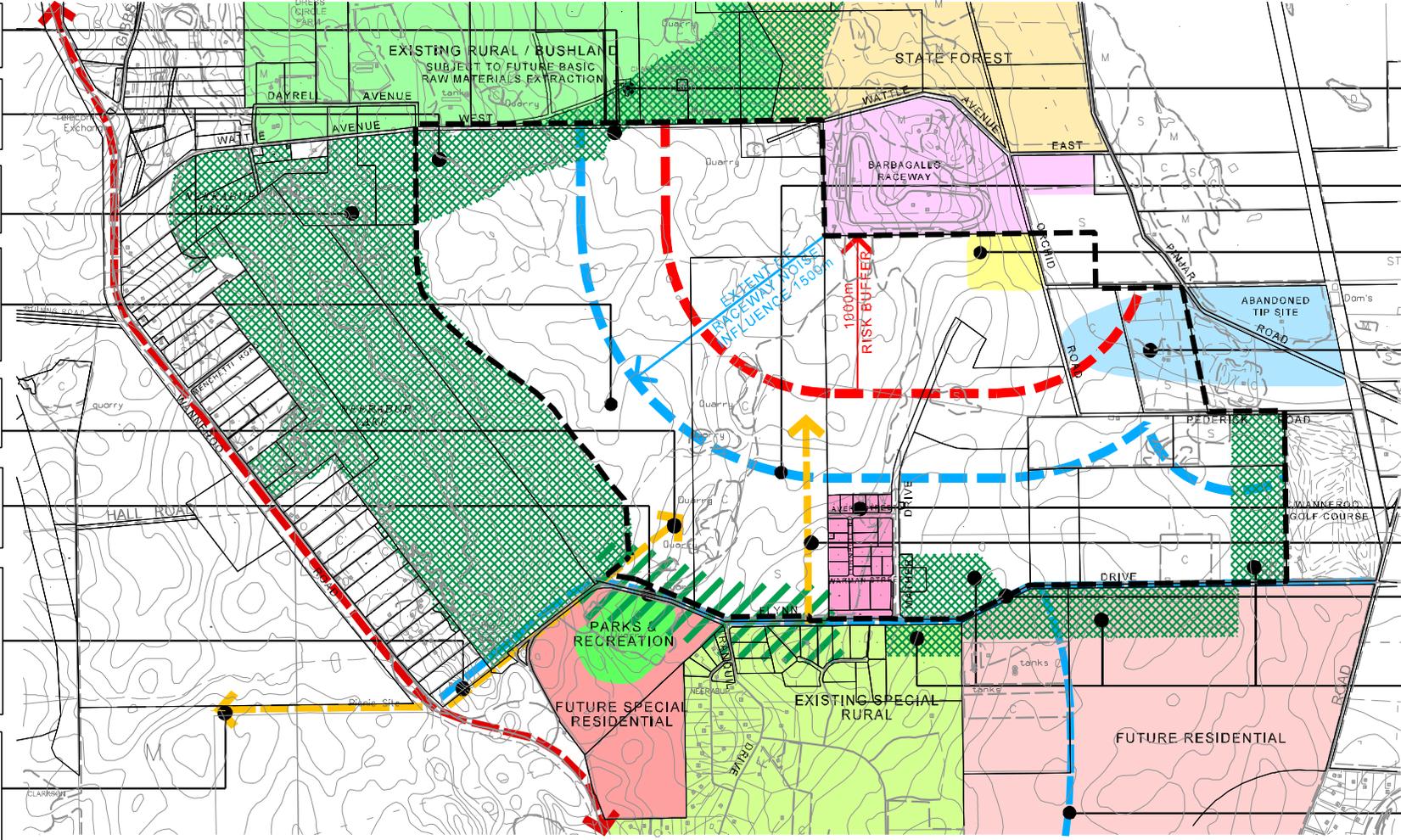
POSSIBLE PRESENCE OF LIMESTONE KARSTS WITH RARE STYGOFAUNA MAY NECESSITATE DETAILED SURVEY AND POTENTIALLY CURTAIL SOME EXTRACTION / DEVELOPMENT OPPORTUNITIES, IF FOUND

POTENTIAL TO CREATE MORE DIRECT CARRIAGE FROM ESTATE GATEWAY TO THE HEART OF THE INDUSTRIAL ESTATE

NEED TO CONSIDER SENSITIVITY OF LAND USE INTERFACE WITH ADJACENT SPECIAL RURAL & SPECIAL RESIDENTIAL USES

RECOMMEND REALIGNMENT OF FLYNN DRIVE
- IMPROVED ROAD GEOMETRY FOR INDUSTRIAL TRAFFIC
- OPPORTUNITY TO DEVELOP A PROMINENT GATEWAY - GIVING THE INDUSTRIAL ESTATE A WELL EXPOSED CORPORATE ADDRESS

POSSIBLE FUTURE LINK TO FREEWAY AND RAIL SYSTEM VIA EXTENSION OF NEERABUP ROAD (PROPOSAL INCLUDED IN CURRENT CLARKSON-BUTLER OMNIBUS AMENDMENT NO. 982/33)



EXTENSION OF WATTLE AVENUE WEST - EXTENSION NORTH TO SERVICE NOWRUP AND REDUCE IMPACT ON THE BUSH FOREVER SITE SUBJECT TO FURTHER INVESTIGATION

RACEWAY NOISE INFLUENCE AREA - ONLY EFFECTIVE ON OCCASIONAL WEEKENDS (MOSTLY SUNDAYS) NOT EXPECTED TO CAUSE ANY ADVERSE IMPACT ON INDUSTRIAL AND ASSOCIATED LAND USES

PUBLIC PURPOSE PRESERVATION NO LONGER REQUIRED BY WATER CORPORATION

LEACHATE PLUME FROM OLD TIP SITE, POSSIBLE NEED FOR DISCLOSURE TO PURCHASERS

EXISTING (UNSERVICED) INDUSTRIAL AREA - MATHER DRIVE PROVIDES ESTATE ENTRANCE. EXISTING USE & DEVELOPMENT MAKE THIS INAPPROPRIATE FOR USE AS HIGH QUALITY ENTRANCE TO A MAJOR NEW INDUSTRIAL ESTATE

OPPORTUNITY TO ESTABLISH NEW ENTRY, AND KEY NORTH-SOUTH SPINE.

FLYNN DRIVE CLASSIFIED AS OTHER REGIONAL ROAD UNDER MRS

BUSH FOREVER SITES 295 & 494 - COUNCIL HAS FORMALLY OBJECTED TO SITE ADJACENT MATHER DRIVE - LAND SOUTH & EAST OFFER BUFFER AGAINST FUTURE RESIDENTIAL AND GOLF COURSE USES

FUTURE DISTRICT DISTRIBUTOR THROUGH BANKSIA GROVE

NEERABUP INDUSTRIAL AREA OPPORTUNITIES AND CONSTRAINTS



FIGURE 5.1

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More recent discussion with the DEP indicates that the Department agrees that even noise sensitive uses are likely to be permissible at a closer distance from the Raceway (eg, within the Service Industrial and Business Precincts) in view of the special factors noted above.

If this is accepted, it would also give continued flexibility for the raceway to occasionally exceed the 65 dB(A) noise limit specified by the DEP.

5.2.2 Noise from NIA Industries

Industrial noise has the potential to cause an adverse impact on residential amenity in circumstances where industrial and residential developments are placed in close proximity. It is therefore important to ensure that this issue is properly addressed through the planning process so that the development potential of strategic industrial areas such as Neerabup is not constrained by urban development. The onus of protection should, in some part, fall upon the urban developer to minimise potential land use conflicts in the future.

Given the strategic importance of the NIA, suitable separation needs to be maintained between the future northward expansion of the Neerabup Urban Cell (Banksia Grove) and the Industrial Development zone. This would be partially achieved through the retention of Bush Forever site 295 which would preserve a buffer of approximately 300 metres. In addition, consideration should be given to the use of memorials on titles notifying residential purchasers of their proximity to a strategic industrial area.

There is also merit in exploring the potential of applying for a Regional Factor under the Environmental Protection (Noise) Regulations 1997, following the precedent set by the Kemerton Industrial Park south of Perth. The Kemerton Industrial Park, in accordance with Schedule 3 clause (5) of the Regulations, has a Regional Factor assigned that allows noise emissions to be 5 dB(A) above the assigned noise levels under the Regulations.

5.3 Risk

Certain industries may pose a health or safety risk to the public, and the DEP has advised that this is of particular concern considering the numbers of people attending the Barbagallo Raceway (DEP, 1999). The DEP has advised that industries which pose an off-site risk (eg through storage of dangerous or hazardous goods) should be established at least 1,000m away from the raceway (DEP, 1999).

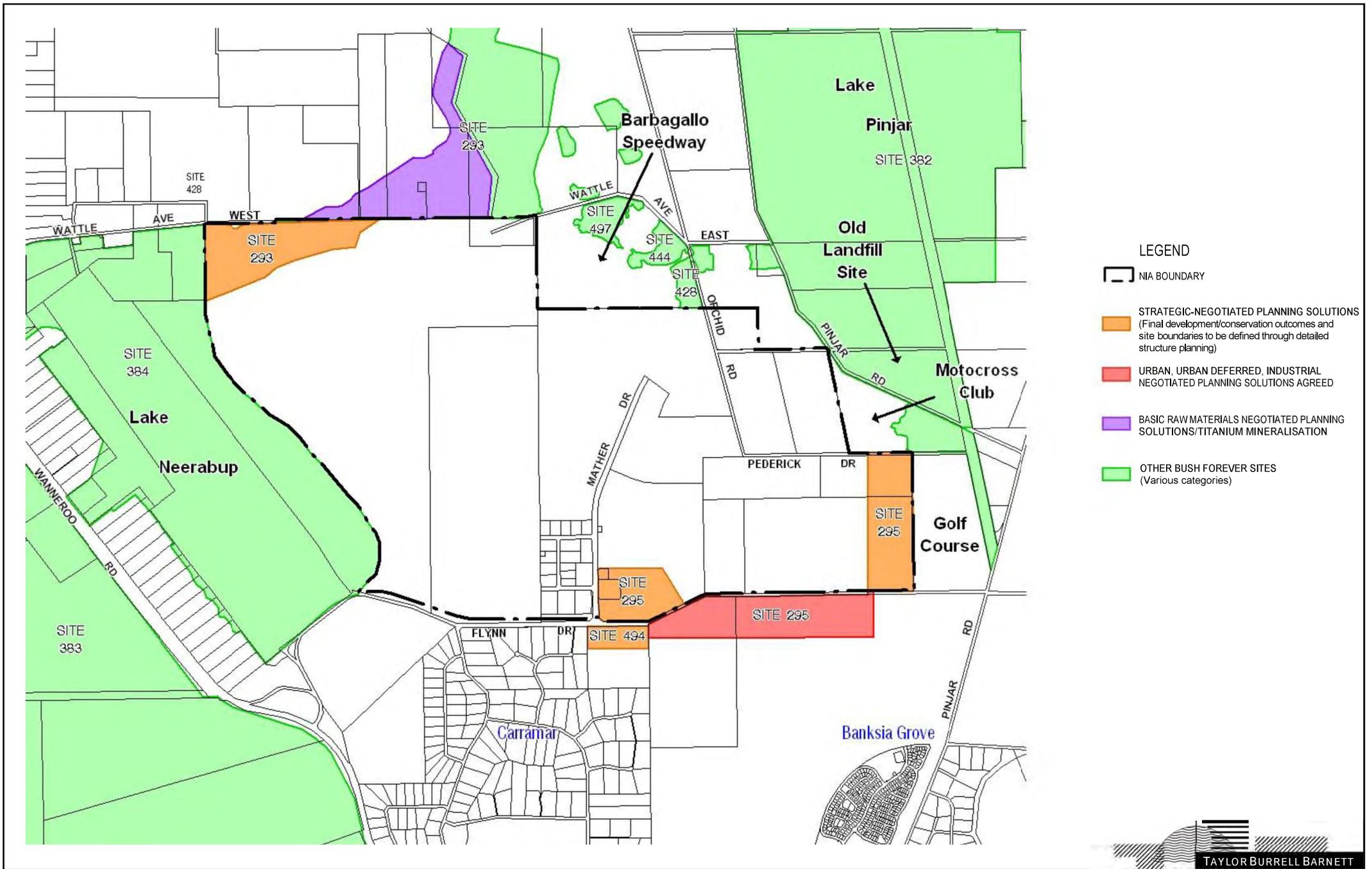
This is not considered to present any significant constraint as industries which pose such levels of off-site risk would, in any case, typically be unacceptable in a general industrial estate.

5.4 Flora, Fauna and Vegetation

5.4.1 Bush Forever Sites

In response to advice from the Minister for the Environment, the EPA has endorsed the Bush Forever strategy as a way forward for the Government to preserve regionally significant native vegetation within the Swan Coastal Plain area of the Perth Metropolitan Region. Two Bush Forever sites have portions that lie within the proposed NIA (**Figure 5.2**) site 293 in the north-west corner, and site 295 along the eastern and southern boundaries. The combined area of the two sites within the NIA is 89.82 hectares, or approximately 9% of the total area of the NIA. Bush Forever suggests that both sites represent significant conservation values in terms of biological diversity, ecological patterns, processes or communities, and are also representative of rare vegetation complexes.

- Site 293 in particular is in conflict with the linking of the east and west parts of Wattle Avenue, which is of strategic importance not only to the NIA but also to provide a vital alternative access route for the Barbagallo Raceway. Only 14.7% of this Bush Forever site's area (39.6 hectares) lies within the NIA. The linking of Wattle Avenue East and West, however, will need to recognise the site's function as a corridor between Lake Neerabup (site 384), a threatened flora community located north of the NIA, and State Forest areas located north-east of the NIA (Planwest et al., 1999; SMEC, 1999). This may be achieved through sensitive road design, including grade separated fauna links.



NEERABUP INDUSTRIAL AREA
 BUSH FOREVER SITES

FIGURE 5.2

- Site 295 includes areas identified as habitat for the rare bee *Hylaeus globuliferus* (see **section 5.4.3** below). 42.5% of this site's area (50.2 hectares) lies within the NIA.

Both of the sites are identified by Bush Forever as containing areas intended for development, either through zoning or leases. Bush Forever recommends that conservation of the two sites be encouraged through consultation with the landowners.

In addition to sites 293 and 295, there are a number of Bush Forever sites adjacent to or near the NIA:

- i) Site 384, comprising Lake Neerabup and the bushland immediately west of the NIA, which connects to site 293;
- ii) Site 382, comprising Lake Pinjar and Site 494 West Flynn Drive Bushland, which connects to site 295; and
- iii) Sites 428, 444, 457 and 455, comprising remnant bushland in the vicinity of the Barbagallo Raceway.

5.4.2 Rare flora

Searches of the Department of Conservation and Land Management (CALM) Rare and Priority Flora Database and the WA Herbarium Specimen Database found no listing of declared rare flora within the NIA (Pawluk & Associates *et al.*, 1995).

5.4.3 Rare Fauna and Habitat

There are several issues relating to rare fauna:

- There is the potential for communities of troglobitic fauna to be present within the cave system in the vicinity of the NIA. This includes the open caves immediately west of the NIA, as well as possible subterranean areas below the NIA itself. Troglobitic fauna have been found within limestone caves in Yanchep, and will likely be assigned a high conservation value by the EPA (Planwest *et al.*, 1999; SMEC, 1999). Fauna surveys of the caves and groundwater are recommended at the subdivision and development stage (Planwest *et al.*, 1999) and management of groundwater levels is a critical issue in

maintaining the conservation values of any existing communities in the area (SMEC, 1999), however threatened ecological communities may exist within the NIA, and flora and vegetation surveys are recommended prior to development.

- The population of the rare bee *Hylaeus globuliferus* identified within the NIA is one of twelve populations known to exist (CALM, pers. comm.). The habitat of the bee, *Adenanthos cygnorum* (Woolly bush), appears to be restricted mainly to the area between Mather Drive, Flynn Drive, Wanneroo Golf Club and Pederick St to the north (Pawluk & Associates *et al.*, 1999). Part of the habitat area is covered by Bush Forever site 295. Conservation of site 295 enables appropriate protection for the bee.
- There are five threatened and priority fauna species recorded generally in the Neerabup and Nowergup area (Planwest *et al.* 1999). According to CALM, these species and their conservation status are:

Schedule 1 (Fauna which is Rare or likely to become Extinct)

- Carnaby's Cockatoo (*Calyptorhynchus latirostris*)

Schedule 4 (Fauna which is Otherwise Specially Protected)

- Peregrine Falcon (*Falco peregrinus*)
- Carpet Python (*Morelia spilota imbricata*)

Priority Taxa

- Quenda or Southern Brown Bandicoot (*Isodon obesulus fusciventer*) P4
- Bee (*Hylaeus globuliferus*) P3

5.4.4 Dieback Prevention

During the public advertising of the Structure Plan CALM submitted that a Dieback Hygiene Plan should be prepared; Council supported this submission and resolved that an appropriate provision should be included in Part 1 of the Structure Plan requiring this work to be undertaken prior to subdivision and/or development. Discussions with the landowners in September 2004 indicated that they will prepare a Dieback hygiene Plan to suit either their extraction objectives or their development objectives prior to any activity on the individual sites.

5.4.5 Implications for Structure Planning

Where land is earmarked for industrial development, Bush Forever will seek to enter into Strategic Negotiated Planning Solutions (NPS) with landowners to achieve a balance between the needs of conservation and legitimate development expectations by acknowledging the full range of social and economic values attached to the land. Strategic NPS promote the protection of Bush Forever sites (in their entirety where possible) from proposals that would result in the direct loss of bushland through statutory planning and environmental approval processes.

Within the NIA, Bush Forever sites 293 and 295 are currently recommended for Strategic NPS by the Department for Planning and Infrastructure. The implementation status of these sites is '**To be determined**', which requires further discussion and liaison between the affected landowners and State Government to establish the desired protection approach/mechanism to be adopted to secure the Bush Forever objectives for the defined sites. This may involve the development of planning and design solutions at detailed design stage, to achieve the core conservation values of the Bush Forever site, while still allowing some development to proceed.

As summarised in Section 5.4.3, there are five priority and threatened fauna species that reside within the NIA boundary and migrate to outer areas. These species need to be considered in the holistic planning and management strategy associated with Bush Forever sites 293 and 295 and the native vegetation within the boundary of NIA. The most significant issue associated with this proposal, which may affect the long-term survival of faunal populations in the area will be the fragmentation of ecosystems as a result of clearing native vegetation. Factors that need to be considered include:

- Implementation of bushland sensitive design techniques within Bush Forever sites to reduce fragmentation and maintain contiguous linkages between vegetated areas; and
- Liaison between individual landowners and CALM as to their development time frames, so that, if priority or threatened species are found to exist in a development site, there is ample opportunity to develop appropriate management and/or preservation strategies, prior to the clearing of native vegetation.

Given the existing conservation reserves in the region and Bush Forever strategy, these factors are considered to be manageable in the context of industrial development in the NIA, provided liaison is staged effectively between landowners and authorities prior to development.

5.5 Karstic Features

Karstic geology is extremely complex, difficult if not impossible to model and thus prediction of the location of cavities is not an exact process. In locating karst cavities in other areas detailed drilling even at 5 metres centres has proved to be expensive and of limited use. One hole may intersect a large cavity whereas the next may be in solid rock.

Most geophysical methods will only locate cavities when they are large and/or close to the surface. Resistivity, electromagnetic surveys, radar and/or micro-gravity have all been used with some success in location of cavities. However, they all work better where the cavity is in a more uniform medium than karstic limestone. This is because the limestone has varying resistivity and density changes that may be greater than that provided by a void.

The use of these test processes to locate large near surface cavities will provide some degree of safety. From such studies combined with detailed mapping and test drilling an estimation of the likely extent of cavities could be established and this testing should be conducted in conjunction with building design.

This information could then be used in building design to compensate for likely extent of cavities by over-engineering structures. Thus if the likely extent of cavities is estimated to be 10% then 10% of the foundations should be considered expendable. The best approach is a best guess.

If karstic formations are identified, certain issues may arise as a result. The porous nature of soils associated with karst topography and their direct connection to groundwater through cavities and solution channels provides a susceptibility to groundwater contamination. Certain industry activities that produce potential contaminants would be subject to normal environmental approvals and management controls. Proposals for such industries would warrant detailed geotechnical investigation to demonstrate site suitability.

A further downstream monitor of groundwater quality could also be undertaken, on an ongoing basis, by the Water and Rivers Commission through the installation by the Commission of monitoring bores within the Parks and Recreation reserve between Lake Neerabup and the industrial area.

In addition, the karst topography (caves in particular) located in and around the NIA may be of conservation significance due to the presence of rare fauna and to the recreational, ethnographic and palaeontological attributes they might possess.

5.6 Summary of Spatial Constraints

5.6.1 Buffer zones

The following buffer zones are of relevance to the NIA:

- 250 m buffer from eastern shores of Lake Neerabup, which is already provided by the MRS zoning and Bush Forever site 384; and
- 1,000 m risk buffer between the Barbagallo Raceway and industries with the potential for off-site risk impacts.

With regard to the impacts of specific industries on residential areas, the DEP recommends buffer distances based upon the pollution footprint of the industry. The DEP are currently reviewing their industrial buffer distances, and plan to release a new guidance document. The current recommended buffer distances are in **Table 5.1**.

Table 5.1: Industrial Buffer Distances (DEP, 1997)

Type of Industry	Buffer Distance (m)
Abrasive blasting works	Case by case
Artificial textiles & fibres	200
Automotive spray painting	150
Bakeries (night time)	500
(day time)	100
Carpet backing	500
Timber treatment plants	Case by case
Dry cleaners	100
Fibreglass works (LSE resins)	200
(non-LSE resins)	500
Joinery & wood working	100-200
Metal fabrication	500
Metal finishing	500
Motor body works/panel beaters	200
Other food or beverage products	Case by case
Paints & inks (blending & mixing)	300
(manufacture)	1,000
Pharmaceutical production	300-1,000
Quarry (non blasting)	500
Recycling waste facility	200
Rubber products	500
Service station (normal hours)	50
(24 hours)	200
Smallgoods (not abattoir or rendering)	100
Synthetic resins & rubber - other	1,000
Textiles (dyeing)	200
(treatment/production)	up to 500
Transport vehicles depot	200
Used tyres storage	1,000
Wreckers	300

5.6.2 Other zones

The following policy zones are of relevance to the NIA:

- Bush Forever sites 293 and 295;
- Groundwater Pollution Protection Area – Priority 3;
- The western boundaries of the Gngangara Park Concept Plan (CALM, May 1999) are in the vicinity of the eastern boundaries of the NIA. According to the GPCP, a park entry statement and recreation site (significant pine plot) is planned in the vicinity of the intersection of Neaves and Pinjar Roads. The Park boundaries do not clash with those of the NIA, and given the presence of other land uses between the two areas (eg Golf course, old landfill, raceway), there should be minimal constraint, if any, to the NIA. Consultation should still be undertaken with CALM, however, to resolve any outstanding issues regarding the Park and the NIA;
- There exists a zone of groundwater contamination approximately 1,000m long extending from the abandoned landfill east of Pinjar Road; and
- There exists an area of noise influence around the Barbagallo Raceway as shown on **Figure 5.1** (refer Section 5.2.1).

5.7 Key Road Linkages

5.7.1 Connections to Freeway

The current road connections to the Mitchell Freeway are indirect. Access is via Wanneroo Road and either Joondalup Drive to the Hodges Drive interchange or via the Ocean Reef Road interchange further south. The Mitchell Freeway currently ends at Hodges Drive.

A direct link to the proposed freeway extension at Neerabup Road (from a westerly extension of Flynn Drive) has been proposed in the North West Corridor Structure Plan, and was the subject of an MRS Amendment (No. 992/33).

This connection would be highly beneficial to the NIA in terms of the substantial improvements in accessibility to regional transportation infrastructure which would result. This is an important consideration given the scale and regional significance of the NIA.

5.7.2 **Wattle Avenue**

Wattle Avenue, to the north of the NIA, is a discontinuous road providing access to Wanneroo Road (Wattle Avenue West) and Pinjar Road (Wattle Avenue East). Wattle Avenue West does not currently serve any major land use. Wattle Avenue East is the main access for the Barbagallo Raceway.

5.8 **Public Purpose Reservation**

There is currently an existing Public Purpose reserve within the study area, reserved for water supply purposes under the provisions of the Metropolitan Region Scheme. This land, which is owned by the City of Wanneroo, is now surplus to requirements and is currently subject to an MRS Amendment to modify the zoning to Industrial (refer Section 3.1).

It is logical that this land now be incorporated into the NIA for industrial development. The City also owns the western portion of Bush Forever site 295; this presents a possible opportunity for Council to negotiate to achieve industrial potential on the Public Purposes site as a trade-off for the loss of the Bush Forever site. It is understood that this will be the subject of more detailed negotiations between the City and the Department for Planning and Infrastructure.

5.9 **Existing Industrial Development**

A small area of existing industrial development is located along the central frontage of the NIA along Flynn Drive at the intersection with Mather Drive. There is the need for the Structure Plan to recognise the existing industrial development in relation to both the extension of Mather Drive and linkages to future road and service infrastructure within the industrial area.

5.10 **Cockburn Cement Land Holding**

Cockburn Cement's land holding (Lot 21), in the western part of the site, contains a total area of 437 ha, of which approximately 300 ha is contained within the Structure Plan area. This represents approximately 35% of the total Structure Plan area. Cockburn Cement's primary objective for this land is to ultimately extract the valuable lime resource, after which they will make the land available for industrial development.

At the time of preparing this Structure Plan, the development intentions of Cockburn Cement, in terms of timeframes and anticipated resource extraction are not known. Cockburn Cement have completed additional site investigations and have determined an optimum final extraction surface which is included in this Structure Plan.

The discussions with Cockburn Cement have enabled the inclusion of Lot 21 in the Structure Plan area and have established a future development pattern encompassing the whole of the area, while allowing Cockburn Cement the greatest flexibility in their future operations.

5.11 **Future Residential Development**

It is important for the Structure Plan to recognise the surrounding land uses, particularly future residential development (Banksia Grove) proposed to be located to the south east of the NIA.

As illustrated within **Figure 5.1** Bush Forever site 295 extends south of Flynn Drive. The retention of this site provides a substantial advantage by forming a buffer of over 300 metres to the future residential development.

Also of relevance is the existing Special Rural and proposed Special Residential areas to the south of Flynn Drive, which will be potentially sensitive to any industrial uses at the interface with the Neerabup Industrial Area boundary.

In particular, the proposed Special Residential area, which carries a subdivision approval, will place approximately 150 Special Residential lots (ranging between 2,000m² and 5,000m² in area) in close proximity to the southern end of the Cockburn Cement land. This will have implications, not only for future industrial land uses, but any interim resource extraction activities.

5.11.1 Other Regional Road Link

The north south road link through the Banksia Grove urban cell, which intersects with Flynn Drive, presents the potential for industrial traffic from the NIA to be attracted to use that route through the heart of the urban cell. It will be important to ensure that the road pattern proposed for the NIA is designed to encourage industrial traffic to use alternative routes to reach the main arterial system.

6.0 RESOURCE EXTRACTION & SITE WORKS

6.1 Basic Raw Materials Policy

The Government of Western Australia through the offices of the DPI and the Department of Minerals and Petroleum Resources (DMPR) has adopted the Basic Raw Materials State Planning Policy No 10 (SPP 10) the aim of which is to preserve resources for future use at reasonable costs.

The policy was refined and upgraded, being gazetted on 28 July 2000. The City of Wanneroo is one of the local government areas included in the policy.

Within the NIA Structure Plan area the two materials are sand and limestone as illustrated in **Figure 2.1**. Limestone can be in cut block or rubble form.

Limestone and sand are not defined as minerals so that the DMPR do not have an extractive licensing function but have an operational safety function.

SPP 10 provides for the issue of extractive industry permits by combination of DPI and the Local Authority and every applicant must submit a management plan for the operation, final form and condition of the land. Control of these issues remains with the Local Authority and in this instance Council will also be the administrators of the Structure Plan.

Within SPP 10, WAPC Plan No. 1 5038 Sheet 3 identifies the bulk of the Structure Plan area and the area extending northwards in Nowergup as Resource Area.

6.2 Resource Extraction Objectives

6.2.1 Compliance with Policy

The existing extractive operations and the proposed final levels following extraction, provide for resource extraction complying with the State Government Policy, SPP10.

6.2.2 Forward Planning

The final surface contours shown on **Figure 6.1** will guide the forward planning of the extractive industry operators and the regulatory authorities in issuing licences for land within the Structure Plan area.

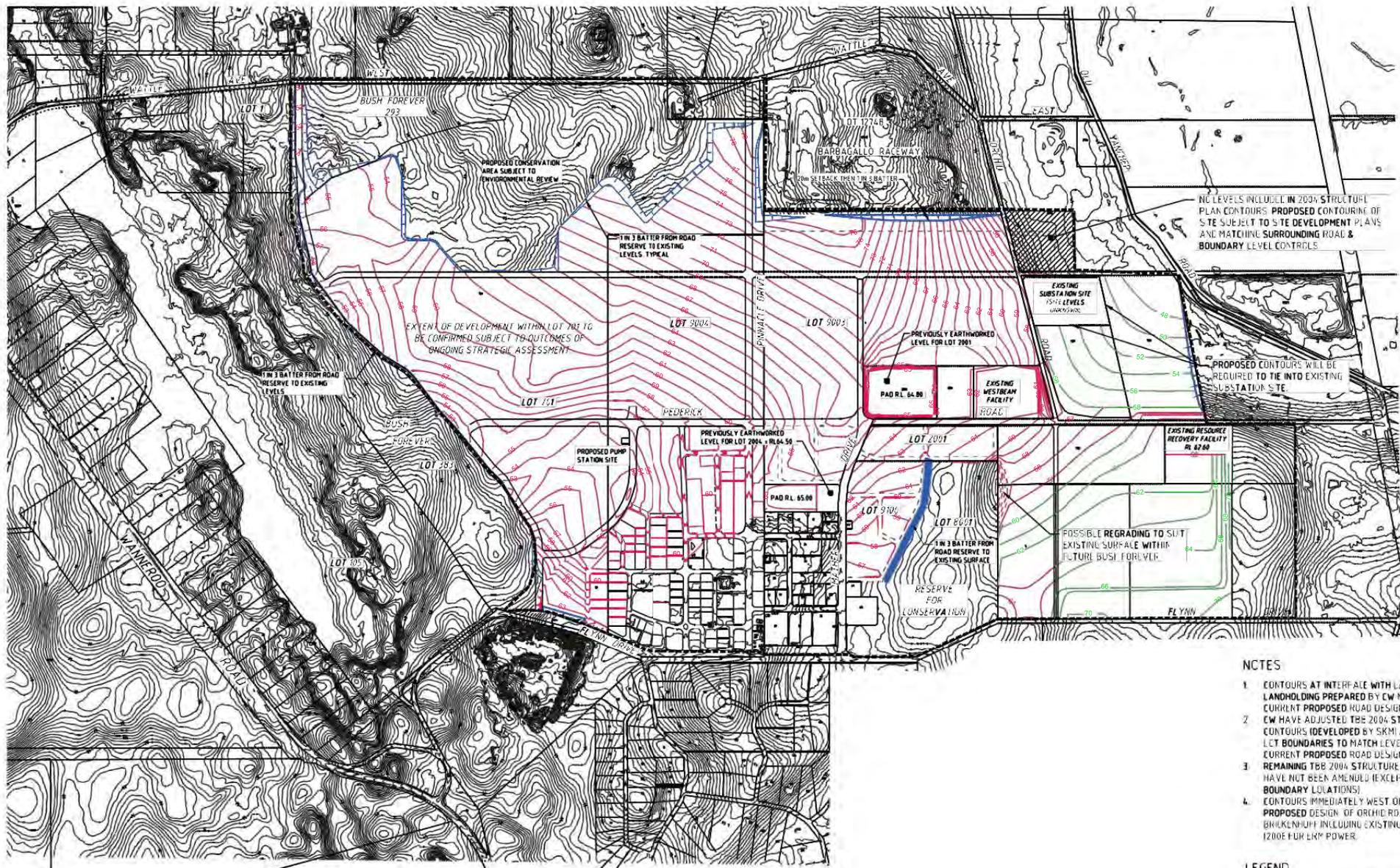
An operator may consider that alternative levels, or greater extraction and backfilling may provide an economic return and seek a variance to the levels shown. Any proposed variance should be considered on its merits and whether the resulting surface achieves these proposed guidelines in a manner which is compatible with the overall final surface contours adopted in the Structure Plan. Any significant variations would be required to be undertaken as a modification to the Structure Plan.

6.2.3 Liaison Across Land Ownership Boundaries

A significant issue is the possible extraction by one landowner to levels that create a discontinuity of the final surface across a common boundary. This could arise from differing rates for extraction and development of adjoining landowners. The finished levels shown on **Figure 6.1** form a basis for resource extraction and should only be varied where later changes in landowners planning require a review of the levels.

6.2.4 Final Surface Levels

The proposed final levels have been designed with the objective of enabling the optimum utilisation of the raw material resources, but ensuring that the final landform provides an optimum environment for efficient industrial development. On this basis, the levels are intended to create a finished surface with grades approaching 1% and ranging up to 2.5%. These grades have been applied to achieve planar surfaces conducive to road design and road drainage and to minimise subsequent development earthworks. Within the Cockburn Cement land the finished surface grades vary and are up to 5% and these will require consideration at land development time with possible batters or retaining walls to achieve site levels suitable for industrial development.



NO LEVELS INCLUDE IN 2004 STRUCTURE PLAN CONTOURS PROPOSED CONTOURING OF SITE SUBJECT TO SITE DEVELOPMENT PLANS AND MATCHING SURROUNDING ROAD & BOUNDARY LEVEL CONTROLS

EXTENT OF DEVELOPMENT WITHIN LOT 701 TO BE CONFIRMED SUBJECT TO OUTCOMES OF ONGOING STRATEGIC ASSESSMENT

PROPOSED CONTOURS WILL BE REQUIRED TO TIE INTO EXISTING SUBSTATION SITE

PREVIOUSLY EARTHWORKED LEVEL FOR LOT 2001

PREVIOUSLY EARTHWORKED LEVEL FOR LOT 2004 - RL 64.50

EXISTING RESOURCE RECOVERY FACILITY RL 62.60

1 IN 3 BATTER FROM ROAD RESERVE TO EXISTING SURFACE

RESERVE FOR LONSEHVA TUSH

POSSIBLE REGRADING TO SUIT EXISTING SURFACE WITHIN FUTURE BUSH FOREVER

NOTES

1. CONTOURS AT INTERFACED WITH LANDCORP & COW LANDHOLDING PREPARED BY CW MATCH EXISTING OR CURRENT PROPOSED ROAD DESIGN LEVELS
2. CW HAVE ADJUSTED THE 2004 STRUCTURE PLAN CONTOURS (DEVELOPED BY SKM) AT ROAD INTERFACED & LOT BOUNDARIES TO MATCH LEVELS ALONG EXISTING & CURRENT PROPOSED ROAD DESIGN LEVELS
3. REMAINING THE 2004 STRUCTURE PLAN CONTOURS HAVE NOT BEEN AMENDED (EXCEPT AT SELECTED BOUNDARY LOCATIONS)
4. CONTOURS IMMEDIATELY WEST OF ORCHID RD TIE INTO PROPOSED DESIGN OF ORCHID ROAD BY PARSON BRINCKERHOFF INCLUDING EXISTING O/F POWERLINES (200E FOR LHM POWER)

LEGEND

- AMENDED 2015 STRUCTURE PLAN CONTOUR
- ORIGINAL 2004 STRUCTURE PLAN CONTOURS
- STRUCTURE PLAN BOUNDARY



REV	DATE	DRN	CKD	APP	AMENDMENT	REV	DATE	DRN	CKD	APP	AMENDMENT
F	07.06.17	JBA			LOT 8001 RESERVE FOR CONSERVATION ADDED	A	07.06.15	JBA	R.P.	R. STAMFORTH	ISSUED FOR INFORMATION
E	16.12.15	JBA	RP	R. STAMFORTH	ROAD LAYOUT REMOVED FOR CLARITY						
D	09.11.15	JBA	RP	R. STAMFORTH	BATTER AMENDED TO COLOUR WHEN PLOTTED						
C	20.08.15	JBA	RES	R. STAMFORTH	CONTOURS REVISED TO SUIT EXISTING SUBSTATION & RESOURCE RECOVERY FACILITY						
B	12.06.15	JV	RP	R. STAMFORTH	CONTOURS REVISED ADJACENT TO LOT 9801 AND EXISTING WESTBEAM FACILITY						

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DESIGNED: JBA

SCALE: 1:10000

PROJECT: LCT 22 FLYNN DRIVE NEERABUP

TITLE: PROPOSED AMENDED STRUCTURE PLAN CONTOURS 2015

WAPS NO.:

DRAWING NO. 5920-00-SK128

REVISION: F

ORIGINAL SIZE A1

The implementation of the final surface levels requires a strategy which provides for the variable extraction operations which will occur under the differing land ownership. The current situation where Cockburn Cement have indicated a preference to independently extract, LandCorp are proceeding with limestone extraction on Lot 22, City of Wanneroo are not extracting and two sand extraction operations are in progress, indicates the diversity of operation which must be accommodated, as far as is practicable given the strategic status of the NIA and the essential requirement to ensure that land is available to industry when needed to meet demand.

Landowners may wish to extract below the final surface contour levels with either refilling to level or proposing new levels. The levels can be influenced by project proposals for individual development sites.

The responsibility to ensure that adjoining landowners activities produce finished levels that will support and encourage integrated industrial development will be exercised by the City of Wanneroo through controls on the extractive industry licenses and permits. The NIA Structure Plan will provide Council with an appropriate framework for exercising that responsibility.

6.3 Current Extractive Operations

Several extractive businesses are currently operating in the Structure Plan area:

- Lot 22 Flynn Drive - basically limestone extraction under a joint venture arrangement.
- Lot 508 Pederick Street - an extraction operation by Rocla Industries.
- Loc 2477 Flynn Drive - a sand extraction operation by Carramar Sands.

These operations are all controlled by Licences issued by the City of Wanneroo. Further applications for licences have been submitted to the City including proposals to refill with inert waste. These were still under consideration at the time of writing this report.

6.4 Maximum Extraction Within Industrial Estate

6.4.1 Finished Levels

The final surface levels have been derived from consideration of the resource extraction objectives, current developments and quarrying and the need to achieve optimum grades for industrial development. The plan also considers a reasonable balance between the rate of extraction and the rate of land development. The final surface levels recommended discourage excessive extraction which may otherwise retard the rate of land release for industrial uses.

The levels have also been designed to facilitate efficient design and construction of stormwater drainage and gravity sewer systems.

Where extractive operations are undertaken, the individual landowners will be responsible for ensuring that finished ground levels, after extraction, comply with the Final Surface Contour Plan. In the absence of extractive operations, compliance with the Final Surface Contour Plan will be achieved through bulk earthworks operations prior to subdivision and/or development for industrial use.

Where it is necessary to fill particular areas to comply with the Final Surface Contour Plan (either following resource extraction or in the course of bulk earthworks) only clean fill material should be used and must be imported in a manner suitable for industrial development in accordance with the requirements of the City of Wanneroo.

The final surface contour levels may be influenced by the projected demand timeframes for General Industrial land as well as the timing of special industrial projects. These may occur out of sequence with the completion of maximum resource extraction. The location of sites for special industrial projects needs to be carefully considered and sited to achieve a balance between optimum extraction and minimum servicing costs with an overall benefit to the industrial area.

A review of the adopted Final Surface Contour Plan may be warranted if resource extraction rates are not enabling the timely supply of industrial land or in the event that land supply is required to be brought forward to support specific industrial proposals of strategic significance.

6.4.2 Site Geology

The Environmental Geology Mapping Series Muchea sheet indicates that limestone material occurs in the western portion of the Structure Plan area with a varying thickness of overlying sand. The eastern portion is generally sand material.

6.4.3 Groundwater

The existing groundwater levels and profile have been taken from the Perth Groundwater Atlas. The water levels fall reasonably evenly from Pinjar Road at RL46 westwards to RL24 near the boundary of Lot 22 then fall sharply to Neerabup Lake with a water surface at approximately RL15. The groundwater contours are generally in a north south direction as part of a reasonably uniform water table falling westwards. The maximum extraction levels have been established to remain above the predicted groundwater levels.

There has been some discussion concerning the rate of extraction of groundwater from the Gngangara Mound and there is some possibility of reversing the groundwater gradient in the eastern part of the Structure Plan area. It is not considered that this will have any adverse impact on the Structure Plan or the finished levels.

6.4.4 Extent of Resource and Timing

A simplified bulk volume calculation, excluding the western portion of Lot 21, estimates that within the Structure Plan area the retrievable resource, based on the proposed finished levels, amounts to 57,700,000 cubic metres.

This is a combined sand and limestone resource volume.

Current extraction rates appear to average between 500,000 and 600,000 cubic metres per annum, which is mostly limestone rubble.

However, this does not account for the future resource extraction intention of Cockburn Cement in Lot 21, which is anticipated to remove in the order of 2,000,000 cubic metres per annum. That material will be used for different purposes and will therefore not impede existing extraction rates elsewhere within the estate. The calculated volume of resource in Lot 21 is approximately 65,000,000 cubic metres. This would mean that complete extraction of Cockburn Cement land would take approximately 32 years. The extraction area over the balance of the Structure Plan area (on current extraction rate) will take approximately 100 years to complete.

It is likely that the limestone resource, having greater value and demand, will be extracted at a more rapid rate than the sand resource leading to land development in two areas, commencing from Flynn Drive. It is also possible that industrial land demand will overtake the extraction of resources, based on an estimated development programme of approximately 25-30 years. Final surface contours in the sand extraction area (eastern sector) have been designed to balance optimisation of the resource with timely availability of industrial land. In the event that the ability to meet industrial land requirements is being impeded by the extraction rates, a review of final surface contours, and therefore ultimate extraction capacity, may be warranted.

6.4.5 Surface Condition

Within the Structure Plan area, it is desirable that, besides achieving finished levels in accordance with the adopted surface contour levels, the completion of extraction leaves the surface in a condition suitable for subdivision, sale and development. Testing and inspection for any Karst presence, if required, should be completed at this stage.

For the industrial area this should comprise of a minimum layer, 1.0 metre thick, of loose re-compacted material. This material could be sand or limestone broken up by ripping where necessary to facilitate development and building.

All surfaces should be compacted to a density suitable for building construction.

6.5 Design Criteria for Establishing Final Levels

Based on the comments and principles discussed in the preceding parts of this section, the following is a summary of the assumptions and criteria used in formulating the plan of recommended extraction levels.

6.5.1 Assumptions

- i) The timing/staging of industrial development will be conducive to enabling the complete extraction of basic raw materials to the levels proposed and given the projections available to date, this will be subject to ongoing monitor and review. Both Cockburn Cement and Landcorp have conducted site drilling to confirm the boundaries of the different materials and to define the extraction levels.
- ii) Final levels should attain an optimum balance between:
 - a) maximising resource extraction potential for individual landowners;
 - b) maintaining an integrated approach to the planning of final levels across the study area; and
 - c) ensuring that the level of resource extraction proposed does not compromise the ultimate industrial development objective.

The desirable gradient for the provision of optimum industrial land is 1% with a maximum acceptable gradient (without benching) of 2.5%.

Benching results in increased development costs and reduced effective land area and should be avoided where possible.

There are no environmental impediments to achieving maximum resource extraction.

6.5.2 Criteria

- i) Desirable finished gradient is 1% with a maximum (without benching) of 2.5%. Some parts of Lot 21 have steeper slopes which will require detailed consideration at subdivision stage.

- ii) Benching (retaining or battering) should only be used where necessary to meet existing base levels, to achieve higher value industrial land, or for other reasons which will add value to, or not compromise, the industrial development objective.
- iii) The design should, as far as possible within the broader strategic planning objectives, meet the known extraction and development aspirations of individual landowners.
- iv) The design should ensure that the land can be efficiently serviced and staged for subdivision, sale and development for industrial use after extraction is complete, having regard for the principal road and land use layout contained in the NIA Structure Plan.
- v) Final surface levels should remain above predicted groundwater levels.

7.0 NEERABUP INDUSTRIAL AREA DESIGN CONCEPT

7.1 Philosophy

The NIA Structure Plan will provide the planning framework necessary to ensure that the development of the area for its ultimate industrial purposes occurs in the most orderly and integrated manner, fulfilling the primary objectives of maximising the yield of General Industrial land, in a high quality estate environment, whilst respecting the prior need to utilise basic raw materials, and recognising the various physical/environmental constraints of its location.

7.2 Objectives

The NIA Structure Plan should:

- Depict a robust design, providing the broadest possible opportunities to accommodate the varying demands for general industrial land in a fluid development environment.
- Produce a three dimensional planning structure having regard for the fact that sand/limestone extraction activities will mean that the framework needs to define landform (vertical) as well as land use and movement (horizontal), and recognising that individual landowners will have varying development aspirations.
- Recognise environment and heritage issues within and around the study area and recommend best management practices.
- Provide a development and staging strategy which will promote the NIA as a commercially attractive corporate address.
- Produce a movement network which ensures the most direct connectivity with the central business core and the regional network from all parts of the estate, notwithstanding the differing resource extraction objectives of individual landowners, and isolates, as much as possible, industrial traffic from the nearby residential and rural environment.

- Ensure that advantage can be taken of future regional transportation (public and freight) opportunities, particularly in terms of more direct future links with the freeway and passenger rail system.
- Ensure the protection of industrial uses from other established and proposed land uses on the periphery of the NIA.
- Facilitate the efficient provision of all necessary engineering services and support infrastructure in an efficient manner to accord with the adopted staging strategy.
- Provide adequate commercial services to meet the needs of the Neerabup Industrial Area's industrial community at company and workforce levels.

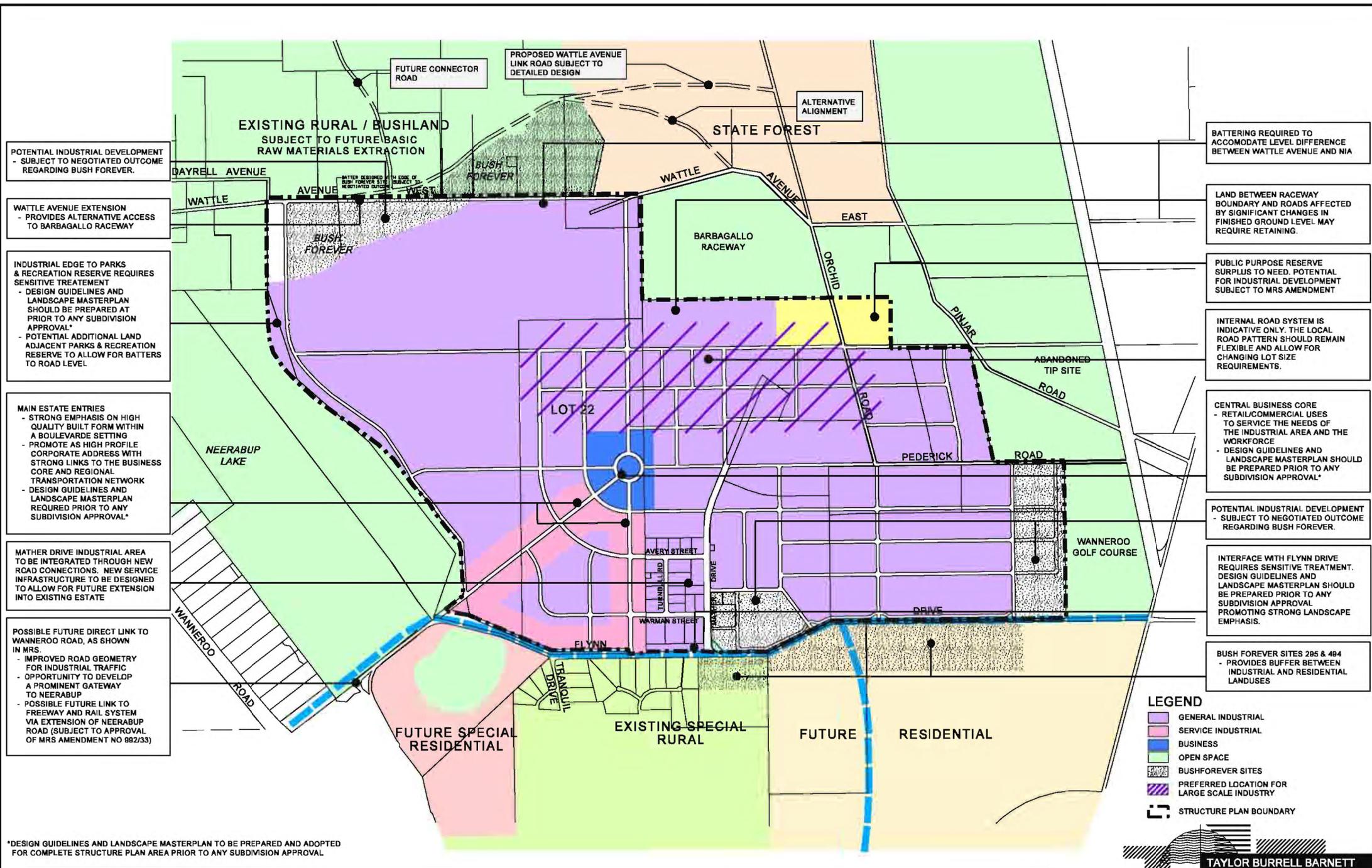
7.3 Indicative Development Concept

The NIA Indicative Development Concept provides a more detailed framework for planning and describes the many issues that must be taken into consideration when preparing detailed subdivision designs and development proposals (refer **Figure 7.1**). As the title suggests, this is an Indicative Concept and is for explanatory purposes.

It is anticipated that modifications will be undertaken at the detailed design phase; however, these must be assessed in accordance with the principles of the plan.

It should be noted that the Indicative Development Concept shows no detail, beyond the key structure planning elements, within Lot 21 (the Cockburn Cement land). In consultation with Cockburn Cement, it was agreed that the current lack of clarity about their future development objectives makes any meaningful detailed planning difficult.

It was, however, considered imperative that, regardless of the landowners eventual development intentions, a suitable standard of integration should be protected throughout the Structure Plan area by defining and enforcing the key planning elements embodied in the formal Structure Plan. This was reflected in the decision of the Western Australian Planning Commission to reinstate the need for the diagonal entrance road through Lot 21.



NEERABUP INDUSTRIAL AREA INDICATIVE DEVELOPMENT CONCEPT



FIGURE 7.1

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SINCLAIR KNIGHT MERZ

7.4 Movement Network

7.4.1 Principles and Objectives

The local road network has been structured in accordance with the following objectives:

- To maximise the general industrial land yield;
- To create a strong corporate address and direct access throughout the estate;
- To enable the development of a gridded road structure to ensure permeability and manoeuvrability for all movements throughout the industrial area;
- To maximise exposure to the regional roads by providing a series of service roads along the regional road system and prevent backing on;
- To provide a flexible and robust road system that provides for efficient movement throughout the estate and similarly provides the opportunity for alterations to lot patterns to accommodate changing land demands without the need for wholesale changes to the local road network;
- To recognise the fragmented nature of land ownership and provide for independent sub-division wherever possible; and
- To facilitate linkages to the existing Mather Drive industrial area.

7.4.2 Internal Road Network & Access

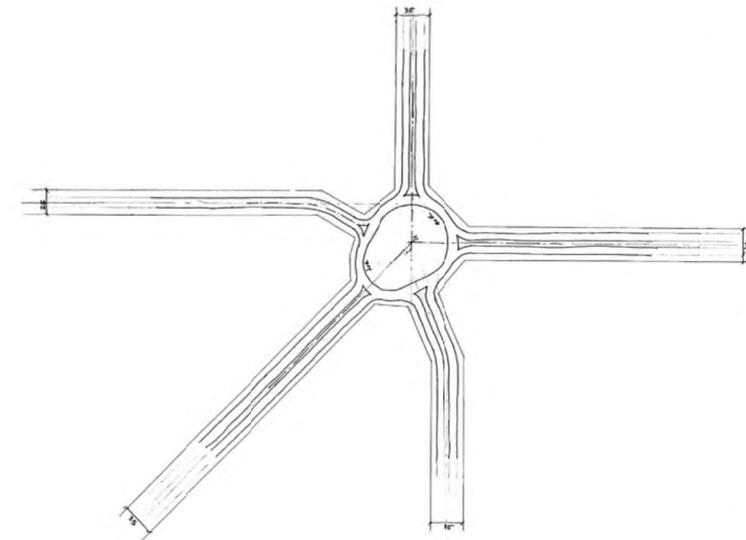
The road network is illustrated on **Figure 7.2**.

The internal road layout reflects a standard north-south rectangular grid pattern, apart from the south-west corner where a diagonal road is proposed. This is part of the "statement" planning for the Structure Plan area. As such the proposed layout provides good accessibility to all areas of the Structure Plan area while still maintaining a high standard of traffic management and safety.

It is important to note that the Indicative Development Concept provides a guide to the broad concept of the road network. It is expected review and refinement will occur over time, at the subdivision stage.

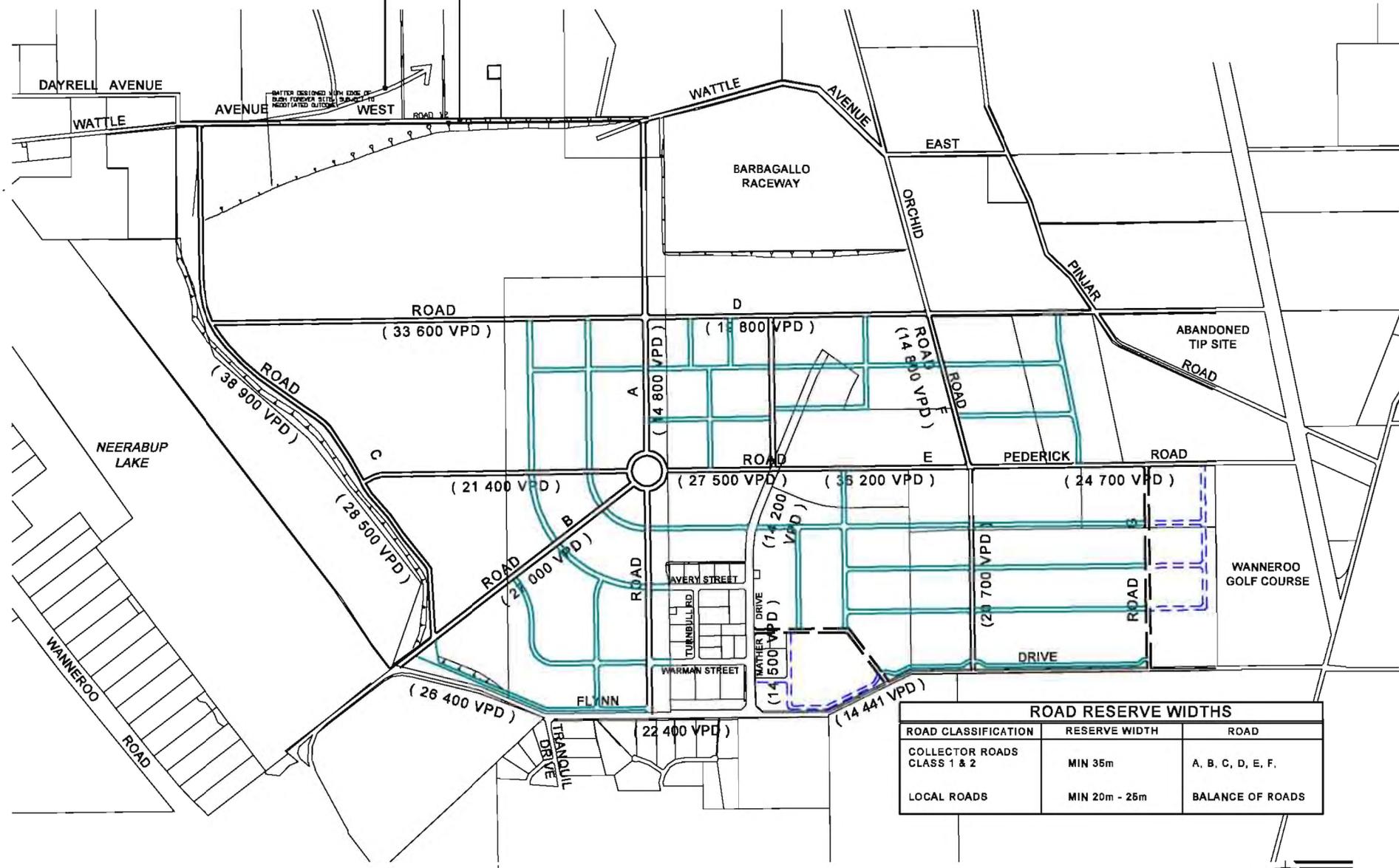
The Indicative Development Concept is characterised by a major north south central arterial spine linking into Flynn Drive (Road A). The diagonal road (Road B) and two other east west collector roads (Roads D and E) support this. It is envisaged that the major intersections on each of these roads will be either signal or roundabout controlled. The Concept Plan is cognisant of the high volume of heavy vehicles likely to use the road network; space will be provided for appropriate radii on roundabouts to accommodate articulated vehicles. Suitable intersection spacing has also been allowed between major intersections and the minor road network.

Two options for the central junction treatment are illustrated below. Option 1 is the design included within the Structure Plan and is based on a large roundabout.



Option 1

PREFERRED WATTLE AVENUE
EAST WEST LINK TO BE
FURTHER INVESTIGATED



NEERABUP INDUSTRIAL AREA INDICATIVE MOVEMENT NETWORK

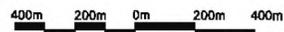
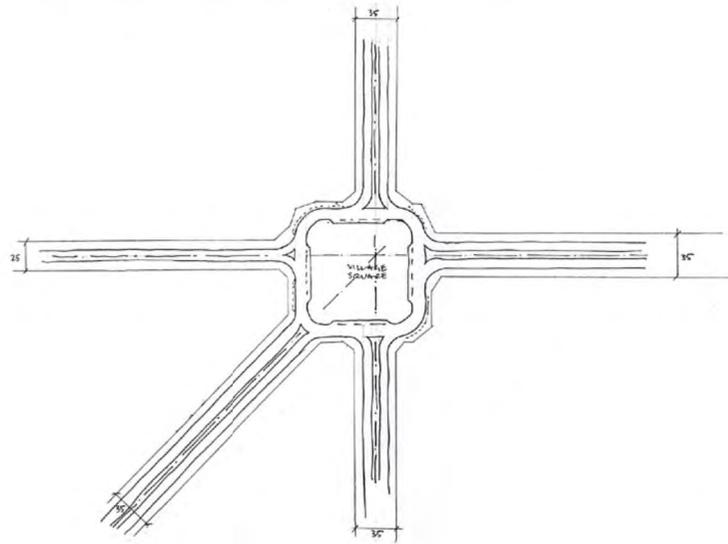


FIGURE 7.2

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Option 2

Option 2 includes the creation of a square roundabout and provides an alternative design. Importantly, both options will be subject to detailed design.

A separate traffic modelling exercise by Sinclair Knight Merz has recently been undertaken for this Structure Plan. This has determined indicative traffic volumes on the major roads, refer **Appendix 6**. This supersedes the previous traffic work undertaken for the City in 1996.

The complete Traffic Analysis is contained within **Appendix 6**, however, summarised below is a description of the road network proposed.

Road B is expected to carry a significant volume of traffic (approximately 27,000 vpd) with corresponding reduction on Road A (to approximately 14,800). This is due to the more direct access to the Mitchell Freeway via Flynn Drive provided by Road B.

Key road elements are discussed in more detail below:

Flynn Drive - Remains as the key southern east-west arterial road servicing the estate for the short to medium term. It is acknowledged as a defining edge between the Industrial Estate and Carramar Park and Banksia Grove to the south

Wattle Avenue - Forming the connection from the North West corner of the developed area to Wanneroo Road and the future urban development northwards along the coast. The portion of Wattle Avenue to be upgraded to a dual carriageway road.

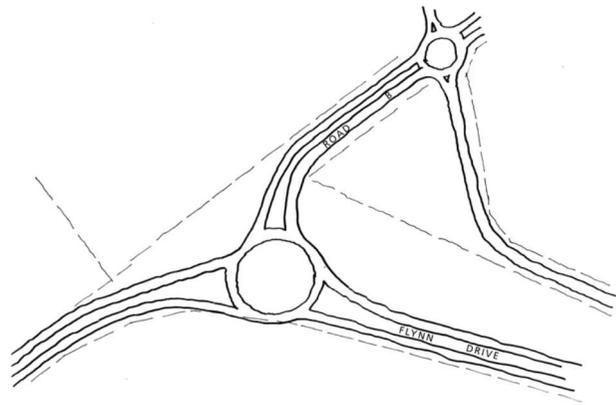
The future development of the Nowergup area to the north will require a connection for east-west traffic and this is envisaged to be on an alignment along the northern side of the Bush Forever site connecting to a future distributor road northwards into the area and further east to connect to Pinjar Road.

Road A - Forms the north south central arterial spine linking into Flynn Drive. It is proposed that Road A will be constructed in the short term to provide the main estate entrance.

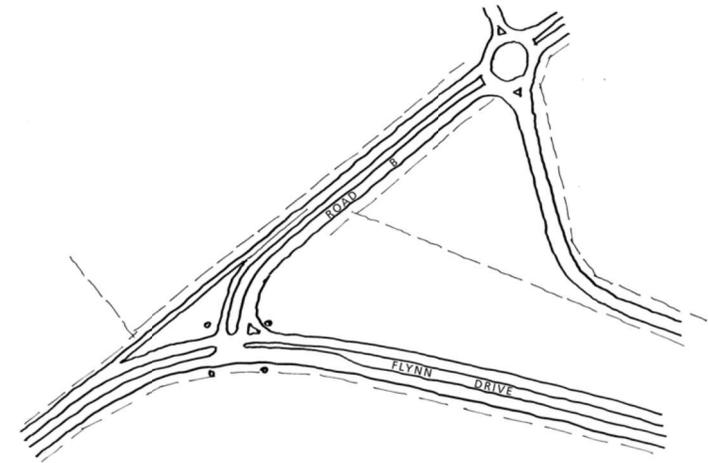
At the centre of the industrial estate Road A intersects with Road E (east west connector) and the diagonal Road B. The surrounding land is proposed to be developed as the core business area around a central traffic roundabout. The roundabout will have five legs and will accommodate the large number of heavy vehicles expected. The roundabout will be subject to more detailed design, however, some options have been prepared, as illustrated earlier in this section. It will also be necessary to review access into the uses located at the centre of the roundabout.

In the medium term, Road A will provide the sole connection to the extended Wattle Avenue, and one of the main connections to Flynn Drive. Other key connectors to Wattle Avenue and Flynn Drive (e.g. Road B, Road C and Road D) depend upon access through the Cockburn Cement land and may therefore not be available for development in the short- to medium-term.

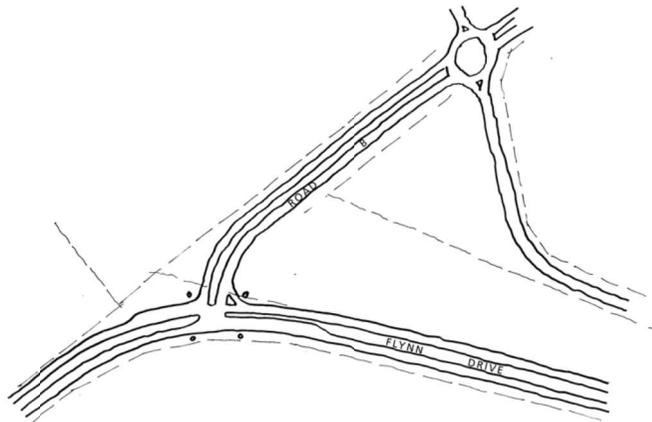
Road B is expected to become the main access into the estate extending from Flynn Drive. The section of Road B adjacent to Flynn Drive is expected to carry volumes in excess of 27,000 vpd and adequate capacity will be provided at the intersection with Flynn Drive. Possible treatments for the management of the intersection (signals or roundabout) are illustrated below.



Option 1: Roundabout



Option 3: Light Controlled With Left Slip Lane



Option 2: Light Controlled

The diagonal alignment of Road B is deliberate. It is intended to provide a future entry road for the estate, and more importantly, preserve a path for any potential transport or transit corridor for a more direct link between the estate and the Mitchell Freeway/Northern Suburbs rail corridor.

Road C – Provides a road edge to the western boundary of the NIA and delineates the edge to Lake Neerabup. The northern end of road C extends into Wattle Avenue. Forecasts for Road C estimate up to 39,000 in the northern section to 28,500 in the southern section near Road B.

Roads D & E – Both roads D & E form important east west connectors extending through the estate. Roads D and E connect with existing road reserves including Pederick Road to the east which, in turn, connects with Pinjar Road.

Road F – It is proposed to extend Orchid Road to the south to connect with Flynn Drive. This provides a direct route to the centre of the Structure Plan area and may be used as an alternative to Road A. The FDIASP indicated that this would form a continuous link with the north-south connection between Pinjar Road and Flynn Drive (see section 2.3). Under the current Structure Plan this link will be discontinuous and traffic will be encouraged to use Road A (if indeed this north south link is connected). Also the current plan encourages numerous access points to the NIA off Flynn Drive, further decreasing the earlier traffic forecast for Road F.

Road G – Provides for north south connections to Flynn Drive and increases permeability and accessibility at the eastern end of the estate.

Local roads - A highly permeable minor road network complements the arterial road network. Because of this permeability and linkage to the arterial road network, these minor roads are expected to carry low volumes of traffic. This is similar to the Wangara industrial area, which is served by 3 key arterial routes in Ocean Reef Road, Prindville Drive and Hartman Drive.

The Indicative Development Concept as presented provides a sound transport network which, with further detailed investigation, will adequately and safely manage the traffic demand.

7.4.2.1 Intersections

Priority control will exist at intersections within the minor road network, i.e. T-junctions and 4-way intersections. While the use of 4-way intersections has had some debate, they are considered an appropriate intersection control as long as certain issues regarding their use are addressed, as identified by the Department for Planning and Infrastructure Liveable Neighbourhoods Guidelines which are as applicable to an industrial estate:

- **Clear priority at the intersection should be given** which can be improved by; reduced minor leg approach distance, highly visible signage; threshold treatments; adequate sight distances.

- **Establish traffic volume limits;** as traffic volumes through the intersection increase, gap selection becomes more difficult and safety reduces. Rules of thumb suggest 2000 to 5000 vehicles per day (VPD) total intersection traffic. Traffic volumes at 4-way intersections in Neerabup are generally considered to be at or less than the lower end of this range. Clearly for intersections along the arterial roads where volumes are higher other traffic management techniques will be introduced such as left in-left out control. A traffic management plan may be developed as the minor road network is refined.
- **Speed control on the major leg;** approach speeds on the major approach should be assessed.

In relation to the proposed central roundabout, the design has been verified by preliminary traffic analysis and assignment of traffic volumes. The traffic assessment included the requirements for industrial traffic predicted for this area. The minimum outer diameter for the roundabout is 50 metres and the proposed reserve area is 100 metres diameter providing sufficient space for a final design in accordance with Austroads standards.

7.4.2.2 Road Reserves

Three broad categories (from the City of Wanneroo Land Development Standards) of road are present in the Structure Plan namely:

- Boulevard Collector road (Class 1) such as the north-south spine road (Road A) and the diagonal road (Road B and the western part of Road E);
- Major Collector roads (Class 2) such as the major east west collector roads supporting the north-south spine (Roads C, D, E and west F); and
- Local roads (balance of roads)

The Wanneroo requirements are shown in Table 7.4 below.

Table 7.4: City of Wanneroo Road Requirements

Road Class.	Reserve Width	Pavement Width	Verge Width
Collector Roads			
Class 1 and Class 2	Min 32-35m	13.4m	Min 5.1m
Local Roads	Min 20-25m	10.0m	Min 5.1m

Given these requirements and the high proportion of heavy vehicles, it is recommended that, for the Class 1 Boulevard Collector roads and Class 2 Major Collector Roads, a 32 m road reserve is allowed, which provides a minimum of 2 x 5 m verges, 2 x 8 m carriageways and a 6 m median. A 35 metre reserve is proposed where there is the requirement for on road cycle lanes. These have been identified on Road C and the extension of Orchid Road.

The Local roads (Class 2) require a 20-25 m road reserve to accommodate 2x5 m verges and a 10m carriageway, with the option to include a median treatment or traffic management measures if required.

7.4.2.3 Public Transport

At this stage it is understood that there are no planned public transport routes for the area but it is considered that bus services could be developed on the proposed Class 1 and 2 collector roads in the Structure Plan, all of which have sufficient width to carry buses.

It is also noted that the alignment of Road B preserves the opportunity for direct dedicated transit links into the Estate should such be contemplated in the long term. It may be appropriate therefore to allow a wider median on Road B to accommodate this. An appropriate road reserve is 40 m, which would allow for a dedicated transit lane in each direction to be constructed either in the median or kerbside.

7.4.2.4 Mather Drive

The unconstructed northern section of Mather Drive (bordered by Lots 4, 53 and 240) would be superfluous in the context of the local road pattern shown in the Indicative Development Concept. If development is proposed in accordance with the Indicative Development Concept, the unconstructed section of Mather Drive should be closed and the land offered for acquisition by adjoining landowners.

Within the constructed southern section of Mather Drive, the road reserve width of 40m is excessive in relation to its local road function. The potential to reduce the reserve to a minimum 32-35 m, with the balance land being returned to adjoining owners, may be explored.

7.5 Lot Sizes

Within Business Park and Industrial Estates, land area demands vary considerably from a typical minimum of 2000m², to 2-5 ha, with major industrial uses sometimes requiring sites of 30 ha and larger. The Indicative Development Concept depicts a road network capable of sustaining this variety of lot sizes. Importantly, however, the lot pattern depicted is purely indicative and should be refined at the time of subdivision approval when consumer demand can be properly assessed.

The network is sufficiently robust to provide the opportunity for a range of different lot sizes. It may be necessary to add roads or remove others should lot sizes vary significantly from those shown in the Indicative Development Concept.

Such modifications should be entertained provided they are consistent with the Structure Plan and Policy Precinct objectives and demonstrate compatibility with the surrounding road structure.

The NIA Indicative Development Concept shows preferred locations for larger scale industrial sites. These areas are considered most appropriate due to the following factors:

- Separation from the urban cell;
- Proximity to raceway (less likelihood of land use conflict between raceway and larger industries); and
- Minimum impact on servicing efficiencies.

This should not, however, preclude consideration of large industrial sites outside of the depicted areas.

Siting of industries would also need to reflect their potential for off-site impact in terms of air quality, noise and risk (refer to **Section 5.0** and **Figure 5.1**).

7.6 Open Space & Drainage

Public open space within an industrial area shall be provided in accordance with clause 6.3 of the Commission's Policy DC4.1 Industrial Subdivision. There is also the opportunity to accommodate drainage within areas of public open space. These will perform both drainage and aesthetic functions and will provide some passive recreation opportunities for workers.

An area of 5,000 m² of open space is to be provided in the estate core (business park). This should be included on either Lot 22 or Lot 4. This may include seating areas, public art, etc.

The final detailed configuration of this open space and drainage would be depicted at the time of subdivision; however, indicative locations of the drainage are illustrated on the drainage plans.

During the public advertising of the Structure Plan the then DEP submitted that a Drainage and Nutrient Management Plan should be prepared. Council supported this submission and resolved that an appropriate requirement be included in Part 1 of the Structure Plan.

7.7 Landscape

The approach to be adopted for the landscape of the industrial estate is to create a low maintenance street tree scheme which will aid orientation within the site (by giving different avenues individual character) while helping integrate the area within the wider context. It is envisaged that streetscape tree planting will be determined as part of the preparation of design guidelines.

7.8 Interface with Surrounding Land Uses

7.8.1 Lake Neerabup

The western boundary of the Neerabup Industrial Area is defined by the existing Industrial Zoning under the Metropolitan Region Scheme. This abuts the Parks and Recreation reservation containing Lake Neerabup. As mentioned previously, the existing Parks and Recreation reservation adequately accommodates the lake and associated wetland buffer.

To delineate the Parks and Recreation boundary and industrial development, a road edge is proposed. To the south near Flynn Drive the road predominantly follows the edge of the industrial zoning.

Further north, additional land has been allowed within the NIA and adjacent to the Parks and Recreation reserve to allow for batters to the road level, given that the final levels proposed for industrial development (post extraction) will be substantially lower than natural ground level at the reserve boundary. The final position of the edge road will be determined after a Final Surface Contour Plan has been adopted for Lot 21, to ensure that any battering between road level and Parks and Recreation reserve is accommodated within the Structure Plan area.

It is proposed that a Landscape Master Plan is prepared at the detailed design stage to ensure sensitive treatment of development adjacent to the Parks and Recreation reservation.

7.8.2 Residential

Residential development is proposed on the southern side of Flynn Drive at the eastern end of the NIA. Given the strategic significance of the NIA for accommodating future industrial growth in the Metropolitan Region, and as a major employment centre for the north Metropolitan Region it is important that the future residential development recognises the potential impacts of industrial land use, and plans for appropriate separation. Bush Forever site 295 abuts Flynn Drive to the south and is approximately 300m wide, providing a significant buffer between future residential and industrial development.

7.9 Staging

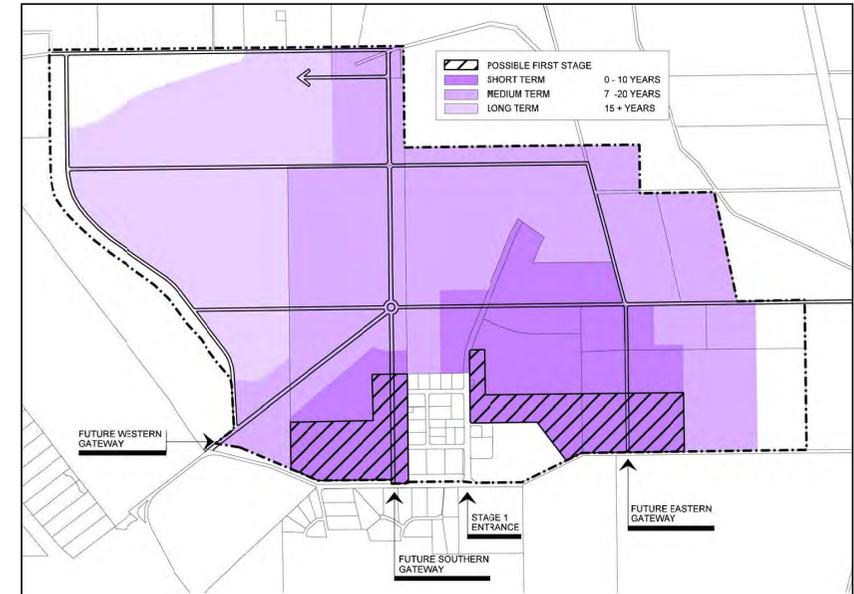
The timing for industrial development within the NIA will be primarily influenced by four factors:

- Fragmented land ownership, and the varying intentions of individual landowners;
- The substantial potential of much of the area for basic raw material extraction as an interim to the end industrial use;
- Proximity to service infrastructure; and
- Rate of industrial land demand.

It is important to consider the possible staging of the development to assist the servicing authorities to plan for future infrastructure development, and also to provide some guidance for landowners. At this early stage in the planning process, a staging programme will be highly speculative as it will be based on very generalised assumptions about resource extraction rates, landowner intentions, and industrial land demand.

The staging plan shows, in general terms, the potential staging of development. It is emphasised that this staging plan is basically a composite reflection of known landowner intentions, and development practicalities (such as proximity and accessibility to services). It should not be construed as a recommended development staging programme to be used in controlling the timing of development.

Due to its preliminary nature, the staging plan seeks only to distinguish between short, medium and long term development. The time spans applying to each of the stages overlap with each other, reflecting the fact that there should not be an absolute time delineation between stages at this point.



Staging Plan

Furthermore, it is acknowledged that the amount of land identified in each of the stages may provide sufficient industrial land supply for a period longer than the defined timeframe. For example, whilst the short term development timeframe is 0 - 10 years, the amount of land shown within the short term stage may in fact satisfy demand for a considerably longer period. The intent of the staging plan in this regard is not necessarily to indicate the amount of land required within a 10 year period, it is more intended to indicate those areas with potential for development within the defined timeframe.

In terms of short term stages, two areas have been identified as having the highest potential for development within the next 7-10 years.

1. Lot 22 - Southern Portion (57 ha)

This area abuts Flynn Drive and encompasses the southern part of the limestone quarry on Lot 22, where extraction has been completed. The land is therefore, ready to be reinstated at a suitable finished ground level for development; this factor, together with the lands abuttal with the primary road infrastructure and the industrial development objectives of the landowner makes this the most logical location for the first stage development. The Structure Plan also supports this through the placement of a main estate entry point within this area.

2. Land extending from Mather Drive fronting Flynn Drive (170 ha)

This land contains some sand quarrying activity (western end of Lot 2477) and some areas (particularly southern part of Lot 240) will have limited potential for resource extraction based on the proposed levels. The willingness of at least two major landowners to make land available for development and abuttal with Flynn Drive presents an alternative location for first stage development. This potential may be enhanced with the possible development of a major industrial enterprise (Laminated Veneer Lumber Plant) on Lot 53, which may generate some initial development impetus.

Given that the short term areas contain approximately 227 hectares, this is likely to satisfy short term demand assuming the land is made available during that period. The medium term areas mostly reflect remoteness from service infrastructure and likely first stage development areas, rather than the development intentions of the landowners.

The exception is the southern portion of Lot 21 (Cockburn Cement land). The location of this land is ideally placed for short term development, having close and direct linkage to Wanneroo Road via Flynn Drive. Its identification as medium term is a direct reflection of the stated intentions of the landowner to maintain the land in an undeveloped state in the short term.

8.0 NEERABUP INDUSTRIAL AREA STRUCTURE PLAN

8.1 Structure Plan

The Neerabup Industrial Area Structure Plan, shown in **Figure 8.1** provides the statutory framework for planning within the NIA.

The Structure Plan demonstrates the preferred land uses and movement network within the NIA. Any modifications to the Structure Plan will need to be undertaken in consultation with Council and the WAPC.

8.2 Zones

The zones for the NIA are as follows:

- General Industrial;
- Service Industrial; and
- Business

These zones will facilitate predominantly development of General Industrial land being the primary purpose of the estate and will also allow flexibility for a variety of activity in particular locations within the estate with differing development criteria to support the General Industrial activities. Design guidelines may be prepared for the various zones to control and guide particular aspects of development. For example development at key intersections may be encouraged to include reduced setbacks and promote particular architectural styles.

The zones applied are in accordance with the zoning classifications under DPS2. The scheme provisions for these zones will be applied to development with some exceptions and additions as specified in Part I of the document as described below.

8.2.1 General Industrial

The General Industrial Zone encompasses the majority of the land within the Structure Plan area.

In accordance with DPS2, "the General Industrial Zone is intended to provide for industrial development which the Council considers would be obtrusive in, or detrimental to, the amenity of the Service Industrial Zone.

The objectives of the General Industrial Zone are to:

- a) accommodate a wide range of industrial activities, including those generally involving production, processing, storage, wholesaling or distribution processes; and
- b) minimise adverse visual and environmental effects of industrial uses on surrounding areas."

Specifically, the NIA General Industrial Zone is intended to provide attractive industrial sites harmonious with surrounding land uses.

The permissibility of uses and development provisions shall be in accordance with the General Industrial Zone. As mentioned within Section 5.3, there is the need to ensure that industries which pose an off-site risk through storage and handling of dangerous or hazardous goods are established at least 1,000m away from the Raceway. For this reason, it is proposed to exclude hazardous industry from the General Industrial precinct. This is not considered to present any significant constraint, as hazardous industries would not typically be desirable within a General Industrial estate.

8.2.2 Service Industrial

The Service Industrial Zone is generally located adjacent to Flynn Drive and the major internal spine roads connecting to Flynn Drive, to take advantage of the greater exposure in these locations.

Possible extensions along peripheral roads may be entertained, but this should be reassessed as development and demand unfolds. Extension of the Service Industrial land should not be allowed to detract from the principal purpose of the Neerabup Industrial Area as a location for General Industry.

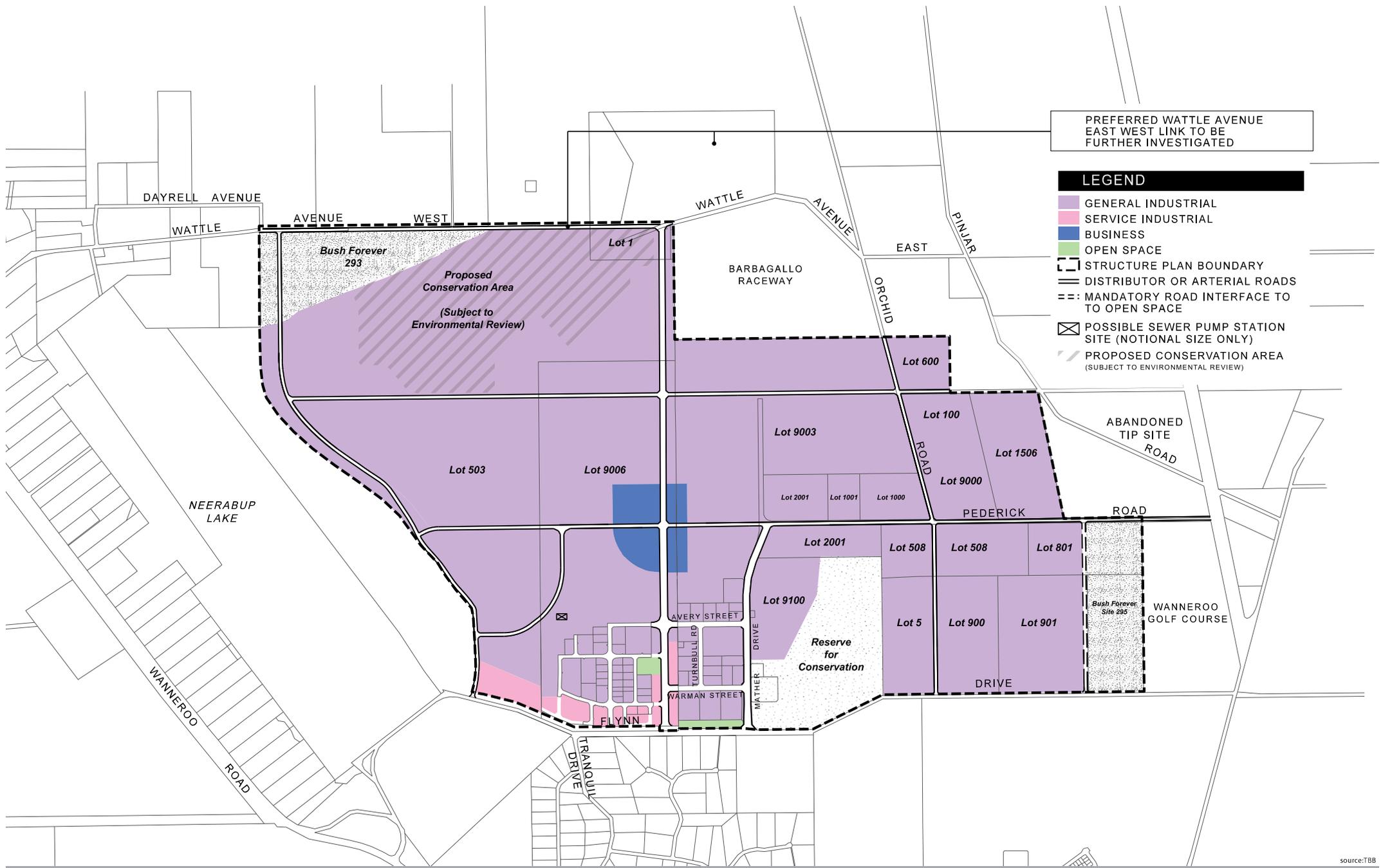


Figure 8.1 - Local Structure Plan
Neerabup Industrial Area

Date: 15 Sep 2020
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Drawing No. 715-341 CP-2 A
Staff: MR_GW



source:TBB

In accordance with DPS2 *"the Service Industrial Zone is intended to provide for a wide range of business, industrial and recreational developments which the Council may consider would be inappropriate in Commercial, Business and General Industrial Zones and which are capable of being conducted in a manner which will prevent them being obtrusive, or detrimental to the local amenity.*

The objectives of the Service Industrial Zone are to:

- a) accommodate a range of light industries, showrooms and warehouses, entertainment and recreational activities, and complementary business services which, by their nature, would not detrimentally affect the amenity of surrounding areas; and
- b) ensure that development within this zone creates an attractive façade to the street for the visual amenity of surrounding areas."

Specifically, the objectives of the NIA Service Industrial Zone are to:

- a) encourage high quality service, business and commercial activity at the entrance to the NIA to take advantage of greater exposure generated by the industrial park and passing trade at these locations; and
- b) enable the seamless transition of uses extending into the General Industrial Area

The permissibility of uses and development provisions shall be in accordance with the Service Industrial Zone of DPS No.2.

8.2.3 **Business**

The Business Zone is located at the centre of the Structure Plan on the major north south spine road. This precinct has been identified in recognition of its strategic location at the centre of the Structure Plan area to encourage more service uses such as banks, local shop, newsagent etc to service the Industrial Estate, both businesses and employees.

In accordance with DPS2, *"the Business Zone is intended to accommodate wholesaling, retail warehouses, showrooms and trade and professional services and small scale complementary and incidental retailing uses, as well as providing for retail and commercial businesses which require large areas such as bulky goods and category/theme based retail outlets that provide for the needs of the community but which, due to their nature, are generally not appropriate to or cannot be accommodated in a commercial area.*

The objectives of the Business Zone are to:

- a) provide for retail and commercial businesses which require large areas such as bulky goods and category/theme based retail outlets as well as complementary business services; and
- b) ensure that development within this zone creates an attractive façade to the street for the visual amenity of surrounding areas."

Specifically, the objectives of the NIA Business Zone are to:

- a) facilitate the provision of community/commercial services to support business and the workforce within the industrial estate;
- b) minimise the need for local (work day) convenience retail and support business demand to leave the NIA and access centres in other localities (i.e. maximise sustainability); and
- c) ensure that development within this precinct creates an identifiable central place for functional and legibility purposes.

The permissibility of uses and development provisions shall be in accordance with the Business Zone of DPS No.2 to ensure that the necessary support activities are able to locate within the NIA. In addition to those uses permitted under the Scheme, it is considered appropriate to allow limited shop development in the Business precinct. This will ensure that uses such as a newsagency, chemist, delicatessen etc, which are entirely appropriate within the Business precinct, are allowed.

It is therefore, proposed to include Shop as an 'A' use and to limit the floorspace per shop to 300m² NLA. This will ensure development in scale with the NIA and in particular the Business Zone.

9.0 SERVICING

9.1 Sewerage System

9.1.1 Internal System

The lots created within the NIA Structure Plan area are proposed to be served by a gravity sewer system. The system will gravitate to two pump stations located at the west and east boundaries of the area.

The current developed area on Mather Drive is served with individual septic tanks and these lots would be connected to the system when constructed.

The system will be designed in accordance with the Water Corporation Sewer Design Guidelines and would cater for waste waters as permitted in their Industrial Waste Policy. This policy generally requires pre-treatment of waste where the waste characteristic exceeds allowable discharge quality. The policy is applied on an individual industry basis.

The system derived for this Structure Plan assumes that resource extraction will occur to the levels indicated in the Final Surface Contour Plan. Alternatives of temporary pump stations exist where extraction and development do not occur sequentially.

9.1.2 External System

The NIA Structure Plan area is immediately north of Carramar and Cockman areas which are serviced through the North West Special Headworks Agreement (1989). The northern limit of this agreement area is Flynn Drive. The sewer planning is in a very preliminary stage. The proposed two permanent sewer pump stations as described in the Internal Sewers section with pressure mains to the Burns Beach Main Sewer in Connolly Drive to the north west is the Water Corporation's preferred system. Part of the Burns Beach sewer is constructed in Connolly Drive but is dormant and not connected to an outfall. Depending on the rate of development required within the industrial area it may be necessary to construct the permanent pump station and temporary pressure mains to existing sewers in Carramar and Banksia Grove Estate south of Flynn Drive.

An economic analysis will be required to determine this alternative when development rates become apparent.

An economic analysis will be required to determine this alternative when development rates become apparent.

9.2 Potable Water

9.2.1 Internal System

The lots created within the NIA Structure Plan area are proposed to be served with a water distribution system constructed in accordance with the Water Corporation Design Criteria.

The existing developed area on Mather Drive is not serviced by a system but uses individual bores. It is proposed that these lots would be incorporated into the Water Corporation scheme.

To preserve potable water it is appropriate for individual lot owners to use superficial groundwater drawn from bores for fire and landscaping requirements where possible.

9.2.2 External System

The water supply for the study area will come from the Wanneroo Tank and large connecting main to a high level tank on land immediately north of Wattle Avenue. The Water Corporation has advised that a site has been secured and this is near the Fire Lookout. These are major headworks for which the Water Corporation has yet to derive a full scheme.

9.3 Electrical Power

Electrical power will be distributed by means of an underground power system throughout the study area in accordance with State Government Policy.

Power supply will come from a proposed 132Kv main to be constructed from the Pinjar Power site through the estate including a transformer site. Power will be fed from this system.

Initial supply into the study area is envisaged to comprise a series of feeders from existing aerial mains in Flynn Drive.

In an industrial estate there is considerable difficulty in determining ultimate power load requirements in a manner which enables economical construction and avoids reworking live cables. The rational approach is to develop the system in a piecemeal fashion to retain the greatest flexibility.

Western Power has implemented a cost sharing process to achieve equity between adjoining owners for the High Voltage network.

Western Power has provided confirmation of its proposal for the area, refer **Appendix 7**.

9.4 Stormwater Drainage

The stormwater drainage system will be constructed in accordance with City of Wanneroo Design Guidelines. This will entail a two part system.

The first part is within the individual lots where the lot owner will control and dispose of the stormwater from the lot, within the lot. This can be achieved by soakwells or open soakage sumps to suit the lot owner's planning. Care will be needed at the time of Development Application to control what is disposed into the soakage system to maintain the groundwater quality.

The second part is the management of stormwater from road reserves and public spaces. This is proposed to be managed with a series of fenced open soakage basins located throughout the Industrial Area. A preliminary assessment of locations and land area requirements has been made and these are shown on **Figure 9.1**.

With regard to the estate amenity it may be beneficial to convert some of these soakage structures from a fenced arrangement to an open landscaped style to create parkland settings which would permit passive surface use for most of the year. The locations for this type of drainage structure can be as shown for the fenced sumps or can be relocated to road intersections. Land area requirements are in the order of three times the land requirements for fenced sumps.

To ensure an appropriate level of environmental protection, a Drainage, Nutrient and Water Management Plan will be required to be prepared prior to any subdivision or development.

9.5 Gaseous Energy

Gas will be distributed by means of a reticulated system connected to the Alinta Gas suburban system.

The gas supply will be drawn from existing mains in Pinjar Road.

9.6 Waste Disposal

9.6.1 Solid Waste Disposal

Solid waste generated by industrial activity remains the responsibility of the lot owner to dispose of in accordance with relevant local and state regulations.

The lot owner has several options depending on the volume and nature of the waste either through the municipal system, waste recyclers or disposal to an appropriate facility.

Disposal of solid waste would be assessed at Development Application stage with the major consideration being health and protection of groundwater.

9.6.2 Liquid Waste Disposal

The provision of a sewerage system will provide for the disposal of sewage and wastewater. Wastewater will need to meet the requirements of the Water Corporation and their licensing provisions before discharge to the sewer system.

The disposal of other liquids such as oils, solvents, fats and hydrocarbon derivatives will be the responsibility of the creator of the liquids. The disposal of these liquids is governed by local and state laws and environmental legislation.

9.7 Forward Service Planning

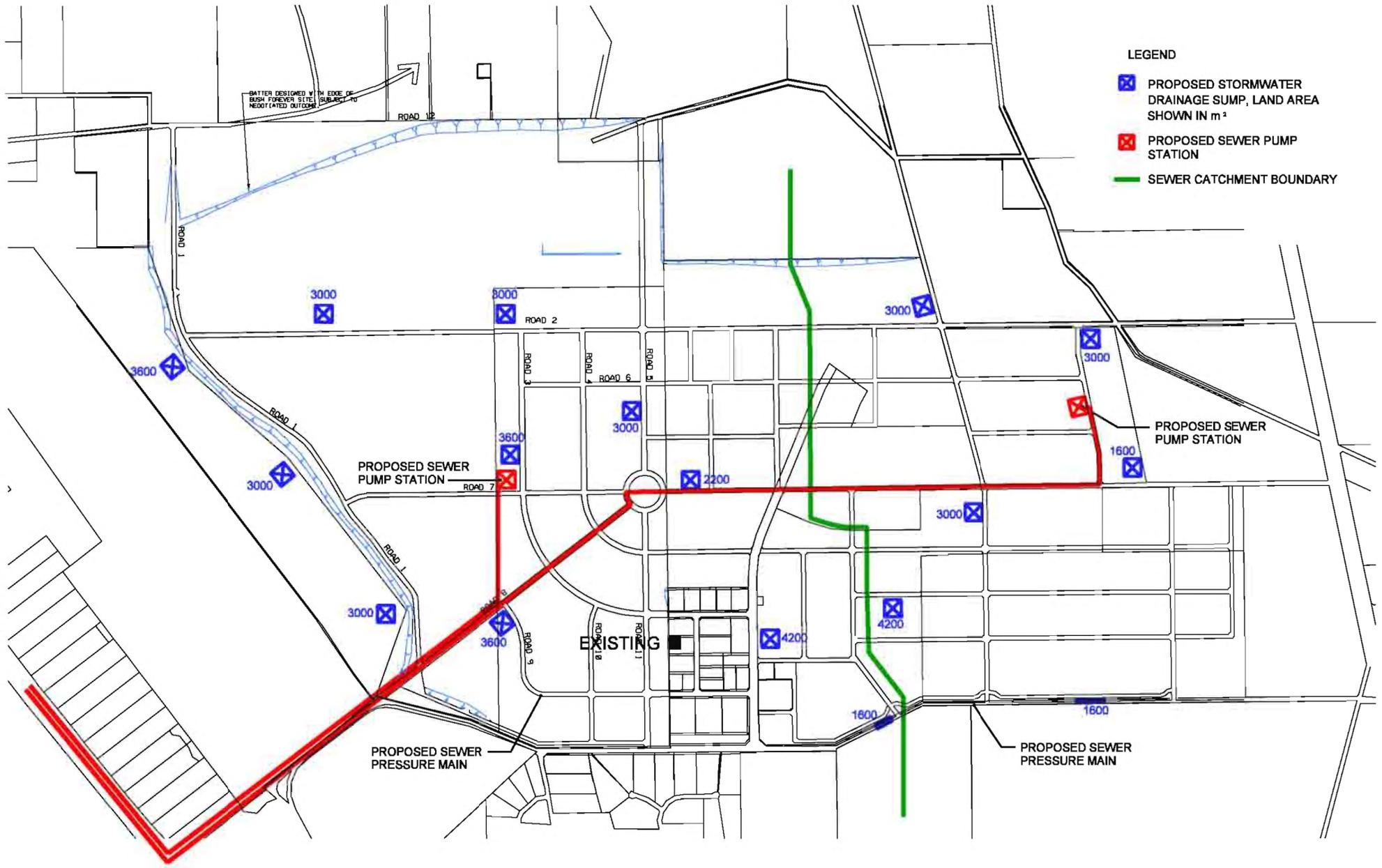
To achieve the proposed Structure Plan preliminary service layouts have been derived to establish broad service planning.

To achieve orderly development it is important that applications be made to service agencies, particularly the Water Corporation to determine service schemes and provide for construction under capital work budgets.

It is recommended that, prior to commencement or development commencing within the Structure Plan area, service concept plans be prepared for sewer, water, electric power, drainage, gas and communications services and submitted and agreed with the service authorities. These concepts will be based on a total development philosophy and will provide a basis to coordinate future individual lot owner developments.

The preparation of service concept plans at the initial development stage will ensure compliance with current standards. It should be noted that several design standards are under major review in 2002. For drainage and sewer preliminary concept plans have been prepared and are included in the Structure Plan document. Provisions for cost sharing are being developed by Water Corporation for minor works and Western Power have a system for sharing HV reticulation costs. Thus cost sharing under a development cell arrangement could be developed in conjunction with these systems.

The adoption of service concept plans will also enable forward planning by the service authorities for capital works funding for the external site service connections.



- LEGEND**
- PROPOSED STORMWATER DRAINAGE SUMP, LAND AREA SHOWN IN m²
 - PROPOSED SEWER PUMP STATION
 - SEWER CATCHMENT BOUNDARY

**NEERABUP INDUSTRIAL AREA
MAIN SEWER AND DRAINAGE INFRASTRUCTURE**



FIGURE 9.1

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 admin@tbbplanning.com.au

10.0 IMPLEMENTATION

The primary objective of the NIA Structure Plan is to establish a planning framework that will enable the area to develop in the most orderly and integrated manner, meeting sound planning principles, and promoting high quality development solutions.

The statutory vehicle used to implement this objective is DPS2, which was promulgated in July 2001. DPS2 is important for two reasons:

- i) It applies an Industrial Development Zone over the majority of the study area. This zoning will facilitate all of the development objectives defined in this Structure Plan; however, it also requires that the Structure Plan be adopted by both the Council and the WAPC (pursuant to Part 9 of the Scheme) prior to the commencement of any subdivision or development.
- ii) The Scheme contains a comprehensive set of Structure Plan provisions which gives the Structure Plan the same force and effect as if it were a provision of the Scheme, once it is formally adopted.

In order for the Structure Plan to fulfil its function as a formal component of the planning framework a number of actions are required to be undertaken, or finalised. The following are the key actions required to complete the framework.

10.1 Structure Plan Adoption

Pursuant to Clause 3.15 of the Scheme, it is a prerequisite of subdivision or development that an Agreed Structure Plan has been prepared and adopted by Council and the WAPC under the provisions of Part 9 of the Scheme.

10.2 Infrastructure Cost Sharing

Some of the major infrastructure works necessary as part of the Structure Plan are likely to pose significant cost burdens on some landowners whilst others may derive the benefit of such works without contributing to their development.

There are three main methods of land development co-ordination and cost sharing:

- i) Development Town Planning Schemes:
 - a) Resumptive Development Schemes;
 - b) Guided Development Schemes.
- ii) Provisions incorporated into District Zoning Schemes (Generic Provisions);
- iii) Private Landpooling Schemes.

The incorporation of generic provisions into District Zoning Schemes is becoming an increasingly popular method, particularly within Local Authorities with considerable scope for land development.

This is the case in the City of Wanneroo, where infrastructure cost sharing provisions have been included in DPS2 (Parts 10 and 11). Whilst they are generic provisions, they are primarily tailored to the East Wanneroo area which is divided into a number of development cells, including the industrial development areas contained within Cells 7 and 8 (Wangara).

In considering the application of comprehensive cost sharing arrangements, such provisions add complexity to the development process, and should only be imposed where there are substantial inequities between landowners - typically where land ownership within the Cell is highly fragmented.

The NIA contains only 7 landowners in total (not including owners within the developed Mather Drive area), and three of those landowners LandCorp, Cockburn Cement and the City of Wanneroo occupy approximately 80% of the total area. However, notwithstanding the small number of landowners, it is reasonable that some method of cost sharing should be applied so that the major infrastructure works, such as upgrading and construction of the surrounding district/regional roads and major intersection treatments will be equitably funded by all landowners.

Given that Council's Town Planning Scheme is already structured around the use of generic cost sharing provisions, it is considered that this would be the most appropriate and straight forward manner of implementing a cost sharing arrangement for Neerabup.

Unfortunately, the specific reference of the existing Scheme provisions to the East Wanneroo planning cells makes it difficult to simply extend their application to the Neerabup Industrial Area, notwithstanding that the provisions relating to Cells 7 and 8 (Wangara Industrial Area) would fulfil a similar function.

It is therefore recommended that new provisions be introduced into the Scheme, by way of a scheme amendment, to establish a cost sharing arrangement particularly related to, and suitable for, the NIA.

10.2.1 Structure of Scheme Provisions

To be consistent with other similar provisions in the Scheme, the Infrastructure Cost Sharing Provisions will be made up of three separate components:

- i) **Generic Scheme Provisions**
Providing the statutory framework for requiring the payment of contributions; these provisions will be contained in the main body of the scheme text.
- ii) **Schedule to Scheme**
Defines the actual infrastructure items (cell works) which are to be funded through developer contributions.
- iii) **Schedule to Local Structure Plan**
Provides specific details of the actual/projected costs of the cell works, and the resultant developer contribution rates.

The relationship between these components is graphically illustrated in **Figure 10.1**. This figure also includes, for discussion purposes, infrastructure items which are likely to be included as cell works for the purpose of developer contributions. It is emphasised that the defined items are based on preliminary considerations at this time, and it will be necessary to undertake a more detailed assessment of infrastructure requirements in order to properly define the cell works.

10.2.2 Implementation Actions to Facilitate Infrastructure Cost Sharing

The facilitation of a cost sharing arrangement for the NIA will require the following actions:

1. Scheme Amendment

- a) General Scheme Provisions

The Scheme will require amendment to introduce the statutory framework to empower Council to require Developer Contributions. This could be effected in one of two ways:

- i) Introduce new provisions specifically related to the NIA; or
- ii) Modify the existing generic provisions relating to East Wanneroo cells 1 to 8.

Given the structure of the East Wanneroo provisions, their modification is likely to be complex, and it is considered that the most straight forward method would be through Option (i).

- b) Introduction of a new Schedule to the Scheme to define Specific Cell Works.

2. Introduction of Scheme Costs into Structure Plan

Under the City of Wanneroo Structure Planning provisions, the details of cell works and infrastructure costs are contained in a Schedule within the Implementation section of the Structure Plan. The schedule may be included in the initial Structure Plan documentation adopted by Council and the WAPC; alternatively it may be introduced at a later stage, as an amendment to the Structure Plan.

In the case of the NIA, it is likely that the actual cell works, and cost estimates, will not be sufficiently defined to include in the initial Structure Plan documentation. It may therefore be presented to Council at a later stage as an amendment to the Structure Plan.

FIGURE 10.1: Infrastructure Cost Sharing Structure

Relationship between Scheme, Structure Plan and Precinct Contribution Arrangements

Generic Scheme Provisions

- Structure Plans
- Infrastructure Cost Contributions

Schedule to Scheme

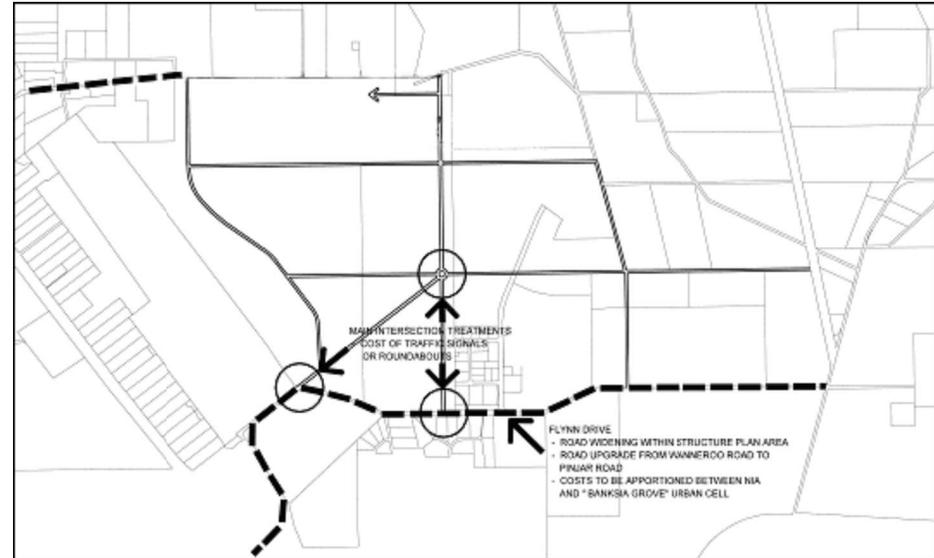
Neerabup Industrial Area Planning & Developer Contribution Arrangement
Cell Works and Contribution Provisions

Suggested Cell Works

- Structure Plan costs (including specialist studies)
- Scheme Amendment costs
- Flynn Drive - road widening (within site)
- construction/upgrade from Wanneroo Road to Pinjar Road
- Major Intersection Treatments - signals or round-a-bouts
- main entrance west
- main entrance east
- central intersection
- Costs of preparing other strategies and management plans such as:
- Landscape Master Plan
- Design Guidelines
- Service Concept Plans
- Flora, Fauna, Karat surveys
- Drainage, Nutrient and Water Management Plan
- Admin & other costs

Schedule to Local Structure Plan

Summary of actual/estimated infrastructure costs and contribution rate



Plan Showing Proposed Cell Works

Note: The suggested cell works listed above are indicative only. A complete list of cell works will be identified in future following a more comprehensive assessment of detailed infrastructure requirements. The final contribution arrangement may include items not listed above and may remove some of the items listed above. In particular Section 7.0 Cell Works of Part I of the Structure Plan identifies the Cells Works contemplated at this Stage.

10.3 Additional Works Prior to Subdivision and/or Development

10.3.1 Preparation of Design Guidelines and Landscape Master Plan

The visual amenity and design standards are important to ensuring quality industrial development. It is therefore, recommended that Design Guidelines and a Landscape Master Plan are prepared covering key elements of the NIA. These include:

- Main estate entries;
- The Core Business area;
- Areas adjacent to the Lake Neerabup Parks and Recreation reservation; and
- Service Industrial areas fronting Flynn Drive.

The Landscape Master Plan should address the opportunities for planting of the woolly bush to support the population of rare bees where possible.

10.3.2 Bush Forever - Negotiated Outcomes

It is necessary for individual owners affected by Bush Forever sites to negotiate outcomes direct with the DPI. The Structure Plan has been designed to allow for industrial expansion in the event that the sites are removed or reduced.

10.3.3 Karsts

Due to the potential for karsts (caves and channels) including communities of troglobitic fauna and stygofauna within the NIA there may be the need at the subdivision and development stage to liaise with the Department of Environmental Protection regarding appropriate management requirements.

10.3.4 Public Purpose Reserve

Completion of the MRS amendment to rezone the Public Purpose reserved land to Industrial zone, and subsequent amendment to DPS2 to effect a similar change to the local zoning.

10.3.5 Groundwater Contamination

It is recommended that the City of Wanneroo undertake a detailed assessment of groundwater quality to determine the extent of the leachate plume and undertake remediation where necessary.

10.3.6 Flora and Fauna

Prior to the clearing of natural vegetation and habitat, surveys of flora and fauna may be required to be undertaken.

If it is identified that there is priority or threatened species located within the NIA, it will be necessary for individual owners to liaise with CALM as to their development timeframes to ensure that there is ample opportunity to develop appropriate management and/or preservation strategies.

Prior to land clearing by individual owners, a Dieback Hygiene Plan should be prepared.

10.3.7 Stormwater Management

Prior to subdivision or development commencing within the Structure Plan area, a Drainage, Nutrient and Water Management Plan should be prepared, and such plan should, if considered necessary by Council, include a contingency plan to ensure the protection of Lake Neerabup.

The cost of preparing the Drainage and Nutrient Management Plan should be included as a Cell Work under the developer contribution arrangement.

Appendices are contained in the hard copy report which is available for viewing at The City of Wanneroo Administration Centre and local libraries.

APPENDIX 1
Consultation

APPENDIX 2
Flynn Drive Industrial Area District Structure Plan

APPENDIX 3
Flynn Drive Structure Plan

APPENDIX 4
Neerabup Industrial Area Structure Plan Review

APPENDIX 5
DEP Advice

APPENDIX 6
Flynn Drive Traffic Assessment

APPENDIX 7
Western Power Correspondence

APPENDIX 8

Bushfire Management Plan
