



Nambeelup Industrial Area

DISTRICT STRUCTURE PLAN

April 2016



Department of
Planning



Western
Australian
Planning
Commission

Nambeelup Industrial Area

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Published by the
Western Australian Planning Commission
140 William Street
Perth WA 6000

Locked Bag 2506
Perth WA 6001

Published April 2016

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PART 1 – THE STRUCTURE PLAN

1 Introduction

The proposed Nambeelup Industrial Area (NIA) will be a modern industrial estate comprising of approximately 1,000 hectares of industrial land, situated about nine kilometres north-east of the Mandurah city centre and 14 kilometres north-west of the Pinjarra townsite (Figure 1).

The establishment of Peel Business Park at Nambeelup is included as a key transformational project in the *Peel Regional Investment Blueprint, Vision 2050* (the Blueprint) prepared by the Peel Development Commission (2015). The Blueprint outlines that development of an industrial business park within the Nambeelup Industrial Area is seen as a project which will stimulate major business and industrial developments across the Peel region over the next 15 to 20 years.

In order to facilitate a coordinated approach to the planning and development of the Nambeelup Industrial Area, and to protect areas determined to be of environmental significance within the precinct, there was a need to prepare a district structure plan to provide overall guidance for future industrial development and infrastructure provision.

Following more than 10 years of planning, environmental, drainage and infrastructure servicing investigations, as well as separate public consultation periods for an initial draft District Structure Plan in 2012 and then a revised draft District Structure Plan in 2014, the Western Australian Planning Commission endorsed this final District Structure Plan in December 2015.

The final Plan now provides the opportunity to progress further detailed planning, environmental and infrastructure servicing investigations required for its implementation. This includes work related to transport modelling, road and infrastructure servicing planning, as well as that to support the preparation of a development contribution plan and amendments to the Peel Region Scheme and local planning scheme.

Part 1 of this report outlines the vision, key planning objectives and proposals, and implementation mechanisms. Part 2 provides background information relating to the preparation of the District Structure Plan including relevant planning, environmental, drainage and infrastructure servicing issues.



2 Planning objectives

2.1 Vision

The Nambeelup Industrial Area will be a modern well-planned industrial business park designed to protect and benefit from the area's environmental features and provide a major new focus of economic activity, employment growth and service delivery for the Peel region.

2.2 Key objectives

The key planning objectives for the Nambeelup Industrial Area are:

Economy and employment

- Develop the area as one of the largest, diverse employment and economic activity areas within the Peel region.
- Ensure an adequate supply of suitably serviced industrial zoned land for the Peel region.

Land use and built form

- Achieve a diverse range of industrial activities and associated supporting land uses.
- Achieve a high level of amenity and built form outcomes expected to be found in a modern well-planned industrial business park estate.

Transport and infrastructure

- Provide a regional and district road network for the industrial area that effectively integrates with the existing and future regional road network.
- Ensure the proposed road network, including the local roads, are designed to accommodate traffic associated with industrial development, including heavy haulage vehicles.
- Plan for the future provision of public transport services which integrate with the road network.



- Ensure land is adequately serviced, including the provision of reticulated water, sewerage, digital telecommunications, waste management and power.

Environment

- Deliver best environmentally sustainable development practices and water quality management principles.
- Ensure environmental, pollution control and total water cycle drainage management measures are implemented to ensure there are no adverse impacts on the key environmental attributes of the Nambeelup locality and wider catchment, including Nambeelup Brook and Serpentine River.
- Establish and manage a self-sustaining ecosystem to provide habitat for local biodiversity, through the effective protection and management of areas of environmental significance within the proposed Open Space areas.

3 Nambeelup Industrial Area District Structure Plan

3.1 Overview

The Nambeelup Industrial Area District Structure Plan is a strategic document that identifies areas suitable for future industrial development, as well as areas required for regional roads, major infrastructure, open space and drainage. The proposed open space areas are essentially for conservation of areas of environmental significance, but some of these areas have a secondary drainage function (further explanation of this matter is provided in sections 9.3 and 9.5).

The main elements of the District Structure Plan are:

- Approximately 1,100 hectares of land identified for future industrial use (gross), which includes land required for major roads and drainage;
- Approximately 1,100 hectares of land identified for future industrial use (gross), which includes land required for major roads and drainage;
- Approximately 234 hectares of land identified for open space, most of which includes conservation category and resource enhancement wetlands and areas of remnant vegetation identified for protection;
- Approximately 79 hectares of land identified as being required for drainage purposes, which includes estimated post-development drainage storage areas and also land needed for arterial drainage, consistent with the endorsed Nambeelup Industrial Area District Water Management Strategy;
- Regional and local ecological linkages;
- Lakes Road and Gull/Paterson roads are ultimately proposed to be constructed as four-lane dual carriageway roads;
- Sections of Nambeelup and Readheads roads may need to be constructed as four-lane dual carriageway roads, depending upon the findings of further transport modelling; and
- The provision of road reserves of sufficient width to accommodate existing and potential future major infrastructure services along Readheads Road and Lakes Road.

Planning for specific parcels within the District Structure Plan area will be progressively refined through future rezoning proposals and the preparation of local structure plans. This will include determining more precisely areas or sites required for drainage, open space and service infrastructure.

The broad land use category 'Industrial' has been used for the District Structure Plan. The delineation of different industrial or associated land use planning precincts should occur at the local structure planning stage. This is because at the local structure planning stage there will be more detailed information available that can be used to determine the precincts. However, the delineation of these precincts at the local structure planning stage will be guided by the key objectives of the District Structure Plan (Section 2.2) and the key planning principles for each land use planning precinct (Section 3.2).

This approach reflects the planning approach taken for the endorsed local structure plan or Outline Development Plan for Lot 530 Lakes Road. The Outline Development Plan for Lot

530 designates two development precincts, a 'Mixed Business/Service Commercial' precinct along Lakes and Paterson roads with the balance of the land being designated a 'General Industry' precinct.

In addition, it is proposed to have one or two commercial support centres within the proposed industrial area. The exact location and area of these centres would be determined at the local structure planning stage. However, at the district structure plan level only one commercial support centre has been identified on the common boundary of lots 600 and 604 Lakes Road.

The commercial support centres will contain commercial businesses and local retail activities that support the industrial activities and workforce of the Nambeelup Industrial Area.

In accordance with the *Planning and Development (Local Planning Schemes) Regulations 2015*, following approval of the local structure plans, there will be a need to initiate amendments to the Shire of Murray local planning scheme to implement land use zones (including any associated land use or development controls) proposed in the structure plan.

3.2 Land use precincts

The Nambeelup Industrial Area is expected to be developed over the next 30 or more years. Therefore, it is necessary to have a sufficiently adaptable planning framework that enables the development of a suitable range of industrial land uses, but still achieves an attractive unified industrial development, with appropriate potential for individuality. For this reason, the delineation of particular land use precincts and the preparation of associated design guidelines will be addressed at the local structure plan stage, as opposed to the District Structure Plan stage.

Notwithstanding the above, the District Structure Plan identifies key planning principles, to provide guidance for the delineation of the land use precincts at the local structure plan stage. The land use precincts listed below are general in nature, but there is the option, if determined to be appropriate following further economic and

demand analysis, to identify more specific precincts (e.g. research and technology development) within the broader precincts listed below.

The planning principles for each precinct will be used to guide the preparation of local structure plans, and any associated planning objectives and design guidelines.

3.2.1 Commercial support centre

Key planning principles

- Provide for commercial business centres or 'hubs' for commercial businesses and local retail activities that support the industrial activities and workforce.
- Be of a sufficient size to be a viable 'business hub', but not of such a size that would compete with other existing or planned activity centres.
- Be located in prominent positions with suitable road and future public transport access.



- Be designed in a manner that provides clear focal points, which may include commercial businesses focussed around a main street with an appropriate pedestrian amenity and public spaces.

3.2.2 Service commercial

Key planning principles

- Service commercial development should be restricted to limited sections of Lakes Road and Paterson Road and provide for a range of land uses which require a high traffic exposure.
- Direct access from service commercial lots onto proposed arterial roads within the area is to be limited though the provision of reciprocal rights of access over driveway cross-overs and visitor car-parking areas.
- Buildings to have a suitable street frontage aspect, with a high standard of building design and well-planned and integrated customer parking along the street frontages.

3.2.3 Light industry

Key planning principles

- Light industrial areas are generally to be situated in more visually prominent areas, including along the arterial roads.
- Provide for a range of generally smaller scale light and service industries and related enterprises which, by their nature, would not adversely affect the amenity of the surrounding area.
- Generally smaller and more affordable lots are to be provided (for example, lots of 1,000m²—4,000m²) within the light industrial areas.



3.2.4 General industry

Key planning principles

- To be situated in the less visually prominent areas.
- Provision of generally larger lots (e.g. 4,000m²—5ha) that cater for either larger scale industrial (and related) enterprises or uses that, by their nature, require separation from other more sensitive land uses to ensure the amenity of the area is not compromised.

3.2.5 Design guidelines – Key objectives

Local structure plans will need to be supported by specific design guidelines and policy measures approved by the Council prior to any subdivision or development. However, the following key objectives need to be addressed in any design guidelines prepared for land within the Nambeelup Industrial Area:

Nambeelup Industrial Area

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- The creation of high-quality built form solutions, which provide functional and attractive industrial streetscapes and efficient use of land.
- The development of a unique sense of place through contemporary distinctive architectural design, building form, streetscape, signage and landscaping.
- Achieve greater sustainability in the built form through efficient energy use, wastewater reuse, stormwater harvesting and water sensitive design.
- Achieve high-quality unified landscaping solutions that are functional, complement buildings, integrate with the natural environment and demonstrate best practice water management principles.

The development of the proposed road network will be undertaken in a staged manner, with the expectation that single-lane carriageways will be sufficient for the regional road network in the short to medium term.

All roads will be built to standards specified by the Shire of Murray. This includes major intersections being designed to accommodate the turning circle of a B-double vehicle.

Proposed four-way regional road intersections are planned as roundabouts in the first stage and in the longer term traffic signals may be warranted. Roundabouts are the preferred option for major intersections as they improve the flow of traffic and are the safest form of intersection control.

3.3 Proposed regional road network

The Nambeelup Industrial Area is strategically located, being well-served by existing regional and district roads. Likewise, in the future Nambeelup will be well-served by the proposed future regional road network for South Metropolitan and Peel regions.

Background information on the road planning investigations undertaken for the District Structure Plan and how the Nambeelup road proposals integrate with the broader sub-regional planning framework is provided in Section 11 of this report.

Due to the need to undertake further transport modelling for the Nambeelup Industrial Area, a possible alternative road classification is indicated for a couple of sections of proposed roads in the District Structure Plan (Figure 2). For example, while the proposed westerly extension of Readheads Road (west of Gull Road) and Nambeelup Road are shown as Integrator A roads, the District Structure Plan specifies that these roads (or sections thereof) may only need to be constructed as Integrator B roads depending upon the findings of further transport modelling.



Table 1 summarises the major road proposals contained in the District Structure Plan. However, it is acknowledged that the road proposals, in particular the proposed categories and associated road reserve widths for some of the roads, could be reviewed following more regional transport modelling and regional road network analysis.

Further explanation is provided below for each of the four major east-west and north-south roads for Nambeelup, as well as some general explanation regarding the proposed 'Important Neighbourhood Connectors' and local subdivisional roads.

3.3.1 Lakes Road

Lakes Road will become an important east-west regional road within the Peel region, connecting Nambeelup to Mandurah, the Kwinana Freeway and the South Western Highway.

Ultimately, Lakes Road will be constructed as a four-lane divided carriageway road. It is proposed to reserve the section of Lakes Road located between the Kwinana Freeway and the South Western Highway for 'Other Regional Roads' in the Peel Region Scheme.

Most of the existing Lakes Road reserve is approximately 20 metres wide and it is proposed to (ultimately) widen the road reserve west of Lakelands Road to 47–50 metres and 54–60 metres east of Lakelands Road. From about the western boundary of Lot 530 Lakes Road (proposed 54–60 metres road reserve), Lakes Road will be widened on the southern side and the existing water trunk main will be accommodated in the median for the proposed dual carriageway.

The existing 'Other Regional Roads' reservation under the Peel Region Scheme for the section of Lakes Road west of the Kwinana Freeway will also have to be widened to accommodate significant service infrastructure.

Table 1 – Summary of major road proposals in the Nambeelup Industrial Area District Structure Plan

| Key road proposals within the Nambeelup Industrial Area | Proposed road category | Proposed number of traffic lanes | Recommended road reserve width (ultimate) |
|---|---------------------------|--------------------------------------|---|
| Lakes Road (east of Lakelands Road) | Integrator A | 4 lane dual carriageway | 54-60m |
| Lakes Road (west of Lakelands Road) | Integrator A | 4 lane dual carriageway | 47-50m |
| Readheads Road (west of Gull Road) | Integrator A ¹ | 4 ¹ lane dual carriageway | 51-54m ¹ |
| Readheads Road (east of Gull Road) | Integrator B | 2 lane | 46.5-49.5m |
| Gull/Paterson Road | Integrator A | 4 lane dual carriageway | 39-42m |
| Nambeelup Road | Integrator A ¹ | 4 ¹ lane dual carriageway | 39-42m ¹ |

¹ These regional road proposals could be reviewed following the preparation of additional regional transport modelling and further analysis of the regional road network. For example, further transport modelling for the Nambeelup Industrial Area could indicate that the section of Nambeelup Road, north of Lakes Road, only needs to be constructed to an Integrator B two-lane road standard.

A proposed typical cross-section for the ultimate road design for Lakes Road can be found in Appendix 1.

3.3.2 Redheads Road (west of Gull Road)

It is proposed to realign Readheads Road, west of Gull Road, to connect to the existing Lakes Road 'T' intersection at the southern end of Osprey Link. Minor reconfiguration of this intersection will be necessary.

This new road connection and Readheads Road through to Gull Road is currently proposed to be constructed as a four-lane dual carriageway road, but this will be confirmed following further transport modelling for the Nambeelup Industrial Area.

A proposed typical cross-section for the ultimate road design for this section of Readheads Road can be found in Appendix 1. However, the proposed 'Integrator A' road category and the associated road reserve width for this road could be reviewed following further transport modelling and regional road network analysis.

3.3.3 Redheads Road (east of Gull Road)

East of Gull Road, Readheads Road will only need to be constructed to a two-lane single carriage standard (Integrator Road B standard). However, this section of Readheads Road will still need to be wide enough to accommodate potential trunk services to a long-term future Water Corporation treatment facility on Lot 88 Readheads Road.

A proposed typical cross-section for the ultimate road design for the section of Readheads Road between Gull Road and Nambeelup Road can be found in Appendix 1.

3.3.4 Gull/Patterson Road

Gull/Paterson Road will become an important north-south regional road and is proposed to be constructed as a four lane divided carriageway road.

A proposed typical cross-section for the ultimate road design for Gull Road south of Readheads Road can be found in Appendix 1.

3.3.5 Nambeelup Road

Nambeelup Road will become an important north-south regional road.

Nambeelup Road may need to become a four lane divided carriageway road. However, the proposed 'Integrator A' road classification and the associated road reserve width for sections of this road could be reviewed following further regional transport modelling. For example, it may be determined that the section of Nambeelup Road north of Lakes Road may only need to be constructed as an 'Integrator B' road with two lanes.

3.3.6 Important Neighborhood Connectors and Local Roads

The District Structure Plan shows proposed 'Important Neighbourhood Connectors' roads. These two-lane roads will generally be 30-35 metres in width depending on the type of drainage design in the road median (kerbed or open).

For example, Lakelands Road is identified as an 'Important Neighbourhood Connector'. Under the approved Outline Development Plan for Lot 530 Lakes Road, the road reserve for Lakelands Road is proposed to be 42 metres wide constructed as a two-lane dual carriageway road, with a central median of 15 metres wide to accommodate an open swale drain.

Being a higher level, non-statutory plan the District Structure Plan does not show lower order local subdivision roads. Local road planning will occur at local structure planning and subdivision stages.

Internal subdivision roads will generally have road reserves 30 metres wide where they accommodate a swale drain and 20 metres wide where they accommodate piped drainage. Carriageways will have a minimum width of 10 metres for a single carriageway road.

3.4 Public transport

There are no existing public transport services to Nambeelup. It is anticipated that bus-based public transport services will be provided in the long-term, when the Nambeelup Industrial Area is of sufficient size and there is a reasonable demand for public transport services. Planning for public transport services will need to take into account any relevant outcomes of the finalised *South Metropolitan Peel Sub-regional Planning Framework*.

3.5 Pedestrian movement and cycleway network

To provide for cycle and pedestrian movements with the proposed Nambeelup Industrial Area, a bicycle and pedestrian network is proposed as part of the District Structure Plan. The network is based upon a hierarchy developed by the Department of Transport which includes principal shared paths, recreation shared paths and strategic bike routes.

The higher order components of the Nambeelup Industrial Area cycleway network hierarchy are shown in Figure 3. These are also reflected in the typical road cross-sections for the proposed regional roads within the Nambeelup Industrial Area.

3.6 Open space proposals

The Open Space areas proposed in the District Structure Plan are essentially for protection of areas of environmental significance, but some of these areas have a secondary drainage function (further explanation of this is provided in sections 9.3 and 9.5). The areas of open space were determined by taking into consideration, *inter alia*:

- the findings of the Environmental Assessment Report: Nambeelup Industrial District Structure Plan prepared by Coterra in 2012 and other environmental investigations and reports undertaken on behalf of landowners within the Nambeelup Industrial Area;
- relevant Environmental Protection Authority and Western Australian Planning Commission (WAPC) policies and bulletins;
- the Nambeelup Industrial Area District Water Management Strategy (JDA Consultant Hydrologists, 2012); and
- further consultations with state government environmental agencies after the advertising of the draft District Structure Plan.

Through the delineation of the open space areas, the District Structure Plan protects key wetland areas, including lakes protected under *Environmental Protection Policy (Swan Coastal Plain Lakes) Policy 1992* and most of the 'Regionally Significant Natural Areas' identified in *Environmental Protection Bulletin No. 12 Swan Bioplan – Peel Regionally Significant Natural Areas* (Environmental Protection Authority, 2010) (Swan Bioplan). To illustrate this, Figure 4 shows the open space areas overlaid with information relating to wetlands and remnant vegetation.

The District Structure Plan also responds to the unique hydrology of this locality. For example, natural areas required to serve an important drainage function as part of the Arterial Drainage Network Strategy in the District Water Management Strategy, are also designated as 'Open Space/Drainage' in the District Structure Plan.

A total of 234 hectare is identified as open space in the District Structure Plan. The main purposes or functions of the open space and their approximate areas are:

- 154 hectares, principally for wetland protection; and
- 80 hectares, principally for remnant vegetation protection.

At the local structure planning stage, proponents will have to undertake further investigations to refine the designated open space areas, having regard to, *inter alia*, any further detailed site specific environmental investigations.

These open space areas are to be ceded free of cost by the proponents. Management plans will also have to be prepared and initially implemented by the proponents. The ongoing management of most of the proposed open space areas will be the responsibility

of the Shire of Murray. Potential funding opportunities for ongoing management of open space areas will be further investigated by the Shire of Murray.

The key open space areas are discussed further in the following sections.

3.6.1 Wetland protection

Conservation Category Wetlands and Resource Enhancement Wetlands, which retain their ecological values, are included in the proposed open space areas in the District Structure Plan. These wetlands are shown in Figure 4.

A 50 metre wide buffer for the Conservation Category and Resource Enhancement wetlands is also included as part of the open space, which will be subject to detailed site specific assessment at the local structure planning stage.

3.6.2 Remnant Vegetation protection

Various areas of the Regionally Significant Natural Area identified in the Swan Bioplan are proposed to be retained within open space.

Approximately, seven hectares of Regionally Significant Natural Area on Lot 221 Lakes Road and 13 hectares on Lot 212 Lakelands Road are included within the open space classification. A six-hectare portion of Regionally Significant Natural Area on Lot 602 Lakes Road is proposed to be protected, however, the degraded five-hectare portion on this lot is included as part of the proposed industrial area.

In addition, areas of remnant vegetation important for Carnaby's Cockatoo feeding, roosting or foraging have also been included in the open space areas. For example, approximately 24 hectares of remnant vegetation in the south western portion of Lot 604 Lakes Road have been included within an area identified as open space on the District Structure Plan.

3.6.3 Key ecological linkages

The Nambeelup Industrial Area District Structure Plan identifies two key ecological linkages, these being:

- through the proposed Nambeelup Industrial Area extending from the Serpentine River and then generally along the southern side of Readheads Road; and
- Nambeelup Brook to the south.

In addition to the above, a local north-south ecological linkage is proposed through the centre of the Nambeelup Industrial Area. Further background information and explanation on the ecological linkages is provided in Section 9.4.

3.6.4 Nambeelup Brook

Nambeelup Brook floodplain extends into several properties along the southern boundary of the District Structure Plan project area. Industrial proposals of the District Structure Plan do not encroach into vegetated areas within the Nambeelup Brook floodplain.

Further site specific environmental investigations will be required during the preparation of local structure plans for all properties abutting Nambeelup Brook, to ensure that sufficient foreshore setbacks are applied. Foreshore management plans will also need to be prepared and implemented as part of the subdivision process.

A north-western portion of Lot 224 Paterson Road immediately north of Nambeelup Brook, which contains two residences, has been retained within the rural designation of the District Structure Plan.

3.7 District Water Management Strategy

In 2012 the Nambeelup Industrial Area District Water Management Strategy was prepared by JDA Consultant Hydrologists in accordance with *Better Urban Water Management* (WAPC, 2008). The Strategy considers all aspects of the total water cycle and was updated to reflect the latest District Structure Plan after it was endorsed by the WAPC.

The purpose of a district water management strategy is to demonstrate that the land is capable of supporting industrial development and the District Structure Plan layout supports appropriate water sensitive design and best practice water management outcomes for the area, including allowances for arterial drainage.

Some of the key components of the proposed district arterial drainage strategy for Nambeelup are illustrated in Figure 2 and the post development catchments are presented in Figure 5. The proposed arterial drainage network incorporates water sensitive design using vegetated open swales in road reserves, living streams/swales of retained natural overland flow paths through public open space, and culverts under main roads. The District Water Management Strategy and the associated (proposed) arterial drainage strategy are discussed further in Section 9.5.

3.8 Infrastructure proposals

A service infrastructure plan has been prepared (Figure 6), which indicates the major service infrastructure that will need to be provided for the Nambeelup Industrial Area.

Background explanation on the infrastructure servicing issues and proposals is provided in section 12, however a summary of the key service infrastructure proposals is provided below.

3.8.1 Potable water

A water distribution main will need to be constructed from the North Mandurah Tank in Parklands along Lakes Road to the proposed Nambeelup Industrial Area, a distance of approximately four kilometres. Developers will need to design and construct additional smaller-diameter water reticulation mains (generally 250mm and 200mm diameter) from the end of the proposed distribution main to service individual industrial subdivision and development proposals.

3.8.2 Wastewater

Nambeelup is within the Water Corporation's licence area for the provision of wastewater services. The Water Corporation has prepared a preliminary Waste Water Strategy for Nambeelup which includes the ultimate construction of a number of pump stations and pressure mains within the Nambeelup Industrial Area. This planning can be varied and staged by developers provided the long-term plan is not compromised.

3.8.3 Electricity

The overall power transmission infrastructure likely to be required is:

- one zone substation (within 10–25 years);
- dual circuit 132kV transmission lines upon pole structures (within 10–25 years), connecting the new zone substation to existing lines to the west and east of the Nambeelup Industrial Area; and
- distribution feeders and connections (to be installed as subdivision and development occurs).

3.8.4 Natural gas

A reticulated gas network for the Nambeelup Industrial Area can be provided from an existing gas trunk main that runs along Readheads Road. However, it will be necessary to construct a pressure reducing station on the existing gas trunk main.



4 Implementation

4.1 Implementation and governance

Although the Western Australian Planning Commission has endorsed the District Structure Plan there are numerous tasks that need to be undertaken to facilitate development of the land for industrial purposes. These include further detailed planning, environmental and infrastructure investigations. Table 2 indicates the key tasks that need to be completed for each subsequent stage of the planning process.

Furthermore, due to the high upfront service infrastructure costs for the first stages of the Nambeelup Industrial Area there is a need to formulate a developer contribution plan or agreement. Further explanation of such contribution plans and agreements is provided in sections 4.3 and 13.

Table 2 – Summary of Key Implementation Tasks

| Implementation task | Stage of planning process | Comments | Key stakeholders |
|--|---|---|---|
| Preparation of a comprehensive infrastructure servicing plan for the Nambeelup Industrial Area. | Prior to the region scheme and local planning scheme amendment processes. | A suitably agreed comprehensive infrastructure servicing plan for the Nambeelup Industrial Area is required to support any industrial rezoning proposals and would form the basis of a proposed Development Contribution Plan. | Landowners Shire of Murray Service providers Department of Planning |
| Preparation of major road design concept plans and land requirement plans. | Prior to local planning scheme amendment process. | The land requirement plans will be used to determine the reserve widths for major roads with in the Nambeelup Industrial Area, having regard to drainage, service infrastructure, traffic and any public transport requirements. Such land requirement plans could be prepared as part of the proposed Development Contribution Plan. | Landowners Shire of Murray Service providers Department of Planning Main Roads WA |
| Preparation of a Development Contribution Plan. | Draft Development Contribution Plan to be prepared to support region scheme and local rezoning requests and to potentially form the basis of a separate local scheme amendment to implement the Plan. | Various matters will need to be adequately addressed or completed prior to the WAPC being prepared to initiate an amendment to the Peel Region Scheme (Section 4.4). | Shire of Murray Landowners Department of Planning WAPC Service providers |
| Transferring additional land to the Industrial zone of the Peel Region Scheme in accordance with the District Structure Plan. | Region scheme amendment process. | Various matters will need to be adequately addressed or completed prior to the WAPC being prepared to initiate an amendment to the Peel Region Scheme (Section 4.4). | WAPC Department of Planning Landowners Shire of Murray |
| Preparation of an amendment to local planning scheme, to transfer land to the Industrial Development zone and introduce provisions to implement the Development Contribution Plan. | Local planning scheme amendment process. | Various matters will need to be adequately addressed or completed prior to the Shire of Murray being prepared to initiate an amendment to the local planning scheme, including the WAPC initiating an associated amendment under the Peel Region Scheme. | Shire of Murray Department of Planning WAPC Landowners |
| Preparation of management plans for wetland, public open space, drainage and conservation areas, including Nambeelup Brook foreshore areas. | Management plans to be prepared at the local structure planning stage or subdivision stage. | Landowners to undertake further consultations with relevant agencies to determine what management plans need to be prepared at subsequent stages of the planning process. | Landowners Shire of Murray Department of Parks & Wildlife Department of Water Department of Planning |

Table 2 – Summary of Key Implementation Tasks (cont.)

| Implementation task | Stage of planning process | Comments | Key stakeholders |
|--|---|---|---|
| Undertake site specific vegetation, wetland assessments and/or flora or fauna surveys. | Depending upon the type of environmental assessment investigation required, at either the region scheme amendment or local structure planning stages. | Landowners to undertake further consultation with relevant agencies to determine what specific surveys or wetland assessments, if any, are needed to be completed in subsequent stages of the planning process. Objectives of the Council endorsed Shire of Murray Local Biodiversity Strategy (2013) may be taken into consideration at the local structure planning stage during the refinement of open space boundaries and location/design of identified ecological linkages. | Landowners Department of Parks & Wildlife Department of Water |
| Preparation of Bushfire Hazard Level assessment and Fire Management Plans. | Prior to Region Scheme Amendment process or at local structure planning stage for land already zoned industrial. | Landowners to undertake relevant investigations in consultation with the Shire of Murray and DFES in relation to fire management matters. | Landowners Shire of Murray DFES |
| Preparation of local water management strategies and urban water management plans. | Local structure planning and subdivision processes. | Landowners to prepare local water management strategies to support local structure plans. Urban water management plans will be required at the subdivision stage. | Landowners Shire of Murray Department of Water |
| A review of the permitted and discretionary land uses for the 'Industrial Development' zone. | Local planning scheme rezoning stage. | Need to review land use permissibility provisions for the Industrial Development zone under the Shire of Murray Town Planning Scheme No. 4, particularly having regard to the <i>Planning and Development (Local Planning Scheme) Regulations 2015</i> . | Shire of Murray Department of Planning WAPC Department of Agriculture & Food WA Landowners |
| Preparation of design guidelines for different planning precincts within the Nambeelup Industrial Area or types of industrial development. | Local planning scheme rezoning stage. | It is important to have appropriate design guidelines for the whole Nambeelup Industrial Area prepared prior to the preparation of local structure plans, to ensure a suitable consistent standard of development across the entire Nambeelup Industrial Area. | Shire of Murray Landowners |

To effectively coordinate all of the tasks required for the implementation of the District Structure Plan, it is recommended that a Nambeelup Project Steering Committee and Technical Advisory Group be established. The composition of these groups, as well as their specific roles and responsibilities will still need to be determined.

In addition, if Perth and Peel Green Growth Plan for 3.5 million project² and associated environmental assessment processes have not been completed by the time the WAPC is in a position to initiate an amendment to the Peel Region Scheme to rezone land for industrial purposes in accordance with the District Structure Plan, then there may be a need to refer the proposal to the Federal Department of Environment under the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act).

4.2 Major roads

Before any detailed road planning and design work can be undertaken for the Nambeelup Industrial Area, a suitably detailed transport modelling report and infrastructure servicing plan needs to be completed. Furthermore, there will be a need to confirm the proposed long-term public transport proposals for the area, and any associated land requirements. When these tasks have been completed there will be sufficient information to prepare road design concepts and ultimate land requirement plans for proposed major roads within the Nambeelup Industrial Area, such as Lakes Road.

These road design concept plans, along with the associated land requirement plans, may have to be prepared by consultants and the cost of preparing such plans be recovered through a development contribution plan for the Nambeelup Industrial Area. Alternatively, the preparation of the road design concepts could be funded via a landowners' agreement, prior to the preparation of the development contribution plan.

The Shire of Murray and Department of Planning will be key stakeholders in the preparation of the road design concept plans and undertake the necessary consultation with service agencies and relevant landowners. The road design concept plans will take into consideration the relevant traffic projections and any public transport, service infrastructure and drainage proposals, as well as the required cycleway and pedestrian facilities.

4.3 Developer contribution arrangements

Following an examination of potential development contribution models it has been determined that the development contribution plan is the most appropriate development contribution model to facilitate the industrial development proposed in the District Structure Plan.

Section 13 outlines the review of development contribution models undertaken for the District Structure Plan and provides an explanation as to why the development contribution plan model has been chosen.

There are various reasons for selecting the development contribution plan model for the Nambeelup Industrial Area. These include the:

- high upfront cost of providing service infrastructure for the first stages;
- involvement of several major landowners in the development of the area; and
- need for equitable and transparent cost-sharing arrangements for the provision of key infrastructure, major drainage infrastructure and regional roads.

In order to prepare a development contribution plan, there will be a need to first prepare a:

- (a) development contribution plan report that sets out the infrastructure and any land requirements (including land for regional roads) for which developer contributions are required; and

² On 17 December 2015 documents relating to the SAPPR project were released as the draft Perth and Peel Green Growth Plan for 3.5 million for public comment.

- (b) servicing and staging plan, which has general agreement from key servicing agencies. This servicing and staging plan would form the basis of the proposed development contribution plan and any associated cost apportionment schedule.

The Shire of Murray will lead in the preparation of the development contribution plan, but as part of the preparation process will consult affected landowners and servicing agencies.

The Shire of Murray will also become the custodian and administrator of the development contribution plan, which will involve the collection of contributions and expenditure of funds in accordance with the development contribution plan. However, the Shire of Murray may have to outsource this role to an external specialist Scheme Management advisor, with this cost 'paid' for by the development contribution plan.

4.4 Peel Region Scheme amendments

There will be a need for the WAPC to initiate an amendment(s) to the Peel Region Scheme to rezone additional land for industrial purposes in accordance with the District Structure Plan.

There are various tasks that will need to be undertaken before the WAPC can consider initiating an amendment to the Peel Region Scheme. These tasks include:

- preparation of a suitably detailed infrastructure servicing and staging plan;
- completion of a suitable transport modelling report;
- preparation of a draft developer contribution plan;
- preparation of Bushfire Hazard level assessment and where necessary, Bushfire Management Plans in accordance with *State Planning Policy 3.7 – Planning in Bushfire Prone Areas and Guidelines for Planning in Bushfire Prone Areas* (WAPC 2015); and

- completion of any relevant environmental reports needed to support the industrial rezoning proposal (for example, flora and fauna studies).

4.5 Management plans

Various management plans will need to be prepared by proponents of industrial development at the local structure planning and subdivision stages of the planning processes. For example, in accordance with the conditions of the environmental approval for the Peel Region Scheme under the *Environmental Protection Act 1986* there may be a requirement to prepare environmental management plans to support a local rezoning proposal. Alternatively, particular management plans, such as foreshore management plans, may need to be prepared and implemented as conditions of subdivision approval.

Management plans for open space or foreshore areas will need to address matters such as:

- the environmental attributes of open space areas;
- measures for rehabilitating retained natural areas;
- landscaping requirements within and adjacent to open space areas;
- identification of ongoing monitoring and maintenance requirements for open space areas; and
- bushfire risk management.

Management plans will need to be endorsed by the Shire of Murray and/or relevant state government agencies and implemented – including ongoing monitoring, to their satisfaction.

4.6 Staging of development

The Nambeelup Industrial Area is anticipated to be developed in numerous stages over a 30 year timeframe. Initial development is expected to occur in the south-western portion of the area within the already zoned industrial areas, with development progressively moving to the eastern and northern areas.

The Nambeelup Kennel Estate is anticipated to be one of the last stages of industrial development, given the current multiple landownership within the Kennel estate and the overall development take-up rate within the Nambeelup Industrial Area.

A few major landholdings in the south-western portion are already zoned for industrial purposes in the Peel Region Scheme and Shire of Murray Town Planning Scheme No. 4. Lot 530 Lakes Road has an approved outline development plan for the land; however, no industrial development has taken place on Lot 530. The high upfront costs of bringing the services to the area, as well as the relatively high site and drainage costs for industrial subdivision remain the major impediments to industrial development for individual landowners.

The timing of industrial subdivision and development will largely be dependent upon the:

- provision of key services to the area or a particular industrial development stage;
- ability and willingness of individual landowners to address any detailed road construction, environmental, drainage and water management issues; and
- demand and development take-up rate for industrial land.

PART 2 - EXPLANATORY

5 Background

5.1 Nambeelup District Structure Plan project area

The proposed Nambeelup Industrial Area is approximately nine kilometres north-east of the Mandurah town centre and 14 kilometres north-west of Pinjarra (Figure 1). The project area covers approximately 1,500 hectare and is generally bound by the Kwinana Freeway and Serpentine River to the west, Nambeelup Brook to the south, Gull Road drain to the north and Nambeelup Road to the east.

5.2 Nambeelup District Structure Plan background

The *Inner Peel Region Structure Plan* (WAPC, 1997) identified approximately 1,300 hectares of land at Nambeelup for future industrial development, with most of the identified industrial area being categorised as 'Industrial - Conceptual Long Term'. The *Inner Peel Region Structure Plan* formed the basis for the preparation of the Peel Region Scheme.

In 2003 when the Peel Region Scheme came into effect, approximately 174 hectares of land in Nambeelup was zoned Industrial. This generally corresponded with the land identified for future industrial in the *Inner Peel Region Structure Plan*, as opposed to the considerably larger area of land identified as 'Industrial - Conceptual Long Term'.

The intention was that when an overall structure plan, along with the associated environmental and drainage investigations had been undertaken for Nambeelup, the WAPC would give consideration to rezoning additional land for industrial purposes.

Since 2003 various planning, drainage and environmental investigations have been undertaken by consultants on behalf of the WAPC and major landowners in Nambeelup.

In 2010, the Murray Shire Council and WAPC endorsed a local structure plan (otherwise known as an outline development plan) for Lot 530 Lakes Road. However, to date no industrial development has taken place on that lot and no industrial rezoning proposals have been progressed for other land in Nambeelup. There are various reasons for this but the high upfront costs of bringing the services to the area, as well as the relatively high site and drainage costs for industrial subdivision remain the major impediments to industrial development for individual landowners.

In 2011, several major landowners agreed to prepare a district structure plan for the proposed Nambeelup Industrial Area and engage consultants to prepare the necessary supporting technical reports. Four technical reports were prepared by the appointed consultants. However, the draft District Structure Plan was prepared by the Department of Planning in consultation with the Shire of Murray, key State government agencies and consultants acting on behalf of the landowners.

This initial draft District Structure Plan was advertised for public comment from September to October 2012. The submissions received were analysed by the Department of Planning and the Shire of Murray.

In May 2013, the Shire of Murray Council endorsed the District Structure Plan subject to modifications and particular matters being addressed. In addition, the Council requested that the WAPC consider the appropriate

integration of the sub-regional road, freight and public transport network systems between the Nambeelup Industrial Area and the proposed sub-regional planning framework, prior to making a final determination on the District Structure Plan.

In response to Council's decision and issues raised in public submissions received on the initial draft District Structure Plan, the Department of Planning undertook further investigations, which resulted in a revised draft District Structure Plan; and ensured the proposals aligned with those of the draft South Metropolitan Peel Sub-regional Planning Framework that was released for public comment in May 2015. The revised draft District Structure Plan was advertised for public comment from 5 December 2014 to 16 January 2015 to provide stakeholders the opportunity to comment on the modifications.

Twenty-two submissions were received on this draft District Structure Plan. Numerous issues were raised in the submissions received but the key issues raised included the following:

- the Nambeelup Industrial Area District Structure Plan should not be finalised prior to the sub-regional structure planning and strategic assessment processes being finalised unless it is clearly demonstrated how it aligns with the broader sub-regional planning framework and a complete comprehensive environmental assessment for the whole area is undertaken;
- suggestions that the District Structure Plan should differentiate between the conservation and drainage areas, as opposed to having a combined 'open space/drainage' classification;
- issues raised in respect to specific proposed open space/drainage areas or proposed ecological linkages;
- questions regarding the proposed road classifications for the major road proposals in the District Structure Plan, particularly as no transport modelling information has been provided to support the proposed road classifications and associated road cross-sections;
- various issues raised about the proposed development contribution plan for the Nambeelup Industrial Area; and
- numerous suggested changes to the proposed objectives, sections of report text and mapping for the District Structure Plan.

In response to the submissions, a few of the proposals contained in the District Structure Plan were modified, as well as numerous modifications made to the associated report and mapping. For example, the District Structure Plan now differentiates between those areas essentially required for drainage and those areas included in open space for protection of areas of particular environmental significance.

The WAPC also concluded that it was appropriate for the Nambeelup Industrial Area District Structure Plan to be finalised prior to the South Metropolitan Peel Sub-regional Planning Framework and Strategic Assessment for Perth and Peel Regions processes being finalised when having regard to the following:

- i) the release of the draft South Metropolitan Peel Sub-regional Planning Framework in May 2015 provided sufficient indication of the strategic planning context for the Nambeelup Industrial Area and no fundamental shift in respect to the proposed area is expected, particularly as it has been proposed in strategic planning documents since 1997;
- ii) there has been substantial environmental investigations undertaken for the Nambeelup Industrial Area during the past 10 or more years and inputs have been obtained from the SAPPR project during the preparation of the District Structure Plan;
- iii) the recently completed environmental study gap analysis undertaken for the Nambeelup Industrial Area (Coterra, 2015), has confirmed that no further detailed site investigations were required to be undertaken to support the District Structure Plan;
- iv) finalisation of the District Structure Plan will enable further planning, servicing and environmental investigations to be undertaken, which are required for the proposed industrial rezoning proposals and a development contribution scheme for the Nambeelup Industrial Area; and

- v) the Nambeelup Industrial Area is identified as a critical employment and economic activity project for the Peel region, therefore, it is important to progress planning for the area.

Finalisation of the District Structure Plan provides the opportunity to progress detailed planning, environmental and infrastructure servicing investigations required for its implementation. This includes progressing work related to transport modelling, road and infrastructure servicing planning, as well as the necessary work to support the preparation of a development contribution plan and amendments to the Peel Region Scheme and local planning scheme.

5.3 Key purposes of the District Structure Plan

The key purposes of the District Structure Plan are to:

- i) ensure effective integration of the District Structure Plan proposals with any broader regional planning proposals or strategic considerations;
- ii) facilitate a coordinated and staged approach to the planning and development of the Nambeelup Industrial Area;
- iii) provide sufficient planning guidance for the preparation of future amendments to the Peel Region Scheme and local planning scheme in order to facilitate implementation of the District Structure Plan;
- iv) depict a sufficiently adaptable and robust design to accommodate future industrial and related land use requirements that may become apparent or evolve as the estate develops, while providing sufficient guidance for the effective preparation and integration of local structure plans for the Nambeelup Industrial Area; and
- v) identify key transport and service infrastructure required to service the proposed Nambeelup Industrial Area, which will assist in the preparation of a development contribution plan for the area.

6 Regional strategic and policy context

6.1 Directions 2031 and Beyond

Directions 2031 and Beyond (WAPC, 2010) is a long-term strategic document, which provides the framework for more detailed planning for the delivery of housing, infrastructure and services necessary to accommodate future growth and development of the Perth and Peel regions.

Directions 2031 also identified five strategic themes that will be used to shape future urban growth:

- A Liveable City
- A Prosperous City
- An Accessible City
- A Sustainable City
- A Responsible City

The Nambeelup Industrial Area will assist in achieving the strategic objectives related to some of the abovementioned themes and will play a major role in achieving employment self-sufficiency.

6.2 Perth and Peel @ 3.5million

In May 20015, the draft *Perth and Peel@3.5million* was released for public comment. This is an overarching document that builds upon the vision laid down in *Directions 2031 and beyond* and provides a link across the four sub-regional planning frameworks (the South Metropolitan Peel Sub-regional Planning Framework being one of these) that define the spatial plan of the Perth

and Peel regions for the next 35 to 40 years in order to accommodate a population of 3.5 million people. *Perth and Peel@3.5million* is yet to be finalised.

6.3 South Metropolitan Peel Sub-regional Planning Framework

The draft *South Metropolitan Peel Sub-regional Planning Framework* was one of four sub-regional planning frameworks that were released for public comment in May 2015 (Figure 7). These planning frameworks, when finalised as sub-regional structure plans, will put in place an integrated long-term framework for land use and infrastructure for the Perth and Peel regions.

These strategic documents recognise the importance of a 'whole of government approach' and use a planning horizon linked to a whole-of-Perth-Peel population of 3.5 million people.

Depending upon matters such as migration policy and fertility rates, it is expected that a population of 3.5 million will be reached during the period 2046–2050.

The draft South Metropolitan Peel Sub-regional Planning Framework reflected the proposed industrial area and associated regional road network shown on the Nambeelup Industrial Area District Structure Plan.

The WAPC, as explained in section 5.2, concluded that the Nambeelup Industrial Area District Structure Plan could be finalised prior to the finalisation of the sub-regional structure planning process.

6.4 Economic and Employment Lands Strategy

The *Economic and Employment Lands Strategy* (WAPC, 2012) provides a strategic planning framework for industrial land use planning and development during the next 20 years. The strategy identifies land that is potentially suitable for industrial development in the medium to long-term and considers ways to address constraints on the land.

The Nambeelup Industrial Area is identified as a priority 'potential industrial area medium-term' in the Economic and Employment Lands Strategy. While recognising locational advantages and good freight network route linkages of Nambeelup, the lands strategy points out that the Nambeelup Industrial Area has significant environmental, water management and servicing constraints, which need to be resolved prior to land being developed for industrial purposes.

6.5 State Planning Policy No. 2.1: Peel Harvey Coastal Plain Catchment

The main purpose of *State Planning Policy No. 2.1: Peel Harvey Coastal Plain Catchment* (SPP 2.1) is the protection and improvement of the environmental quality of the Peel Harvey Estuarine System.

SPP 2.1 contains provisions aimed at controlling the establishment of land uses within the Peel Harvey Catchment to avoid or minimise any environmental damage to the estuary.

In relation to industrial development, Section 6.5 of the SPP 2.1 states that where the industrial process would create liquid effluent, proposals must include provisions for connection to a reticulated sewerage system.

Direct drainage discharge into the catchment from the Nambeelup Industrial Area will be minimised by the requirement for on-site retention and other drainage management measures specified in the Nambeelup District Water Management Strategy, which forms part of supporting documentation for the District Structure Plan.

6.6 State Planning Policy No. 4.1: State Industrial Buffer Policy

The purpose of the *State Planning Policy No. 4.1 – State Industrial Buffer Policy* (SPP 4.1) is to provide a consistent approach to the protection and security of industrial zones, transport terminals, ports, other utilities and special use zones. SPP 4.1 also considers the safety and amenity of surrounding land uses, while having regard to the rights of landowners who may be affected by residual emissions and risk.

Section 1.1 of SPP 4.1 states that in the case of light/service industry or technology parks the impacts can usually be retained on-site, which is a normal requirement for these types of industry, where building setbacks combined with suitable landscaping in effect form the buffer area. Other types of industry such as hazardous, noxious, resource processing, general industry and infrastructure (including power generation facilities, effluent treatment plants and ports) often require buffer areas which may extend off-site on to surrounding properties.

The Nambeelup Industrial Area will provide for light/service and general industrial land uses. All proposed industrial uses within the area would be assessed for compliance with Environmental Protection Guidance Statement No. 3: Separation Distance between Industrial and Sensitive Land Uses at the development application stage, as this is when detailed information becomes available.

A review of SPP 4.1 is currently being undertaken.

6.7 State Planning Policy No. 4.2: Activity Centres for Perth and Peel

The main purpose of *State Planning Policy No. 4.2 – Activity Centres for Perth and Peel* (SPP 4.2) is to provide broad planning requirements for planning and development of new and redevelopment of existing activity centres within Perth and Peel.

SPP 4.2 is aimed at developing a network of centres in accordance with the activity centres hierarchy, which would encourage a more equitable distribution of jobs, services and amenity throughout the city.

One of the key policy framework considerations relevant to the planning of the Nambeelup Industrial Area is to ensure that the development of the area does not compromise the established and/or proposed hierarchy of activity centres specified in SPP 4.2.

Also, Part 2 of SPP 4.2 acknowledges industrial centres as a separate classification outside the activity centres hierarchy. This classification was created in recognition of the need to identify suitably located and serviced land to meet the industrial and employment needs.

SPP 4.2 is not intended to cover industrial activity centres, and is limited to addressing only their office and retail aspects. However, clause 5.6.2 of SPP 4.2 specifies that shop and office uses in industrial zones should be limited to:

- shops that provide a local convenience service predominantly for people employed in the locality and are confined to a local centre; and
- offices that are ancillary to the predominant industrial use of the premises or are confined to a local or small-scale centre that services industrial development.

In addition to the above, sub-clauses 5.6.1(4) and 5.6.1 (5) of SPP 4.2 state that encroachment of bulky goods retailing into industrial areas should be avoided. It is recommended bulky goods retailing be located as integrated peripheral precincts adjacent to other commercial zoned land accessible to regional road network and public transport.

To address the implications of SPP 4.2 for the Nambeelup Industrial Area, the following planning measures either have been taken at the District Structure Plan stage or will need to be undertaken at subsequent planning stages:

- the identification of planning principles for the different planning precincts, including those for the proposed commercial support centre and service commercial areas; and

- the development of appropriate land use permissibility tables and design guidelines for the different planning precincts at the local structure plan stage.

6.8 State Planning Policy No. 2.4: Basic Raw Materials

The main purpose of *State Planning Policy No. 2.4 – Basic Raw Materials* (SSP 2.4) is to facilitate the extraction of basic raw materials close to major markets. SPP 2.4 also aims to prevent sensitive land uses, which could affect extraction of the resource, from being located close to the identified extraction sites.

SPP 2.4 identifies Lot 221 Lakes Road as being within an Extraction Policy area. Lot 221 was identified within the Extraction Policy area as sand was previously extracted from the property. However, sand is no longer extracted from the property and the property is no longer considered a viable sand resource.

6.9 Development Control Policy No. 4.1: Industrial Subdivision

WAPC *Development Control Policy No. 4.1 Industrial Subdivision* (DC 4.1) provides guidance for determining applications for industrial subdivisions throughout the State. The policy covers such matters as the design and shape of industrial lots, road layout, servicing and open space requirements.

The relevant policy provisions of DC 4.1 were considered during preparation of the District Structure Plan and all future local structure plans and subdivisions will be assessed to ensure the provisions of the policy are addressed.

6.10 Peel Region Scheme: Strategic Minerals and Basic Raw Materials Resource Policy

The aim of the *Peel Region Scheme: Strategic Minerals and Basic Raw Materials Resource Policy* (WAPC, 2002) is to identify strategic mineral resources and basic raw materials within the Peel Region Scheme area, facilitate the extraction of these resources and to ensure that the impact on surrounding land uses is minimised.

In 2009, the Department of Mines and Petroleum released updated mapping for the mineral sand resource areas, with nominal 500 metre buffers for such areas.

Only the north-eastern corner of Lot 89 and the northern extremity of Lot 88 Readheads Road are within the strategic minerals and basic raw materials policy area. The policy area that affects these properties relates to the Strategic Mineral Resource Protection Area for titanium-zircon mineralisation located on properties to the north of the Nambeelup Industrial Area.

The Department of Mines and Petroleum has advised that as there are only small portions of these properties that are within the policy area for the Peel Region Scheme: Strategic Minerals and Basic Raw Materials Resource Policy, there is no impediment to the development of Lot 89 for industrial purposes and Lot 88 for key service infrastructure from the perspective of mineral resource protection. However, the Department recommends there be no development on the parts of these properties identified as being within the Strategic Mineral Resource Protection Area. The proponents should liaise with the Department of Mines and Petroleum during the local structure planning stage regarding this matter.

6.11 Peel Region Scheme: Floodplain Management Policy

The *Peel Region Scheme: Floodplain Management Policy* (WAPC, 2002) was prepared to formalise the consideration of floodplain management requirements by responsible authorities when considering various proposals for land within the Murray and Serpentine River floodplains and adjacent to the Peel Inlet and Harvey Estuary.

The *Peel Region Scheme: Floodplain Management Policy* provides guidance on appropriate land use and development within floodplains. In May 2015 the WAPC released a draft (update) of the *Peel Region Scheme: Floodplain Management Policy* for public comment: however, the updated policy is yet to be finalised.

The District Structure Plan does not propose any industrial development within the floodway or flood fringe area for the Serpentine River. Furthermore, the Nambeelup Industrial Area District Water Management Strategy took into account the latest Department of Water floodplain mapping information and addresses the floodplain management issue.

6.12 Better Urban Water Management

Better Urban Water Management (WAPC, 2008) was prepared to guide the implementation of the provisions of State Planning Policy No. 2.9: Water Resources (SPP 2.9).

The main aim of *Better Urban Water Management* is 'to facilitate better management and use of urban water resources by ensuring that appropriate consideration is given to the total water cycle at each stage of the planning system'.

Better Urban Water Management provides a framework for the consideration of water management issues during various planning stages including regional, district and local land use planning as well as subdivision and development. It also provides information on the level of investigations and actions and

type of reporting required at each planning stage and identifies the agencies responsible for providing water resource information.

Section 4.2 of *Better Urban Water Management* states that district structure plans and region scheme amendments should be supported by a district water management strategy. This is to demonstrate that the land is capable of supporting urban or industrial development and can achieve appropriate urban water management outcomes.

The Nambeelup Industrial Area District Water Management Strategy was prepared for the 2012 draft District Structure Plan, in accordance with the objectives and guidelines of *Better Urban Water Management* and endorsed by the Department of Water. The Water Management Strategy has been updated to reflect the proposals in the final District Structure Plan.



7.1 Peel Region Scheme

Under the Peel Region Scheme (PRS), 174 hectares of land within the District Structure Plan area (Portion of Lot 604, Lot 530 and Lot 602 Lakes Road) is zoned 'Industrial', with the remainder of the land zoned 'Rural' (Figure 9).

The District Structure Plan area abuts the 'Primary Regional Roads' reservation for the Kwinana Freeway, which is located south-west of the area.

The transfer of land under the Peel Region Scheme from the 'Rural' zone to the 'Industrial' zone, will be required to facilitate development of land for industrial purposes in accordance with the District Structure Plan.

It is anticipated that one or two Peel Region Scheme amendments will be initiated to implement industrial proposals shown in the District Structure Plan.

These amendments will be initiated when all relevant planning, environmental, regional road and service infrastructure requirements have been adequately addressed. Table 2 outlines the types of matters expected to be addressed prior to the WAPC giving consideration to initiating amendments to rezone additional land to industrial in accordance with the District Structure Plan.

7.2 Shire of Murray Town Planning Scheme No. 4

Under the Shire of Murray Town Planning Scheme No. 4 (TPS 4), part of Lot 604, and Lots 602 and 530 Lakes Road are zoned 'Industrial Development'. The majority of the balance land within the project area is zoned 'Rural' under TPS 4. The existing kennel estates, abattoir site and Murrayfield Airpark are zoned 'Special Use' (Figure 10).

TPS 4 requires a local structure plan to be prepared and adopted for land zoned 'Industrial Development' prior to subdivision or development of the land. The zoning table (Table I) of TPS 4 lists uses that can be considered in the Industrial Development zone, and Table II sets out car-parking and development standards for various land uses in the zone.

The rezoning of any additional land to Industrial under the Peel Region Scheme would result in the need for such land to be rezoned Industrial Development under TPS 4.

The land use permissibility provisions of TPS 4 for the 'Industrial Development' zone will be reviewed through the current local planning scheme review process.

8 Landform and soils



The project area is generally flat with topographic elevation ranging from 25 metres above the Australian Height Datum (AHD) at the peak of the sand dune ridge within Lot 89, down to 1.5 metres AHD towards the Serpentine River. The topography generally declines in westerly direction.

The project area is generally underlain by a veneer of Bassendean Sand overlaying Guildford formation. There are also areas of superficial peaty clay formed as local swamp deposits in low lying areas.

9 Biodiversity and natural area assets

An Environmental Assessment Report was prepared by Coterra environmental consultants in 2012 for the Nambeelup Industrial Area project area, which:

- identified key environmental features of the project area,
- defined the environmental opportunities and constraints for the project area; and
- outlined broad scale environmental management requirements applicable to subsequent stages of the planning processes.

In addition to the Environmental Assessment Report, in October 2015 the Coterra environmental consultants completed an environmental study gap analysis for the Nambeelup Industrial Area District Structure Plan. This gap analysis concluded that *'no additional onsite technical studies are required prior to presentation of the Nambeelup Industrial Area District Structure Plan to the finalisation'*.

The main environmental features and constraints of the District Structure Plan area are summarised in the sections below. An opportunities and constraints plan is presented in Figure 11.

9.1 Remnant vegetation

The majority of land within the District Structure Plan area has been previously used for grazing and other agricultural purposes and has undergone substantial clearing. There are limited areas of remnant vegetation remaining with introduced weed species being common.

The two vegetation complexes mapped over the District Structure Plan area are Bassendean Complex – Central and South and Herdsman Complex.

Some areas of remnant vegetation are also identified as Regionally Significant Natural Areas in the Environmental Protection Authority's (EPA) *Environmental Protection Bulletin No. 12: Swan Bioplan – Peel Regionally Significant Natural Areas* (EPA, 2010).

Most of the landowners within the District Structure Plan area have already undertaken EPA Level 1 or 2 site specific flora and vegetation surveys. The results of these surveys are summarised in the Environmental Assessment Report: Nambeelup Industrial District Structure Plan (Nambeelup Industrial Area Environmental Assessment Report) (Coterra, 2012). Site specific vegetation surveys did not identify any threatened ecological communities, priority ecological communities or declared rare flora within the District Structure Plan area.

Areas identified as a Regionally Significant Natural Area, Conservation Category Wetland and Resource Enhancement Wetland, which retain their ecological value, are to be protected within areas identified as 'Open Space' on the District Structure Plan (Figure 4).

Flora and vegetation surveys in accordance with EPA *Guidance Statement No. 51: Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessment in Western Australia* will need to accompany rezoning proposals for lots containing remnant vegetation.

Approximately 24 hectares of the western portion of Lot 604, which contains vegetation, was excluded from the proposed industrial area based upon investigations undertaken after the advertising of the draft District Structure Plan. Although this vegetation is not identified as a Regionally Significant Natural Area in the Swan Bioplan, this vegetation is considered important to be protected, given the broader strategic planning considerations relating to the protection of Black Cockatoo potential foraging, roosting and/or breeding habitat. This area of vegetation has been included as an Open Space area on the District Structure Plan.

9.2 Fauna

Separate faunal assessments have been completed for Lots 1 (abattoir site), 530, 221 and 600 (formerly 91) and 604 Lakes Road as well as for Lot 92 Gull Road. A summary of the outcomes of these assessments is outlined in the Nambeelup Industrial Area Environmental Assessment Report.

The following key conservation significant fauna species were identified in the Nambeelup Industrial Area Environmental Assessment Report as being relevant to the draft District Structure Plan assessment:

- Carnaby's Black Cockatoo
- Baudin's Black Cockatoo
- Forrest Red-tailed Black Cockatoo
- White-bellied Sea Eagle.

As mentioned in Section 9.1, approximately 24 hectares of land within Lot 604 Lakes Road was excluded from the proposed industrial area for reasons relating to the protection of Black Cockatoo potential foraging, roosting and/or breeding habitat.

There may also be some potential for key conservation species' habitat within the upland vegetation on land within Murrayfield Airpark, Lot 221 Lakes Road, Lots 4 and 27 Nambeelup Road and Lot 89 Gull Road.

It is recommended in the Nambeelup Industrial Area Environmental Assessment Report that further comment be included as part of the environmental documentation prepared to

support individual rezoning applications in relation to potential Black Cockatoo foraging, roosting and/or breeding habitat. Further detailed fauna surveys and habitat assessment will need to be completed to support any industrial rezoning proposals.

The District Structure Plan design addresses the provision of fauna habitat opportunities through retention of consolidated areas of Swan Bioplan Regionally Significant Natural Area vegetation and vegetation associated with Conservation Category and Resource Enhancement Wetland areas.

9.3 Wetlands, lakes and groundwater

High groundwater levels are characteristic of the whole Nambeelup area. Most of the District Structure Plan project area is prone to inundation or expressions of groundwater at the surface.

According to the Department of Parks and Wildlife's (formerly the Department of Environment and Conservation) mapping, 'Geomorphic Wetlands of the Swan Coastal Plain', the majority of land within the District Structure Plan area is classified as a 'Multiple Use Wetland'. This mapping also shows Resource Enhancement Wetlands on the following lots within the District Structure Plan project area: Lots 11, 221, 600 and 604 Lakes Road, 4 (Murrayfield Airpark) Nambeelup Road, Lots 89, Lots 92 and 109 Gull Road, Reserve 50750 (formerly Lot 2) and on the various smaller lots within the Nambeelup kennel estate.

Mapped Conservation Category Wetlands are located within the following lots within the Project area: Lots 11, 56 and 221 Lakes Road and Lot 89 Gull Road and Lot 4 (Murrayfield Airpark) Nambeelup Road.

Following a wetland management reclassification request by the landowner in 2012, a Resource Enhancement Wetland partly on Lots 89 and 109 Gull Road was reclassified as a Multiple Use Wetland. Also, most of the previously identified Resource Enhancement Wetland on the southern portion of Lot 89 was reclassified as a Multiple Use Wetland, with a smaller central wetland area retained as a Resource Enhancement Wetland.

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In respect to the Resource Enhancement Wetland on the southern portion of Lot 89, most of which was reclassified to the multiple use management category, the proposed Open Space area shown in the final District Structure Plan for this wetland has been reduced to essentially contain the Resource Enhancement Wetland and its associated 50 metre buffer.

The District Structure Plan does not propose to retain the associated Resource Enhancement Wetland at the northern end of the kennel estate as Open Space. This is due to the degraded nature of the wetland as a result of the kennel subdivision and development over this portion of the wetland. However, further wetland assessment investigations will need to be carried out to confirm the current wetland boundaries and values to guide future local structure plan preparation and to determine any requirements for wetland protection.

The Serpentine River and the western portion of Nambeelup Brook are also classified as Conservation Category Wetlands. Both the Serpentine River and Nambeelup Brook flow into the Peel Inlet – Harvey Estuary, which is a part of the Peel Yalgorup System protected under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act), and the 1971 Convention on Wetlands, more commonly known as the Ramsar Convention.

There were also several Environmental Protection Policy lakes within the District Structure Plan project area, which were located on the following lots: Lots 4 and 11 (Murrayfield Airpark) and 221 Lakes Roads. There was also an Environmental Protection Policy lake on the southern portion of Lot 109 Gull Road, which extends onto Lot 75 Sunshine Close within the Nambeelup Kennel Estate. However, on 20 November 2015 the Environmental Protection Swan Coastal Plain Lakes Policy 1992 was revoked.

The Murray Drainage and Water Management Plan finalised by the Department of Water in 2011 has refined flood plain mapping for the Serpentine River and Nambeelup Brook. The Serpentine River floodway and flood fringe areas extend into lots 82, 93 and 604. No industrial development is proposed within the floodway and flood fringe areas.

The Nambeelup Brook floodplain extends into the following properties along the southern boundary of the Nambeelup Industrial Area District Structure Plan project area: Lots 1 and 212 Lakelands Road, Lot 221 Lakes Road and Lot 224 Paterson Road (Figure 11). The industrial proposals in the District Structure Plan do not encroach into vegetated areas abutting Nambeelup Brook. Further site specific environmental investigations will be required during the preparation of local structure plans for properties abutting Nambeelup Brook to ensure that sufficient foreshore setbacks are applied. Foreshore management plans will also need to be submitted as part of the subdivision process.

The District Structure Plan addresses the protection of important wetlands and their buffers by designating these areas as Open Space. A 50 metre minimum buffer requirement for Conservation Category Wetlands and Resource Enhancement Wetlands was adopted for the District Structure Plan.

Further site specific assessment will need to be undertaken in relation to Conservation Category and Resource Enhancement Wetlands on individual lots at the local structure plan stage, to confirm the accuracy of the wetland boundaries and confirm the adequacy of the wetland buffer for each site.

Proponents for landholdings containing or abutting open space areas with remnant vegetation and/or wetlands will need to submit management plans for the open space or drainage areas, which would specify environmental management requirements (Coterra, 2012).

Post-development viability and the protection of important wetlands within the District Structure Plan area are also ensured through the implementation of the Nambeelup District Water Management Strategy, which forms part of the technical reports that support the Structure Plan. It also addresses such issues as: the hydrological regime, surface water flows and water quality and contains recommendations to ensure that appropriate water sensitive design development approaches are applied within the District Structure Plan area.

The groundwater management strategy in the Nambeelup District Water Management Strategy (JDA, 2012) proposes to utilise a combination of such measures as sub-soil drainage systems for controlling the groundwater level, filling of land to achieve adequate separation to groundwater and also suitable building foundation designs.

The Nambeelup District Water Management Strategy will guide the preparation of local water management strategies and urban water management strategies during the local structure planning and subdivision stages. It has been updated to reflect the final Nambeelup Industrial Area District Structure Plan.

9.4 Ecological linkages

The *South West Regional Ecological Linkages – Technical Report* (2009) was a partnership initiative between the Western Australian Local Government Association's South West Biodiversity Project and the (then) Department of Environment and Conservation.

The *South West Regional Ecological Linkages – Technical Report* addresses the issue of fragmentation of areas of native vegetation, which results in the loss of biodiversity and key ecological functions, through the identification of ecological linkages at regional scale. It also contains ecological linkage mapping for the South West region project area and separate mapping for the Peel, Bunbury Wellington, Leeuwin Naturaliste and Blackwood sub-regions.

The Report stresses the importance of considering ecological linkages in strategic and statutory planning processes (Molloy, 2009). It also shows, indicatively, three ecological linkages within Nambeelup area, these being:

- along the Serpentine River in the west;
- through the centre of the proposed Nambeelup Industrial Area, extending from the Serpentine River and then generally along the southern side of Readheads Road; and
- along Nambeelup Brook in the south.

The ecological linkage along the Serpentine River is not affected by the Nambeelup Industrial Area District Structure Plan. Likewise future industrial areas will have sufficient setbacks to Nambeelup Brook, which is identified as a key east-west ecological linkage.

In respect of the east-west ecological linkage through the centre of the Nambeelup Industrial Area, there is the potential to provide some form of 'stepping-stone' ecological linkage. The protection of the REWs and/or particular areas of remnant vegetation on Lots 109 and 89 Gull Road, as well as on the Murrayfield Airpark, could provide some form of 'stepping-stone' ecological linkage between the Serpentine River in the west and the larger areas of remnant vegetation on 26 Lakes Road and Lot 27 Nambeelup Road. Lots 26 Lakes Road and Lot 27 Nambeelup Road, as well as other lots on the eastern side of the Nambeelup Industrial Area, were excluded from the project area following the advertising period of the revised draft District Structure Plan. The need to protect the environmental significance of any wetlands and/or vegetation on these rural lots can be considered as part of the broader Perth and Peel Green Growth Plan for 3.5 million project.

The District Structure Plan also provides a local ecological linkage from Nambeelup Brook in the south to Gull Road drain in the north. This linkage includes open space areas on Lot 221 Lakes Road, areas of remnant vegetation on the Murrayfield Airpark site and continues along arterial drainage flow path on Lot 89 Gull Road. A small open space area containing remnant vegetation and several potential key drainage areas on Lot 89 and 109 will serve as 'stepping-stones'.

The first draft District Structure Plan (WAPC, 2012) did propose a northern extension of the central north-south ecological linkage through Lots 89 and 109 Gull Road. However, this extension through Lots 89 and 109 was not shown in the 2014 advertised draft of the District Structure Plan as the Resource Enhancement Wetland, which was the basis for the northern extension, was reclassified by the (then) Department of Environment and Conservation to a multiple use management category. However, in the final District Structure Plan it is proposed

to have a 'stepping-stone' local ecological linkage utilising a proposed open space area (containing remnant vegetation) on the eastern boundary of Lot 109 Gull Road and proposed major drainage areas in the centre of Lot 109 and further to the north abutting Gull Road drain connected by an identified retained natural flow path. Other options for a local 'stepping-stone' ecological linkage connecting to the Conservation Category Wetland on the northern boundary of Lot 89 Nambeelup Road can also be investigated as part of the local structure planning stage.

9.5 Water management

In 2012, the Nambeelup Drainage and Water Management Strategy was prepared by JDA Consultant Hydrologists in accordance with *Better Urban Water Management* (WAPC, 2008). The Strategy is informed by key principles and strategies outlined in the *Murray Drainage and Water Management Plan* (Department of Water, 2011) (Murray Drainage and Water Management Plan). It was prepared in consultation with the Department of Water and the Water Corporation.

The purpose of the Strategy is to demonstrate the land is capable of supporting industrial development and that the District Structure Plan layout supports appropriate water sensitive design and best practice water management outcomes for the area including allowances for arterial drainage.

The Nambeelup District Water Management Strategy considers all aspects of the total water cycle, and the proposed strategies for groundwater management, arterial drainage and surface water management, water quality and nutrient management, plus proposed water supply, conservation, reuse and wastewater planning are outlined below.

The areas shown as industrial on the District Structure Plan are capable of supporting industrial development, and areas required for district level water sensitive design management have been considered and incorporated.

9.5.1 Groundwater management strategy

To protect infrastructure and assets from flooding and damage from groundwater, a combination of management tools are proposed with the aim to also protect retained wetlands. These management tools include controlling/limiting the rise of maximum groundwater levels where required by groundwater drainage systems (also known as 'sub-soil systems'), earthwork fill levels for separation to groundwater, controls over soak-wells and suitable foundation designs for the separation to groundwater provided.

The Department of Water currently approve groundwater drainage systems at or above a control groundwater level, rather than using the previous term of annual average maximum groundwater levels. Control groundwater levels are proposed across the majority of the District Structure Plan area proposed for industrial purposes.

As outlined in the Murray Drainage and Water Management Plan, the identification of appropriate control groundwater levels in areas such as Nambeelup is complex. The control groundwater levels consider freely draining outlet requirements, downstream level constraints, wetlands and resultant subsoil discharge volumes. The Nambeelup Groundwater MIKE-She model (Marillier, 2012) results were used to guide the selection and management of draft control groundwater levels. The control groundwater levels are usually finalised in a local water management strategy.

The effect of the proposed control groundwater levels combined with the proposed land use changes and the impact of climate change on nearby wetlands were investigated with the MIKE-She model (Marillier, 2012). Modelling results show that industrial development results in significantly less evapotranspiration, which can counter-balance the drying effects of climate change on nearby wetlands, even with subsurface drainage set at draft 2012 control groundwater levels (generally set at annual average maximum groundwater level in industrial areas beside wetland buffers)

The modelling also assumed land use change to include maintenance of pre-development gross recharge to the superficial aquifer, which assumes lots to have infiltration devices such as soakwells sized to infiltrate 3.5–4 millimetres runoff from impervious areas. Management measures to limit changes to retained wetland water level depth are proposed.

The Department of Water no longer sets minimum separation distances to groundwater requirements for lots. Fill levels are dependent on the most critical of several design criteria and, generally, a separation distance of one to 1.5 metres would be required to meet these criteria. Depending on the subsurface drainage system spacing and design, shallow soakwells of limited capacity may be able to be accommodated within this range.

Treatment is required for subsurface drainage water prior to reuse or discharge from the catchment, which can often be integrated with the stormwater treatment train infrastructure.

9.5.2 District Arterial drainage strategy

The proposed arterial drainage network incorporates water sensitive design utilising a series of vegetated open swales in road reserves, living streams/swales of retained natural overland flow paths through public open space and arterial culverts under main roads. The arterial drainage strategy sets district catchment boundaries and outflow locations. Arterial flow pathways with connection points for upstream portions of catchments are shown so that the staged development of catchments is not restrictive to upstream landholders.

Alignments of the arterial drainage network can be categorised as internally flexible, fixed (limited alignment), or part of several retained natural areas that also have seasonal inundation.

Flexible drainage alignments are drainage alignments that may be modified within landholdings as long as an adequate connection is provided from the upstream landholding to the downstream outlet.

Fixed drainage alignments are required in certain areas due to longitudinal grade constraints compared to the existing topography and groundwater, whilst achieving a free draining outlet.

Where the arterial drainage is shown through ‘retained areas of seasonal inundation’, the existing natural surface that may exhibit flatter grades and seasonal inundation is retained within either open space areas or within drainage areas.

The majority of outflow locations are to existing defined drainage pathways, such as culverts, existing drains, and Nambeelup Brook.

For a change of land use from rural to industrial, local detention storages are required to maintain pre-development district catchment peak outflows. District catchment peak outflow criteria and associated pro-rata outflow rates for each sub-catchment are provided in the Nambeelup Drainage and Water Management Strategy. Detention storages may be distributed within the district/local catchments and are to meet pro-rata peak outflow criteria, where arterial drainage discharges to downstream landholder. Figure 5 shows the post development catchments and estimated 100 year storage volumes. It is important to note this figure provides indicative surface areas of storages within catchments; they are not representative of large singular basins. Required storage volumes to manage the 100 year ARI event shall be applied pro-rata across these catchments areas as development areas are planned. Locations and concept design of local storages and water quality treatment train are to be reported in a local water management strategy.

9.5.3 Water quality and nutrient management

A change in land use from rural to industrial with non-structural controls will likely result in reduced nutrient input loading on the land. Non-structural and structural water quality controls will be applied in the industrial development to minimise nutrients.



Photo courtesy: Department of Water

The water quality management strategies outlined in local water management strategies are to be consistent with the overarching Murray Drainage and Water Management Strategy, which outlines all requirements. This includes utilisation of a treatment train and an amended soil (0.3m deep) in the base of drainage features (swales and storages) and where works occur on landscaped living streams (Department of Water, 2011).

The use of soil amendments to increase phosphorous retention capacity within areas of landscaping and open space as part of landfill material will be required in accordance with the recommendations contained in the Nambeelup District Water Management Strategy and the Peel-Harvey Water Quality Improvement Plan (Environmental Protection Authority, 2008).

Post-development monitoring is to be detailed in local water management strategies prepared during the next stage of planning and should include monitoring of local system treatment train outlets.

9.5.4 Water supply, conservation, reuse and wastewater management strategy

The District Structure Plan engineering servicing report (Cossill & Webley, 2012) sets out proposed potable water supply and wastewater servicing by the Water Corporation and the use of water conservation initiatives to minimise water demand. There are currently sufficient groundwater resources available in the area to meet minor irrigation demands of industrial development.

Non-potable water supply and water reuse options are outlined; however, these do not preclude development. The potential to harvest and reuse significant non-potable quantities from a Managed Aquifer Recharge (MAR) system has been identified. MAR could potentially provide a significant service in the District Structure Plan area by making use of the drainage water discharge volumes, utilising the sizable natural storage capacity underground, and providing a non-potable supply during peak water demand periods for industrial use.

9.6 Acid sulfate soils

Department of Environment Regulation (formerly the Department of Environment and Conservation) acid sulfate soils mapping identifies the majority of the land within the District Structure Plan area as having a 'Moderate to Low risk' of acid sulphate soils occurring within three metres of natural soil surface. However, some areas within the District Structure Plan area are classified as having a 'High to moderate risk'. These areas are, mainly, abutting Nambeelup Brook and other waterlogged areas.

Several landholdings within the District Structure Plan project area are affected by the 'High to Moderate risk' classification, which includes portions of the kennel estate lots, Lots 221, 26 Lakes Road, Lots 4 and 11 (Murrayfield airpark landholding) and Lot 109 Gull Road.

Acid Sulfate Planning Guidelines (WAPC, 2008) were produced to provide guidance on how to deal with the acid sulphate soils issue during various planning stages. The main objective

as stated in the guidelines is *‘to ensure that the subdivision and development of land containing acid sulfate soils is planned and managed to avoid potential adverse effects on the natural and built environment’*.

Acid sulphate soils will need to be considered in more detail during the local structure planning and subdivision stages for individual properties containing identified areas of ‘High to Moderate risk’. In any areas where they are present appropriate management measures will need to be implemented.

The majority of the District Structure Plan area comprises a thin layer of Bassendean Sand over Guilford formation clay, therefore, it is envisaged that typically one metre of clean fill will be required in order to achieve appropriate site classification (Class A or S) in accordance with the relevant Australian Standard (Cossill & Webley, 2012).

An artefact scatter site (NAMB 04-01) on Lot 11 Lakes Road (Murrayfield Airfield gravel airstrip) was identified in the course of work undertaken in 2004 by de Gran Pty Ltd and Gavin Jackson Pty Ltd for the WAPC.

During further detailed planning an Aboriginal Heritage assessment would need to be undertaken by proponents, to confirm the presence/absence of any sites of Aboriginal heritage significance and to ensure compliance with the requirements under the *Aboriginal Heritage Act 1972*.

Commonwealth heritage lists, the Heritage Council of Western Australia’s *State Heritage Register* and the Shire of Murray’s Municipal Heritage Inventory do not identify any sites of European heritage located within the District Structure Plan project area.

9.7 Heritage

The Department of Aboriginal Affairs’ *Register of Aboriginal Sites* contains the following listing for Serpentine River and Nambeelup Brook:

- Site ID 3582 – Serpentine River

This site is listed on the ‘Permanent Register’ (status ‘P’ in the listing) and is denoted as having a ‘closed access’. This site type is described as having *‘ceremonial and mythological significance’*.

- Site ID 17982 – Nambeelup Brook

This site is listed as ‘Stored Data’ (status ‘S’ in the listing) with an open access and as being of ‘mythological, historical’ significance. The site is also described as a camp, hunting place and water source.

The ‘Serpentine River’ site is located along the western boundary of the District Structure Plan project area and the ‘Nambeelup Brook’ site abuts various lots on the southern boundary of the project area.

10 Existing land uses

There are various existing land uses currently operating within the District Structure Plan area. Most of these uses are compatible with the proposed industrial development. Figure 11 shows existing buffers for particular land uses in the Nambeelup locality. Figure 12 is an aerial photograph of the Nambeelup project area, which shows that most of the land is currently being used for rural grazing purposes.

10.1 Nambeelup Kennel Estate

The existing Nambeelup Kennel Estate is located east of Gull Road and north of Lakes Road in the centre of the District Structure Plan area and is comprised of 32 properties each of which is approximately two hectares in size. The estate is zoned 'Special Use – Kennels' under TPS 4.

It is envisaged that the current kennel activities will remain in the short to medium term. However, it is likely that the kennel estate will be redeveloped for industrial purposes in the long-term.

As the kennel estate currently contains residential dwellings, it will be necessary to ensure that appropriate setback distances and buffers areas are applied during the assessment of local structure plans and development proposals, to protect existing residential uses from offsite industry impacts.

The kennel estate is not expected to be rezoned for industrial use in the short to medium term and is likely to be one of the later stages of industrial development within the District Structure Plan.



Nambeelup Kennel Estate

*2014 aerial photography courtesy:
Western Australian Land Information Authority*

10.2 Murrayfield Airpark

Murrayfield Airpark is located on Lot 11 Lakes Road and Lot 4 Nambeelup Road. It is a small aircraft aerodrome operated by the Royal Aero Club. The Royal Aero Club proposes to operate the aerodrome for the foreseeable future.

In May 2013, the Shire of Murray endorsed an updated Murrayfield Airpark Development Plan under the relevant Special Use provisions of TPS 4. The District Structure Plan reflects the aviation and related development areas, and the conservation areas shown on the development plan for the airpark.

State Planning Policy No. 5.1: Land Use Planning in the Vicinity of Perth Airport outlines the principles in relation to permissibility of land uses within areas assigned an ANEF (Australian Noise Exposure Forecast) level.

Portions of some properties surrounding Murrayfield Airpark are within the 20 or 25 ANEF noise contours. Industrial and commercial land uses are considered compatible with these levels of aircraft noise exposure.

10.3 Former Abattoir – Lot 1 Lakes Road

Lot 1, on the southern side of Lakes Road, contains an abattoir which ceased operating in 2006. This former abattoir property is immediately east of the Nambeelup Industrial Area project area. Various abattoir buildings and other property improvements have been retained.

The balance of Lot 1 has not been developed and contains Conservation Category and Resource Enhancement Wetlands and remnant vegetation areas identified as a Regionally Significant Natural Area by *Environmental Protection Bulletin No. 12: Swan Bioplan – Peel Regionally Significant Natural Areas*.

The 2012 draft District Structure Plan proposed that approximately 25 hectares of Lot 1 Lakes Road (the former abattoir site) be included within the proposed industrial area, with the balance of 40 hectares included in the 'Public Open Space/ Conservation/ Drainage' classification of that draft District Structure Plan. This was to be subject to further environmental investigations and consultations with relevant state government agencies. However, following further investigations for the District Structure Plan, it was decided to exclude this land from the proposed industrial area given the various environmental constraints affecting the land.



10.4 Wandalup Piggery

Lots 109 and 89 Gull Road are owned by the same landowner. On Lot 89 there are the Wandalup Piggery and C-wise (formerly Custom Compost).

Lots 89 and 109 Gull Road are identified as 'Contaminated – restricted use' on the Department of Environment Regulation's contaminated sites database due to elevated concentrations of ammonia present in groundwater beneath the sites. A preliminary site investigation will be required, as a first step, to determine if a detailed site investigation is needed. These investigations will be required at subdivision stage (Coterra, 2012).



Lots 109 Gull Road and 89 Redheads Road

*2014 aerial photography courtesy:
Western Australian Land Information Authority*

11 Regional road network

A legible network of existing north-south and east-west local roads, such as Lakes and Paterson Roads, provide the Nambeelup locality with good access to the regional road network and the broader region, including Mandurah and Pinjarra. However, all of these local roads will ultimately need to be upgraded to different road classifications to support the proposed future industrial development at Nambeelup and ensure connectivity with any regional road proposals shown on the final planning framework that will be released following considered of submissions received on the draft *South Metropolitan Peel Sub-regional Planning Framework*.

In 2012, GHD traffic engineering consultants were engaged to prepare initial transport study report for the 2012 draft District Structure Plan. The road hierarchy identified in the draft Plan consisted of 'Integrator A' roads, 'Integrator B' roads and 'Key Neighbourhood Connectors'. The regional road network and associated indicative road reserve widths proposed in the 2012 draft District Structure Plan had regard to the then anticipated traffic flow generated by the proposed industrial development at Nambeelup and possible future development in the region, including the (then) proposed major urban development at Keralup.

Following public advertising of the 2012 draft District Structure Plan, Transcore traffic engineering consultants were engaged (in 2013) by some major landowners in the Nambeelup Industrial Area District Structure Plan project area to undertake transport modelling and analysis for the Nambeelup Industrial Area as part of a review of the proposed regional roads for Nambeelup. In addition to this, Main Roads WA undertook

some initial regional transport modelling for the draft *South Metropolitan Peel Sub-regional Planning Framework*. The 2013 modelling undertaken by Transcore for the Nambeelup Industrial Area showed significantly less traffic volumes for most of proposed major roads, compared to results from Main Roads' initial long-term regional transport modelling.

Given the differences in the results obtained from the different transport modelling exercises referred to above and the need for the regional road network to be confirmed through the finalisation of the planning framework for the South Metropolitan Peel region, the District Structure Plan indicates that for some major road proposals the road classifications for such road will be determined following further transport



modelling (e.g. Nambeelup Road). Furthermore, the road designs will take into consideration any findings of further investigations relating to any possible future regional or district public transport systems or services and proposed future major service infrastructure. When transport modelling and further investigations have been undertaken, the proposed road classifications (along with the associated road cross-sections) will be determined. This will then enable road design concepts and land requirement plans to be prepared for any proposed major roads. These more detailed road plans can then be used as a basis for determining the required contribution arrangements for such roads as part of a proposed development contribution plan for the Nambeelup Industrial Area. These further investigations relating to proposed major roads within the District Structure Plan project area will need to be completed prior to the preparation of any local structure plans.

12 Infrastructure

In 2012 Cossill & Webley Consulting Engineers prepared an engineering services report to support the preparation of the District Structure Plan. The report summarises the results of a review of the engineering infrastructure required to facilitate servicing of an industrial estate at Nambeelup.

The Engineering Servicing report focuses on traditional infrastructure servicing. However, the report also acknowledges that some opportunities may exist for alternative servicing schemes to be implemented within the proposed Nambeelup industrial area, particularly in relation to water and wastewater servicing. However, at this stage it is expected that all water and sewerage servicing will be provided by the Water Corporation.

It is acknowledged in the Engineering Servicing report that the District Structure Plan area can be serviced with necessary infrastructure; however, significant infrastructure extensions and headworks are required to support the initial stages of industrial development. Since the preparation of the engineering services report in 2012, further consultations have been undertaken with infrastructure service providers to formulate potential key infrastructure servicing proposals for Nambeelup.

12.1 Potable water

The Nambeelup Industrial Area is located within the Water Corporation's long-term plan for the Tamworth water supply zone. However, the Water Corporation advises that initial supply to the Nambeelup Industrial Area will be from the North Mandurah system to the west.

The Stirling Trunk Main, which connects the Stirling Dam to the Tamworth Reservoir, is located east of the Nambeelup Industrial Area. In 2011, a DN 1,400 millimetre trunk main running from the Stirling Trunk main along Lakes Road was constructed by the Water Corporation. This trunk main supports the supply to the North Mandurah Tank situated in Parklands, which supports other water zones to the south.

Due to uncertainty regarding the future industry types within the Nambeelup Industrial Area and their likely water usage rates, staging of the water supply infrastructure is difficult to determine. It is acknowledged in the Nambeelup Engineering Servicing report that the information provided in the report



in relation to water servicing is a 'best guess' scenario and would have to be refined during further planning stages when more detailed information becomes available.

It is likely that initial stages of development within the Nambeelup will be in the vicinity of Lakes Road. The 'Water Supply Strategy' in the Nambeelup Industrial Area District Structure Plan Engineering Servicing Report (2012) outlines initial options for water servicing at Nambeelup.

The North Mandurah Tank option (Option 1) in the Nambeelup Engineering Servicing report is the Water Corporation's preferred option as it has lower capital and operational costs and also lower risk. Indicative possible alignment for a DN 375mm pipe from the North Mandurah Tank is shown in Figure 2 of the Engineering Servicing report.

The Water Corporation has created a new capital investment project for this interim distribution DN375 main and has undertaken initial route investigations and has prepared a preliminary design. When more detailed information becomes available in relation to water supply requirements for initial stages of development, it will be a priority to secure a suitable water main route and to activate this project. This water supply option will be sufficient if the water demand in the initial stages of development is relatively low. The final size, route and length of the main will be determined at the delivery stage, having regard to the location and demand of proposed industrial development.

At this stage the Water Corporation has advised that the DN375 main will likely be extended to the eastern side of the freeway on Fowler Road, which will provide a point from which developers can extend smaller reticulation-sized mains either to the south-east, or north-east depending on the location and staging of development.

The other options discussed in the Engineering Servicing report include a treated supply off the Lakes Road Bulkwater Transfer Main (in case of higher water demand) and off the Stirling Trunk main, to extend supply beyond the initial areas in the vicinity of Lakes Road.

The Water Corporation advises that a direct connection from both Stirling Trunk main and the DN 1400 main in Lakes Road are not preferred but could be considered as long-term options. However, when considering such water supply options various operational issues including water pressure fluctuations, water quality, continuity of supply and other issues have to be taken into account. On-site local water treatment, storage and pressure reducing infrastructure will be required if connections to the Lakes Road Transfer Main and Stirling Trunk main are considered as water supply options. This supply option has not been explored in any engineering detailed.

Further consultation was carried out with the Water Corporation post advertising of the 2012 draft District Structure Plan and a combined Nambeelup Industrial Area servicing plan was prepared, which shows potential waste water and water supply options and other servicing options for the District Structure Plan area.

The Water Corporation will be in a position to provide further advice on funding options when appropriate land use approvals such as industrial rezoning and structure plans are in place and development staging information becomes known.

12.2 Wastewater

Nambeelup is within the Water Corporation's licence area for the provision of wastewater services. The Water Corporation has prepared a preliminary 'Waste Water Strategy' for Nambeelup which includes the ultimate construction of a number of pump stations, gravity sewers and pressure mains within the Nambeelup industrial area. This planning can be varied and staged by developers provided the long-term plan is not compromised.

In the Waste Water Strategy, all the pump stations in the southern, central and northern sections of Nambeelup are shown as discharging to the Gordon Road Waste Water Treatment Plant located to the west of Nambeelup. However, the Water Corporation has confirmed that their planning is schematic and is subject to change. Depending on the timing and location of industrial development, proponents will be able to approach the Water Corporation to modify planning and to stage works differently.

The provision of temporary developer-funded wastewater servicing infrastructure (including temporary pump stations and pressure mains) may be required, depending on location and progression of the development front.

12.3 Electricity

Based upon investigations undertaken by Western Power, the overall power transmission infrastructure likely to be required for the proposed Nambeelup Industrial Area is summarised as follows:

- one zone substation (within 10–25 years);
- dual circuit 132kV transmission lines upon pole structures (within 10–25 years) connecting the new zone substation to existing lines to the west and east of the Nambeelup Industrial Area; and
- distribution feeders and connections (as subdivision and development occurs).

The location of the future zone substation is yet to be determined, but it could possibly be located on Lot 88 Nambeelup Road, Nambeelup, which is owned by the Water Corporation. A site in the middle of the Nambeelup Industrial Area is another possibility and may be preferred in order to be within the load centre.

The zone substation will require a site approximately 1.5 hectares in area (120m x 120m dimensions typically sought on corner block locations). However, Western Power's planning generally takes (approximately) five years to design, fund and construct a new substation, therefore, the detailed design will not be known until closer to its required in service date.

The proposed alignment for the western transmission line connection to this proposed substation runs east-west through the centre of Lots 89 and 109 Readheads Road, connecting west to the existing north-south 132kV transmission lines. The reason for this alignment is due to the need to provide sufficient flight path height clearance for the north-east runway of the Murrayfield Airpark. Similar connections will be required along Redheads Road eastward as well to the nearest north-south 132kV transmission lines in this area.

Road widths, design and installation of other services in road reserves need to consider protecting the ability for these new transmission lines to be constructed in the long-term. During subsequent local structure planning, subdivision and infrastructure planning stages, the proponents should consult with Western Power regarding this requirement. Typical requirements which may be sought to protect the ability to construct these transmission lines in the long term include verge width allowance for 132kV double circuit pole structures and limiting materials of other services to those which are non-conductive.

To satisfy electrical load requirements of the initial stages of development, a new feeder will need to be extended from the Meadow Springs zone substation, a distance of approximately 12 kilometres. This new feeder will have to be developer funded subject to Western Power's contribution policy. However, due to the existing limited power transformer capacity at the Meadow Springs zone substation, this new feeder may only provide sufficient load to service the initial industrial subdivision stages. Western Power is currently investigating an option to install a third new power transformer at the Meadow Springs zone substation. Once the third new power transformer is installed, additional distribution feeders can be extended from the Meadow Springs zone sub-station to provide greater supply to the Nambeelup Industrial Area.

In summary, there is limited existing electrical power capacity available in the region and significant reinforcement works will be

required to provide for the projected load over the term of the development. The timing and type of reinforcements may change and are highly dependent on the load uptake and development of the region (Cossill & Webley, 2012).

A load connection applications need to be submitted to Western Power with sufficient lead time for formal load approval and construction. Western Power advised that the network and connected loads are dynamic, so no guarantee can be made with respect to the spare network capacity available at any point in time. Depending on the circumstances, there may be a need for the developer(s) to contribute to the cost of network augmentations.

12.4 Natural gas

A gas trunk main runs along Readheads Road within the Nambeelup Industrial Area. This pipeline connects the Dampier to Bunbury Natural Gas Pipeline to the Mandurah network to reinforce its capacity.

Connection to this gas trunk to service the Nambeelup Industrial Area is possible. However, it will be necessary to construct a pressure reducing station on the trunk main to supply the distribution network within the development.

12.5 Telecommunications

NBN Co's fibre footprint for the Mandurah area does not include the Nambeelup Industrial Area. However, NBN Co has advised that as further development occurs there is the potential for the area to be included within the NBN Co fibre footprint

13 Developer contributions

Development contribution plans are a mechanism that can be used to provide for the equitable distribution amongst multiple landowners within an area, the cost of providing specific infrastructure (for example roads, infrastructure and services). Another option is to use private agreements between landowners. The following sections examine these models and discuss elements and processes pertaining to possible developer contributions as they relate to the Nambeelup Industrial Area.

13.1 Development contribution plans

Development contribution plans represent a comprehensive and statutorily enforceable mechanism or scheme for equitable common infrastructure contributions to be determined and levied to participating landowners. Such schemes are provided for under *State Planning Policy No. 3.6: Development Contributions for Infrastructure* (SPP 3.6) and may be incorporated and enforced under the relevant local authority's local planning scheme.

SPP 3.6 outlines that contributions must be fair and reasonable, reflect the true cost of providing the required infrastructure and there should be accountability in the manner in which contributions are determined and expended. The development contribution plan must be transparent and outline in exact detail the methodology used to calculate contributions.

A key component of a development contribution plan is the 'infrastructure cost schedule' (or cost apportionment schedule) which contains itemised estimates of the costs of all common infrastructure works and

the contribution required from landowners. The infrastructure cost schedule is usually reviewed at least annually.

To prepare the required cost apportionment schedule, all the common infrastructure items will need to be costed. In many instances, costing items will require some level of detailed design. The cost of this detailed design is also a common cost to the developers and will form part of the administration costs.

As the ceding of land required for infrastructure is a common cost, this land will need to be valued in order that the cost can be included within the cost apportionment schedule. The process for land valuation will need to be clearly outlined by the selected model, including a process for resolution of disputes over the assessed value of land. This process is likely to involve appointment of a valuation panel and process for consultation with all stakeholders.

Importantly, the cost apportionment schedule must be reviewed regularly, usually on an annual basis, to ensure that it reflects the true and real costs of the infrastructure items, actual costs incurred, inflation and economies of scale. In addition, it is wise that the schedule incorporate a healthy contingency to protect the stakeholders against a possible shortfall in funds.

The services of an administrator or 'manager' may also be required. The role of the manager will be to oversee the commissioning of common infrastructure works, collect levies from contributing landowners, undertake day to day liaison on all issues with landowners and stakeholders and undertake the regular review of items and associated costs. The

manager can be employed directly by the scheme or preferably, by the Shire of Murray. In either case, the manager's fees/salary can qualify as a recoverable cost item.

It is also recommended that the initial development contribution plan and cost apportionment schedule be independently reviewed through an external auditing process, to ensure that a correct level of cost calculation and apportionment has occurred. Some form of regular audit may also be appropriate.

Procedurally, the development contribution plan process initially involves the preparation of a development contribution plan for the specific project area. Next, the development contribution plan is formalised via an amendment to the local planning scheme and once approved effectively forms part of the local planning scheme thereby ensuring statutory compliance. Part 7 of the Planning and Development (Local Planning Regulations) 2015 outlines some statutory requirements relating to the preparation and implementation of a development contribution plan.

Given the number of landowners involved at Nambeelup, the likelihood of differing motivations amongst these, the need for transparency and the prospect for 'super lot' development parcels to be on-sold, a development contribution plan model is considered the most appropriate mechanism to deliver development contributions at the project. Such an approach will necessitate an appropriate amendment to TPS 4 involving formal designation of a 'development contribution area' and 'development contribution plan' for the Nambeelup Industrial Area, as well as further supporting specialist studies.

13.2 Private agreements

Private or legal agreements (also known as private treaties or deeds of agreement) represent a customised approach to establishing common infrastructure contribution arrangements. Such a model is particularly well suited to circumstances where there are only a few landowners involved. This approach to developer contributions requires the affected landowners enter into

a legal agreement between each other and with the local authority and other government agencies (as required), to set out the common infrastructure requirements and the contribution arrangements. To operate successfully, a strong 'heads of agreement' is essential. A private agreement is legally based, however the cost sharing arrangements are agreed to through direct negotiation between landowners.

A private or legal agreement development contribution is not considered appropriate for the Nambeelup Industrial Area, given the number of landowners involved, the size of the proposed industrial area, the time it will take to substantially develop the industrial area and the range of infrastructure that will need to be covered under such a contribution plan.

13.3 Common infrastructure items

It is essential that the selected delivery model outlines precisely which infrastructure the developers are contributing towards. Three forms of items are commonly included within contribution models: 'hard', 'soft' and 'administrative'.

'Hard' infrastructure items invariably relate to the major physical works essential to the successful development of area into a fully operational and integrated industrial estate. For the Nambeelup Industrial Area this will primarily relate to items such as the construction of major roads, dual-use paths and arterial (internal) drainage. The likely items are further detailed in Table 3.

'Soft' infrastructure is less tangible and more subjective – being aligned to the perceived needs of a community and building the capacity of local people and groups to respond to current and future needs. Community infrastructure is typically more relevant within an urban context. No major community facilities will be required to service the Nambeelup Industrial Area.

In addition to the traditional 'hard' and more subjective 'soft' items of infrastructure, 'administrative' common costs can be claimed, such as those for the preparation of various forms of documentation, administration

(including the costs incurred when estimating infrastructure costs, as well as costs incurred in the administration and management of the model) and legal requirements associated with the implementation of the model.

Reticulated water and sewer infrastructure are major items required for the development of the Nambeelup Industrial Area, and these involve high costs. Separate funding sources are being investigated regarding these. However, it is necessary to retain

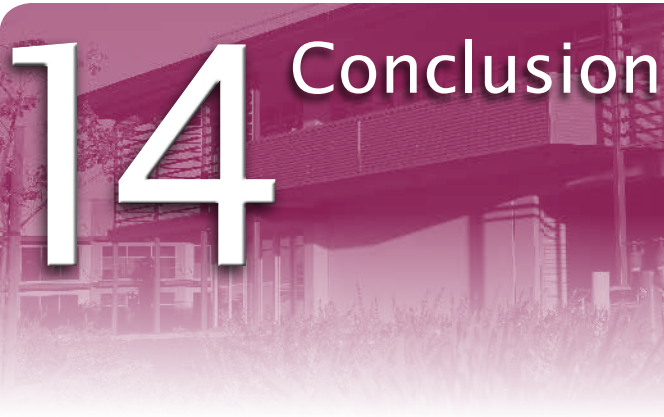
these infrastructure items in Table 3 as the landowners may need to contribute to these major infrastructure costs.

A preliminary assessment of the major items of 'hard infrastructure' likely to be required to service the proposed Nambeelup Industrial Area will need to be undertaken. A listing of these and possible administrative items is provided in Table 3.

Table 3 – Infrastructure items likely to be subject to a Development Contribution Plan

| Item | Specification |
|--|--|
| Integrator A and Integrator B roads | <p>Existing roads:</p> <ul style="list-style-type: none"> Upgrading and/or widening requirements to be determined for each road Intersection treatments. <p>New roads:</p> <ul style="list-style-type: none"> Land component All earthworks One carriageway (two lanes at minimum width of 8.5m) Drainage infrastructure Dual use paths Landscaping of the verge and median Lighting Surveying Legal costs. |
| Regional cycleways and path network | Full cost of constructing pathways along appropriate roads in the Nambeelup Industrial Area. |
| Arterial drainage | Funding of arterial drainage collection, conveyance and disposal, including land for disposal basins, swales or sumps. |
| Water supply headworks | <ul style="list-style-type: none"> Pre-funding of permanent/interim headworks for non-frontal development. Funding of temporary works and standard headworks contribution. |
| Wastewater headworks Pumping stations Wastewater pipes >300 mm | <ul style="list-style-type: none"> Pre-funding of permanent/interim headworks for non-frontal development. Funding of temporary works and standard headworks contribution. |
| Cost of administering Developer Contribution Plan | All costs incurred by Council to administer the Development Contribution Plan, including those associated with appointment a manager to administer the Plan. |
| Longer term water quality monitoring (costings and responsibilities) | Development of entire proposed Nambeelup Industrial Area is expected to occur over the next 30 years. There will be need for ongoing water monitoring as the area develops and therefore a need for it to be funded under the Development Contribution Plan. |

14 Conclusion



The Nambeelup Industrial Area District Structure Plan has been prepared following:

- numerous planning, environmental, transport and infrastructure servicing investigations undertaken for Nambeelup during the past 10 or more years;
- the advertising of two draft District Structure Plans, one in 2012 and one in 2014; and
- numerous consultations with landowners, state government agencies and the Shire of Murray about planning for Nambeelup as a future major industrial and employment activity area for the Peel region.

The finalisation of the District Structure Plan now provides the opportunity to progress further detailed planning, environmental and infrastructure servicing investigations required for its implementation. This includes progressing work related to transport modelling, road and infrastructure servicing planning, as well as the necessary work to support the preparation of a development contribution plan and amendments to the Peel Region Scheme and local planning scheme.

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FIGURES

Nambeelup Industrial Area

DISTRICT STRUCTURE PLAN

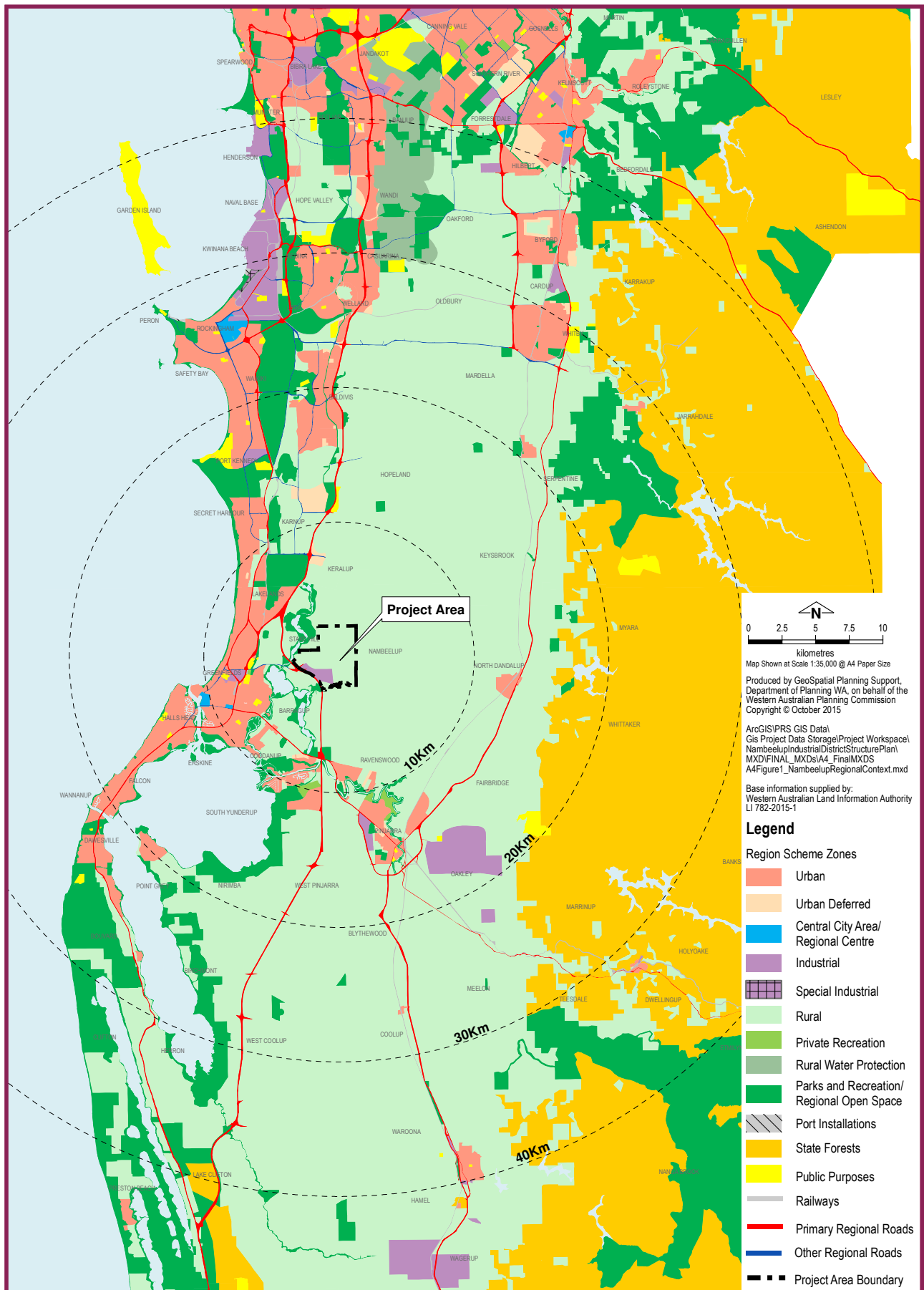


Figure 1: Nambeelup Industrial Area – Regional context

Nambeelup Industrial Area

DISTRICT STRUCTURE PLAN

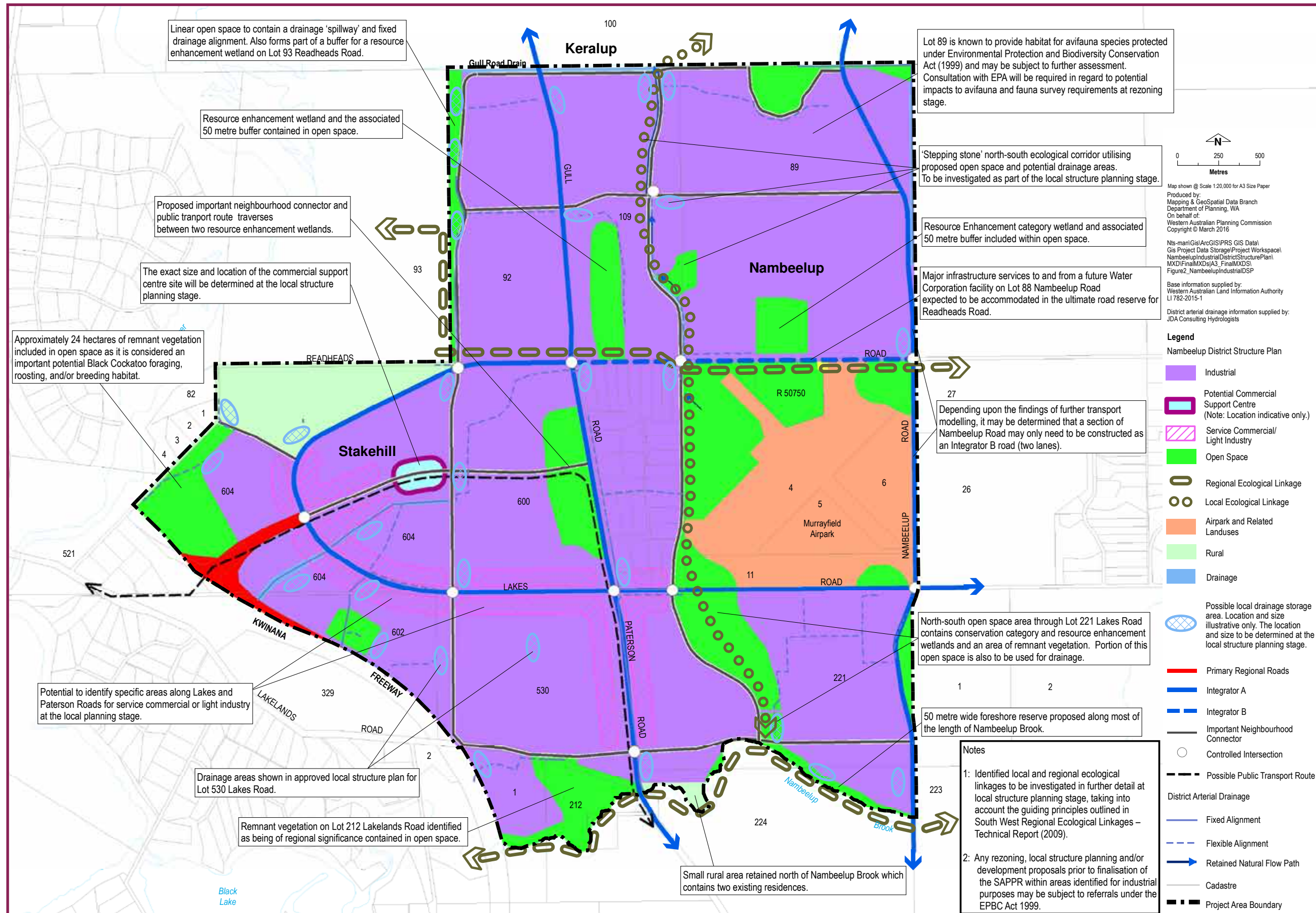


Figure 2: Nambeelup Industrial District Structure Plan

Nambeelup Industrial Area

DISTRICT STRUCTURE PLAN

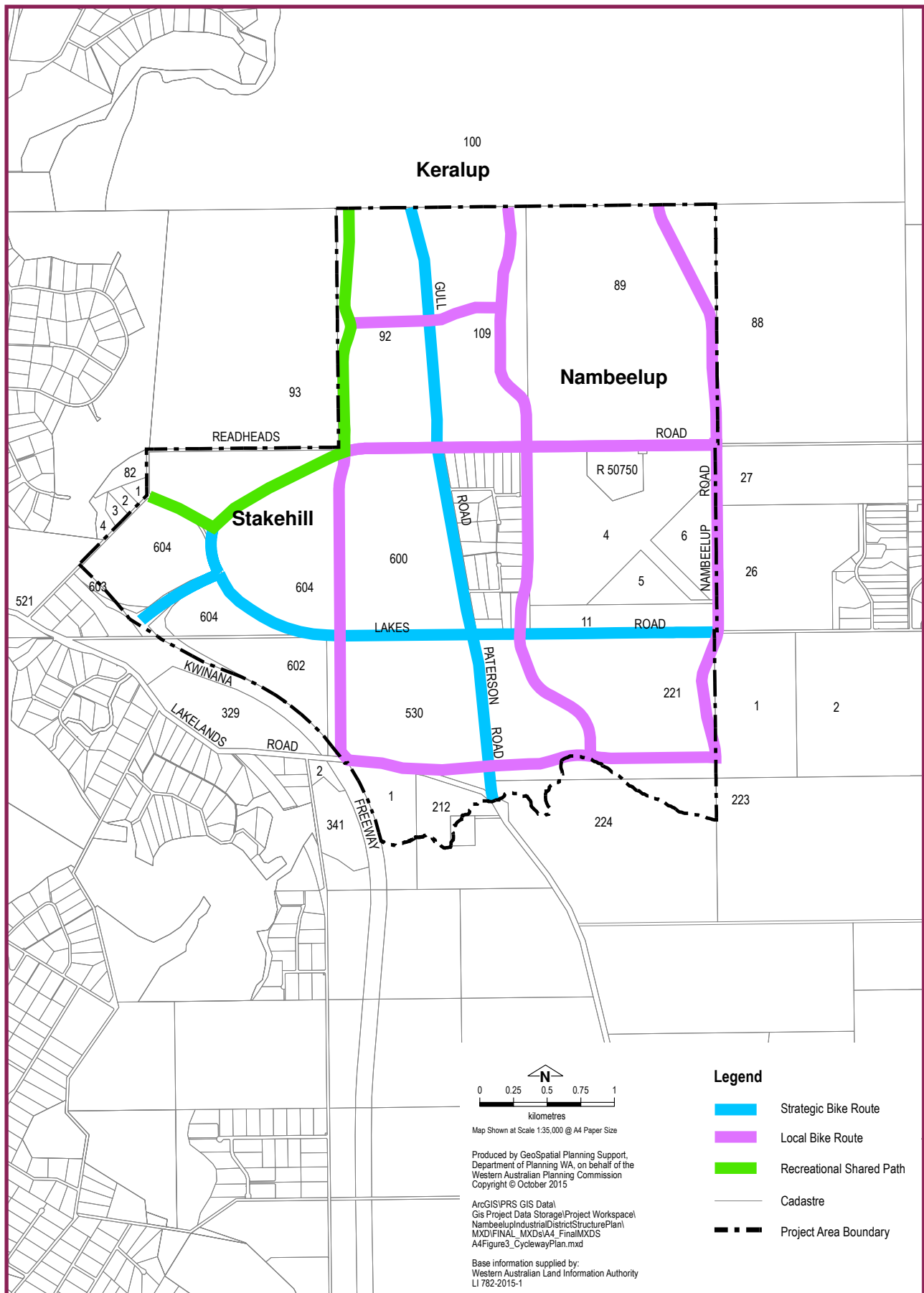


Figure 3: Nambeelup Industrial Area – Cycleway Plan

Nambeelup Industrial Area

DISTRICT STRUCTURE PLAN

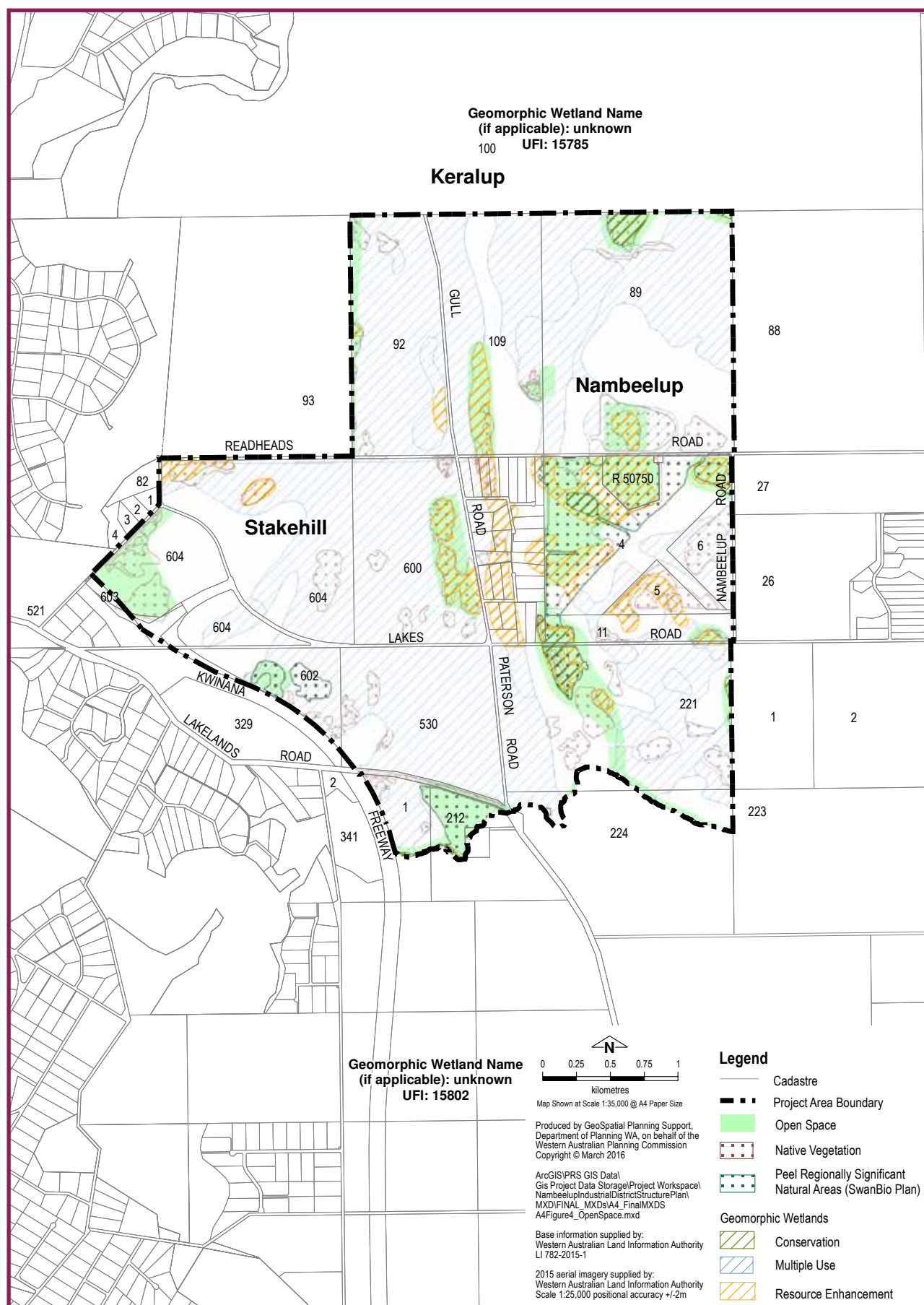


Figure 4: Nambeelup Industrial Area – Open space

Nambeelup Industrial Area

DISTRICT STRUCTURE PLAN

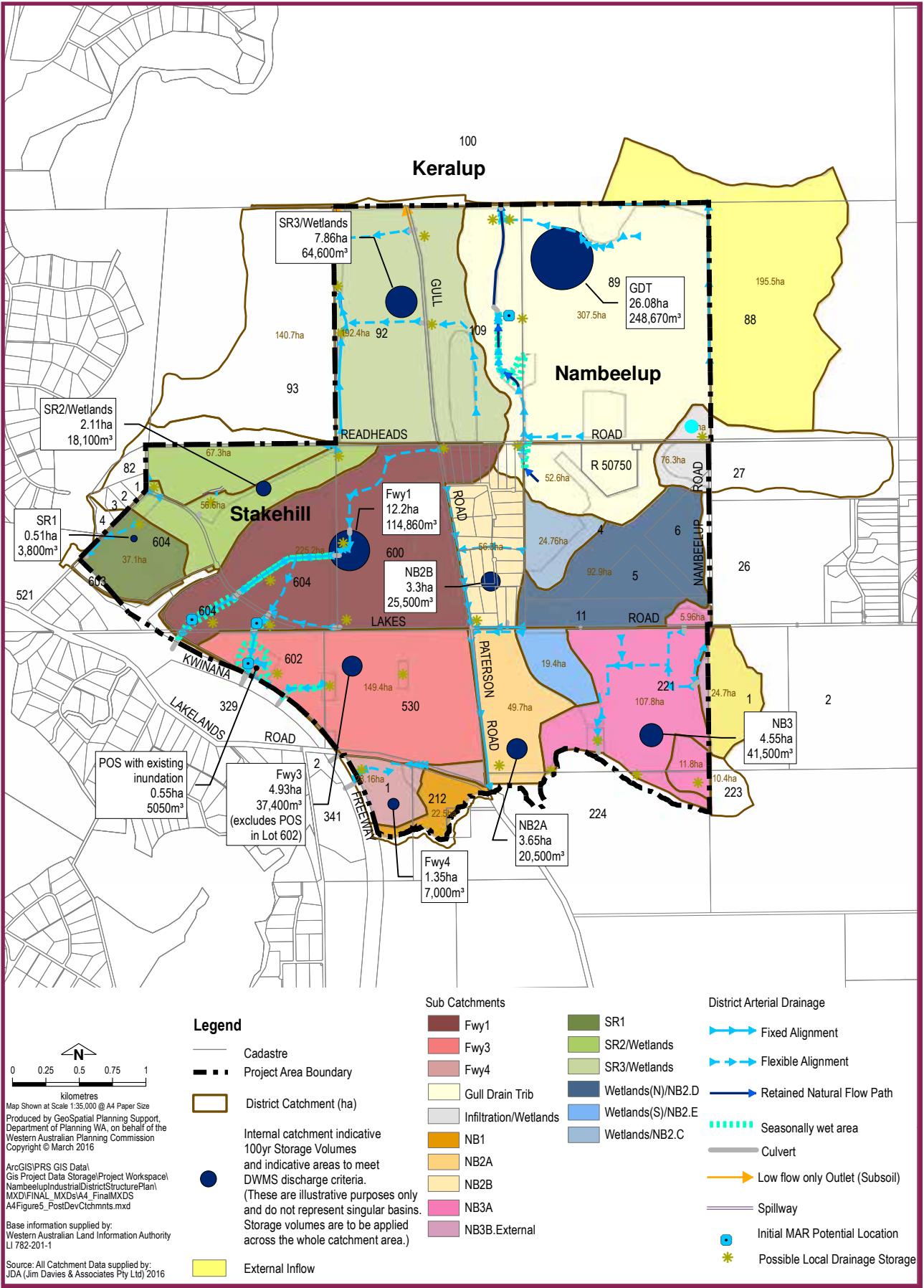


Figure 5: Nambeelup Industrial Area – Drainage

Nambeelup Industrial Area

DISTRICT STRUCTURE PLAN

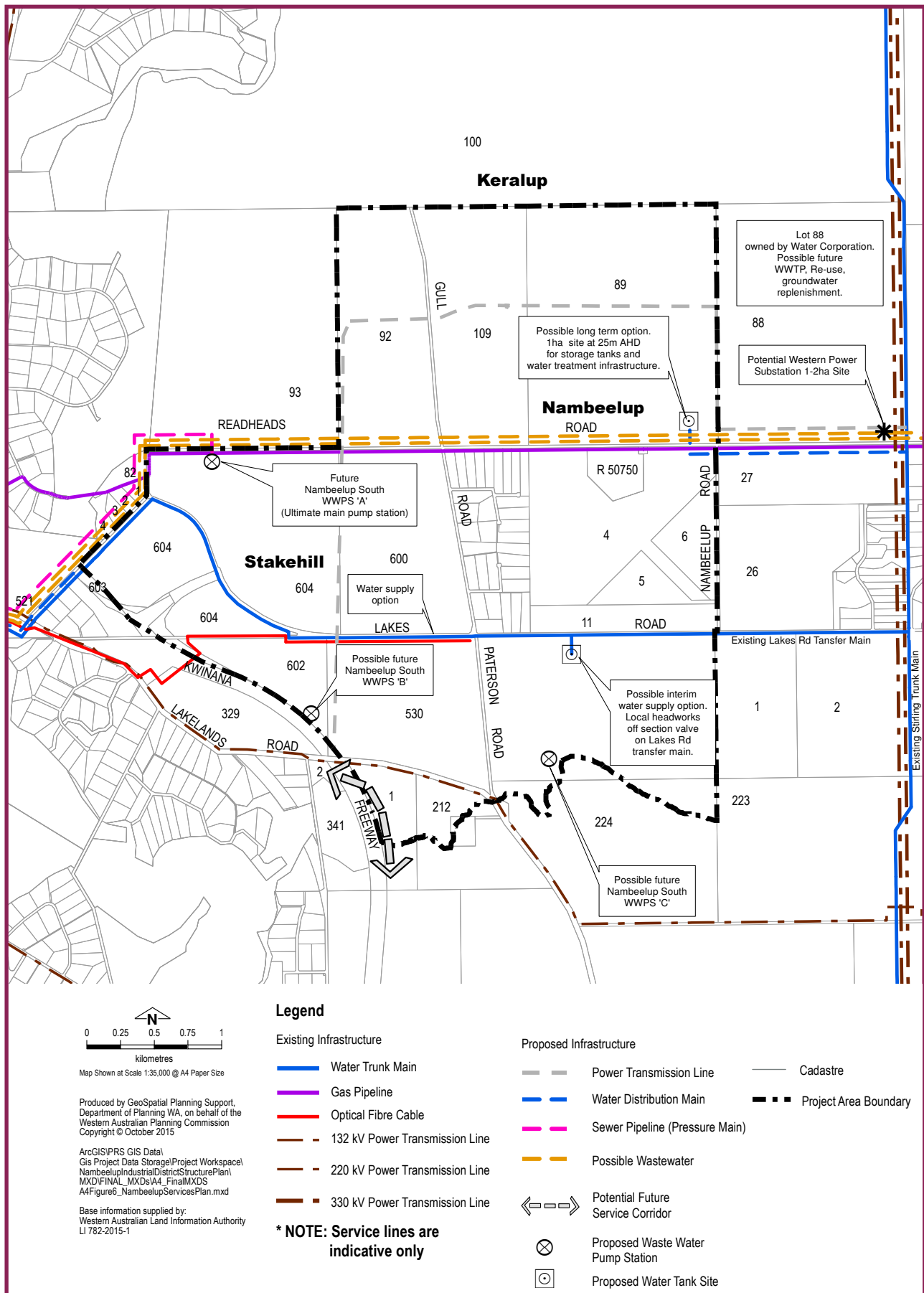


Figure 6: Nambeelup Industrial Area – Service infrastructure

Nambeelup Industrial Area

DISTRICT STRUCTURE PLAN

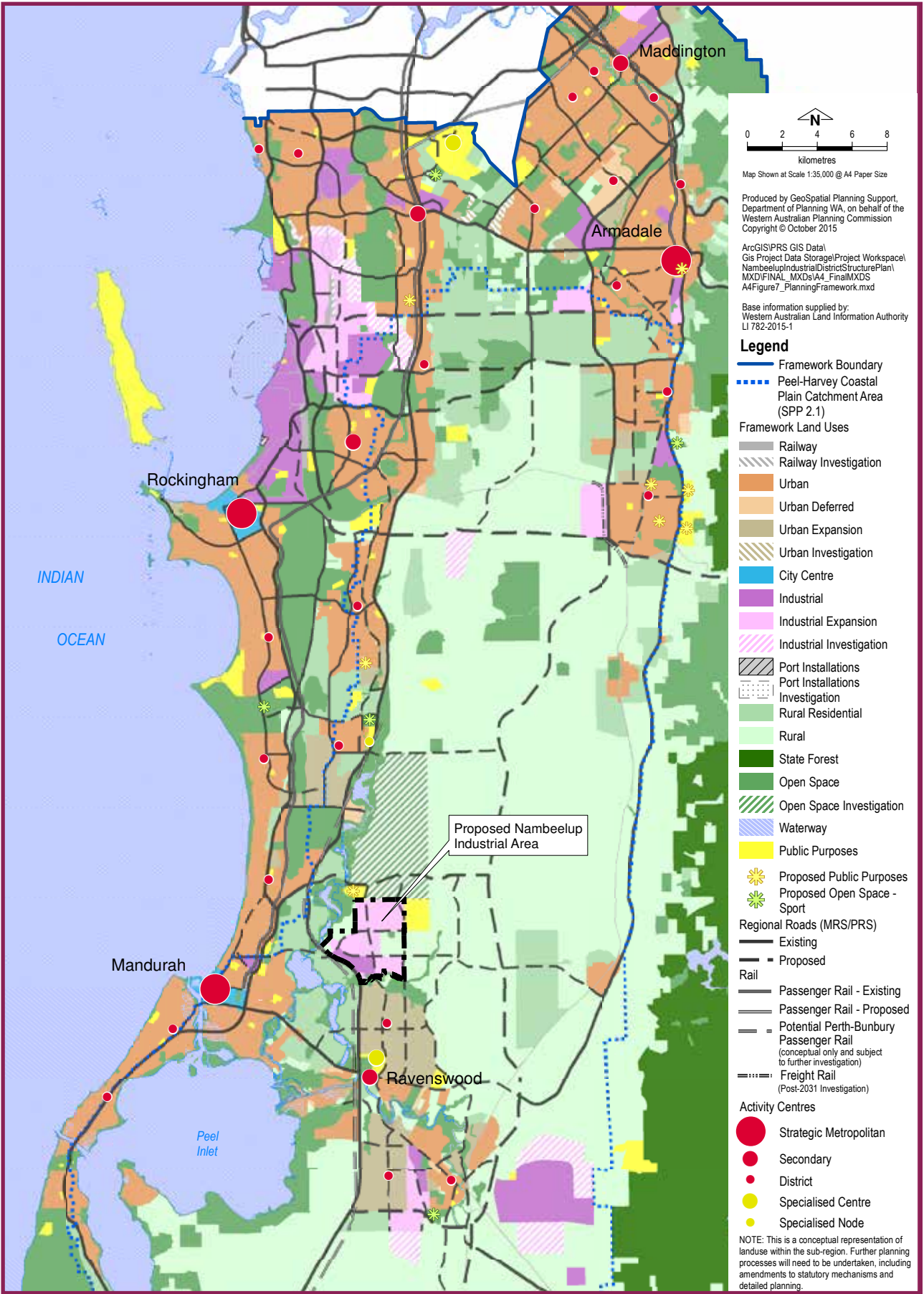


Figure 7: Draft South Metropolitan Peel Sub-regional Planning Framework

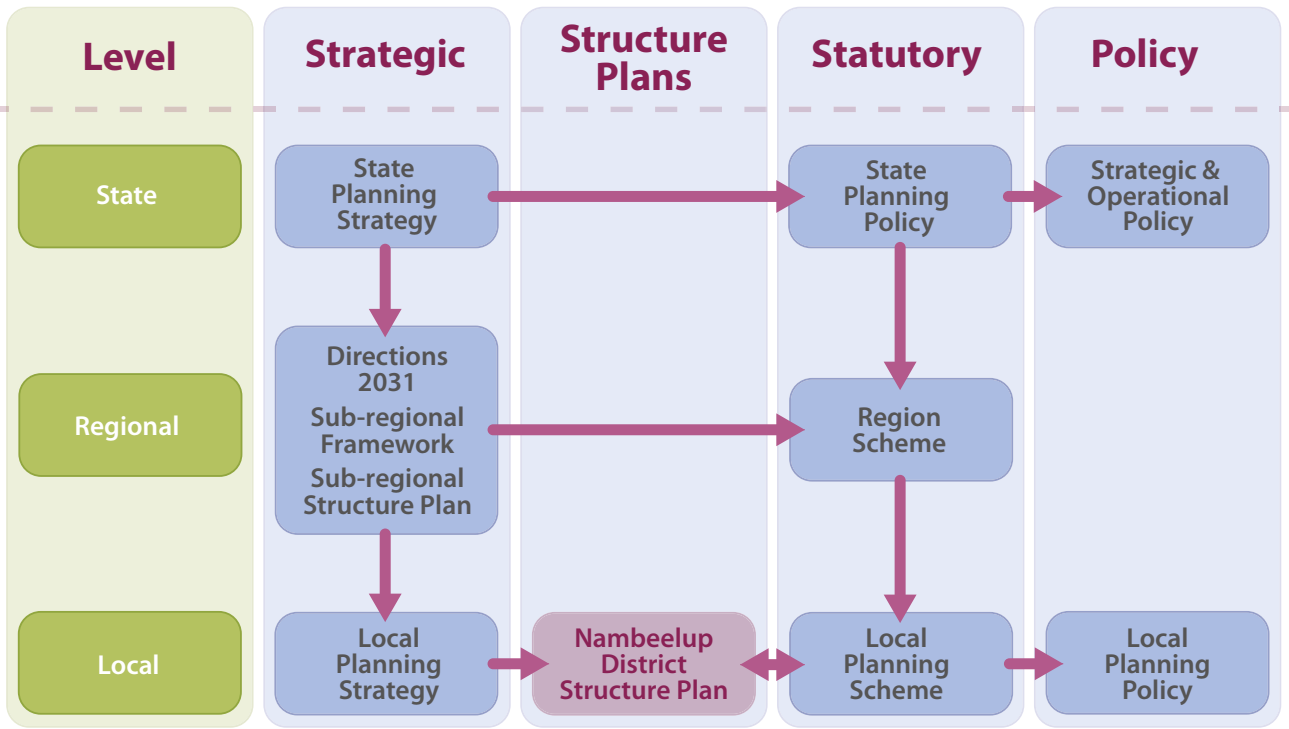


Figure 8: Western Australian Planning Framework (section 6.3)

Nambeelup Industrial Area

DISTRICT STRUCTURE PLAN

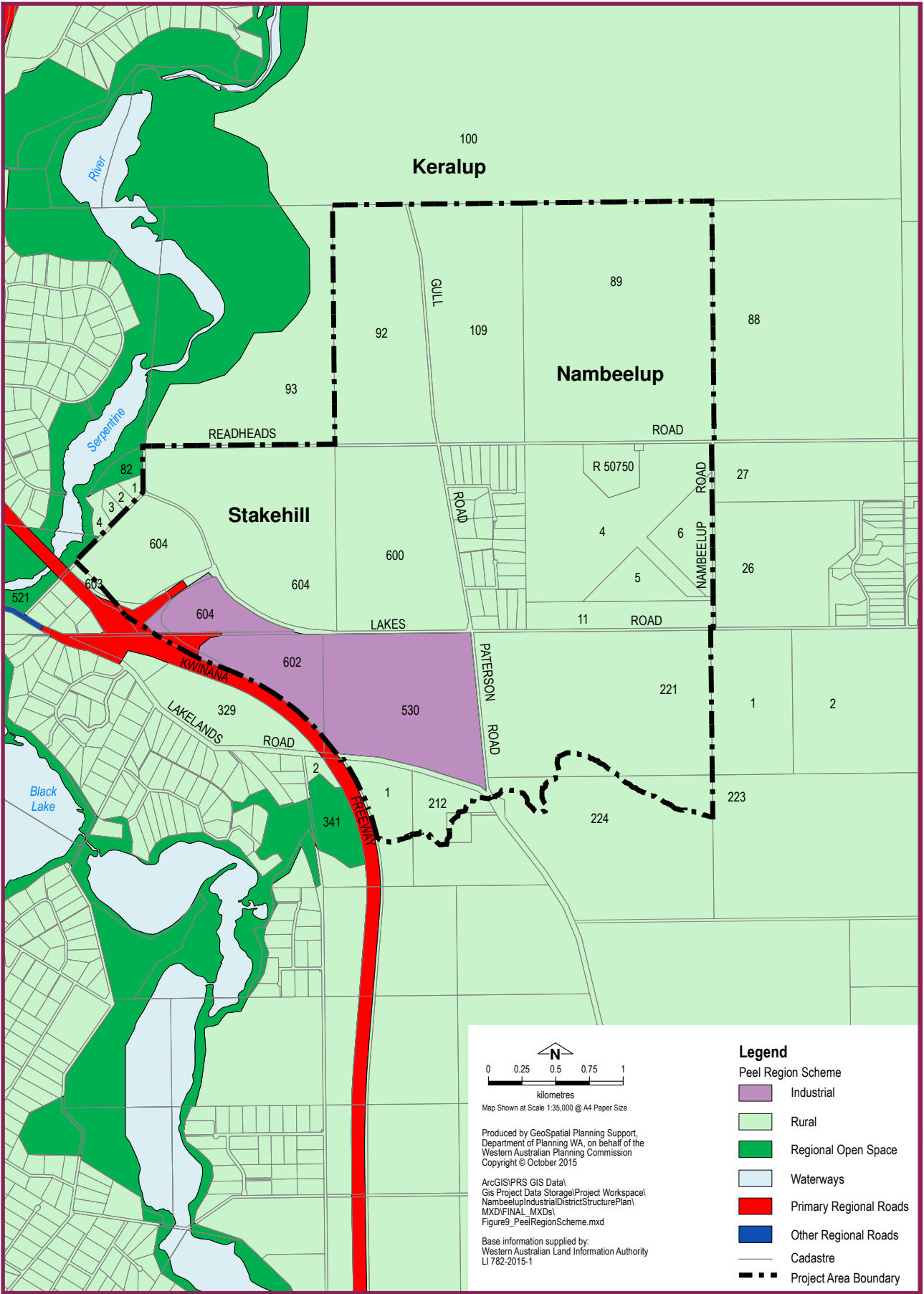


Figure 9: Peel Region Scheme

Nambeelup Industrial Area

DISTRICT STRUCTURE PLAN

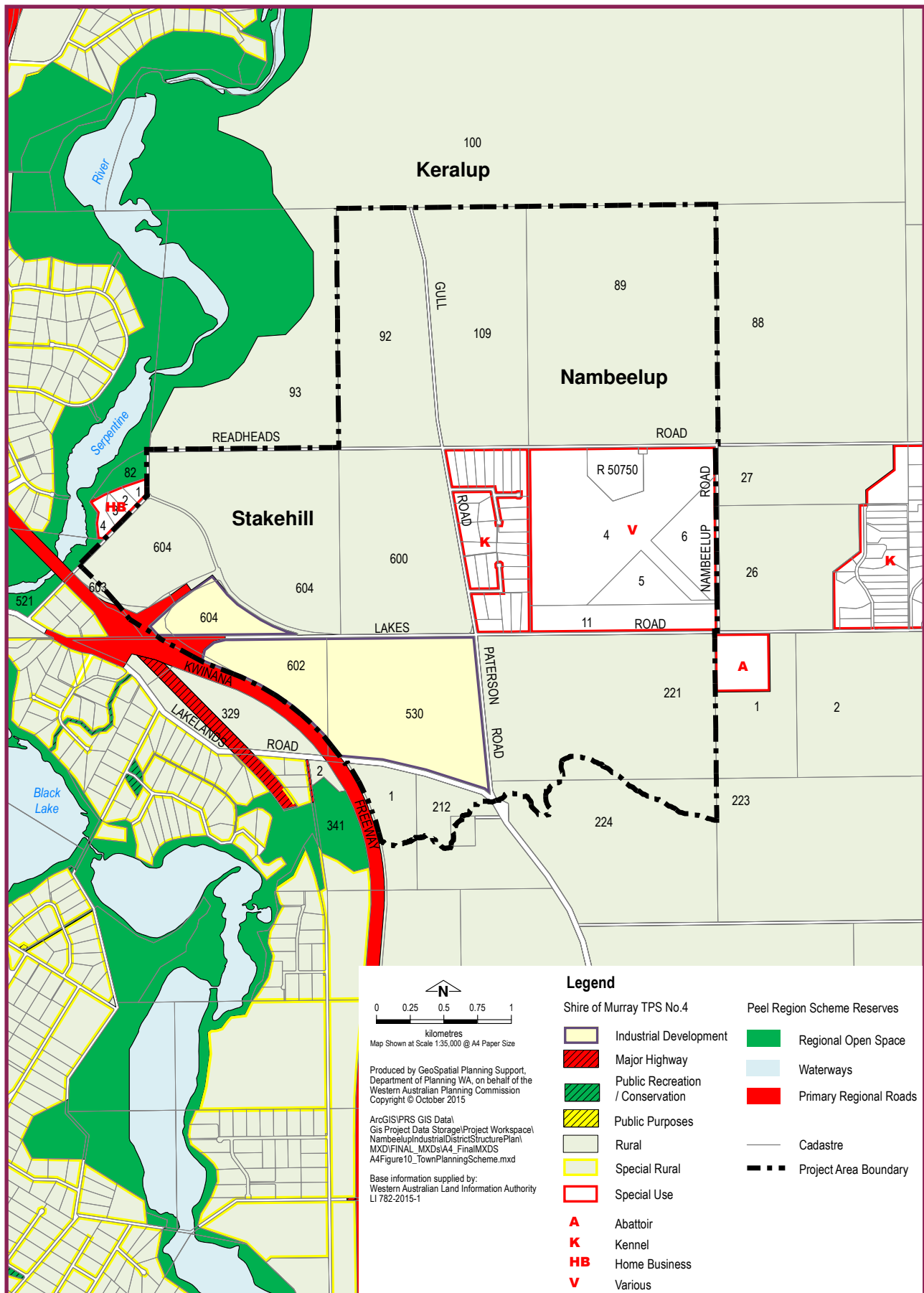


Figure 10: Shire of Murray – Town Planning Scheme No.4

Nambeelup Industrial Area

DISTRICT STRUCTURE PLAN

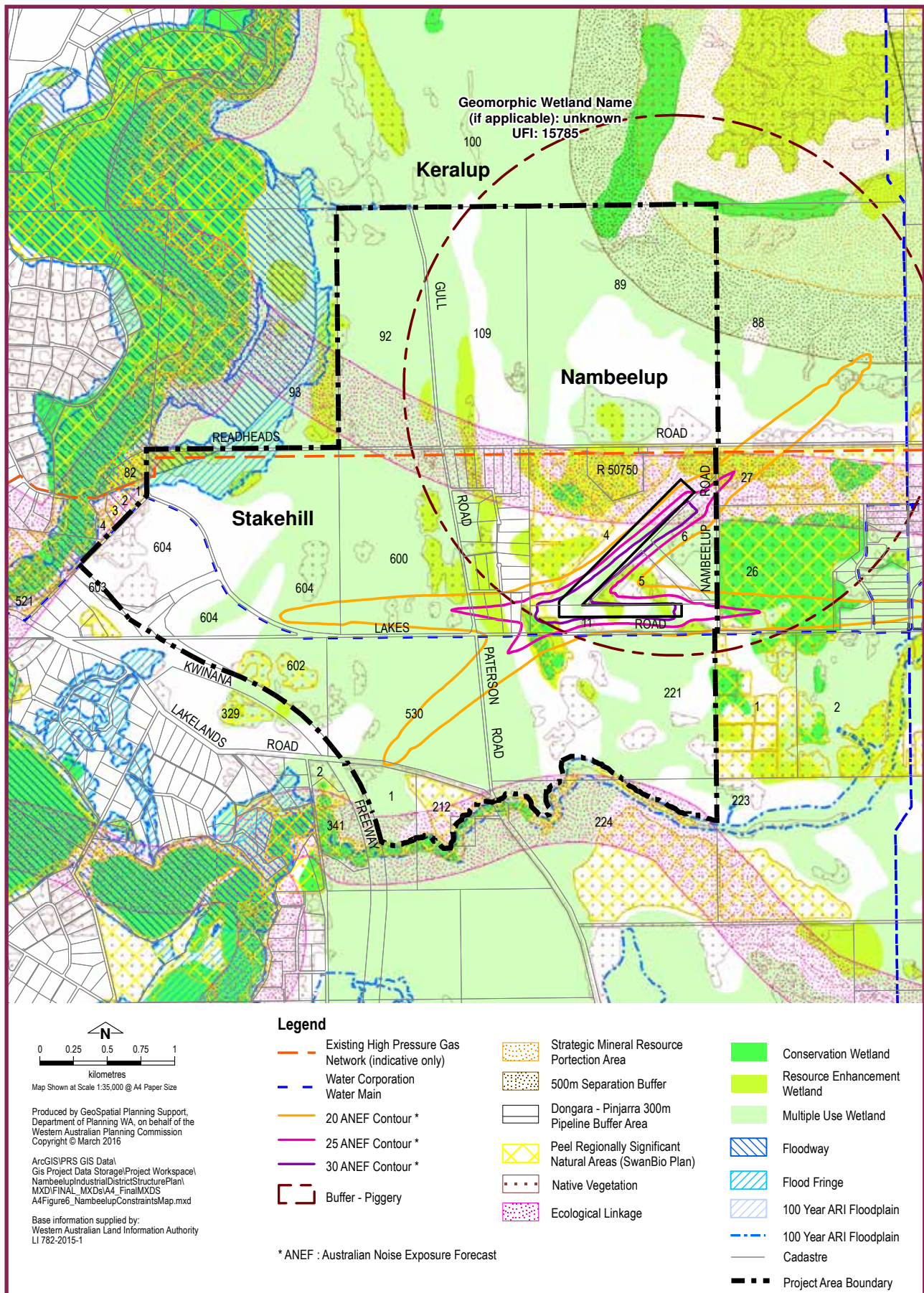


Figure 11: Opportunities and constraints

Nambeelup Industrial Area

DISTRICT STRUCTURE PLAN

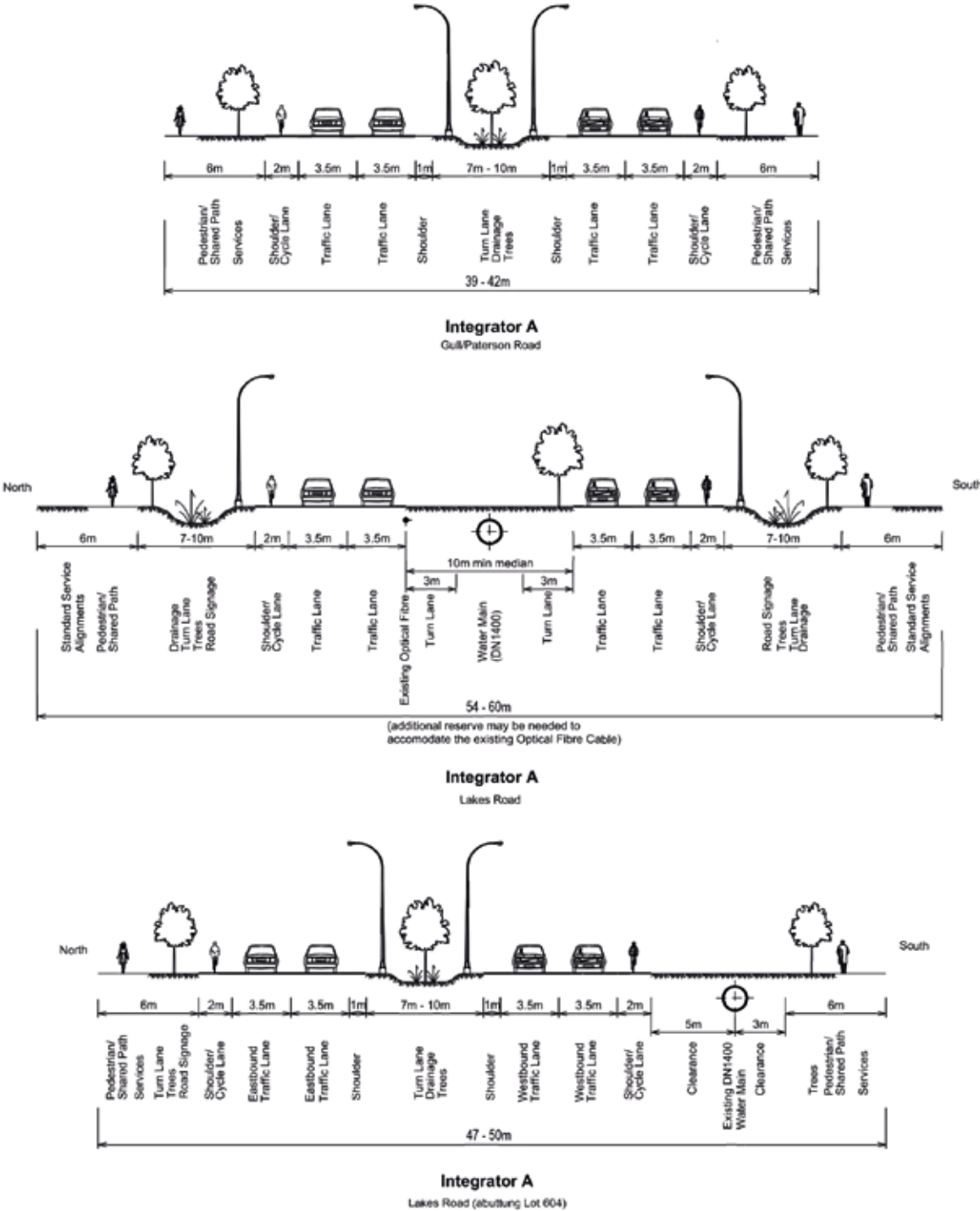


Figure 12: Aerial photography

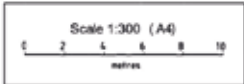
APPENDICES

Nambeelup Industrial Area

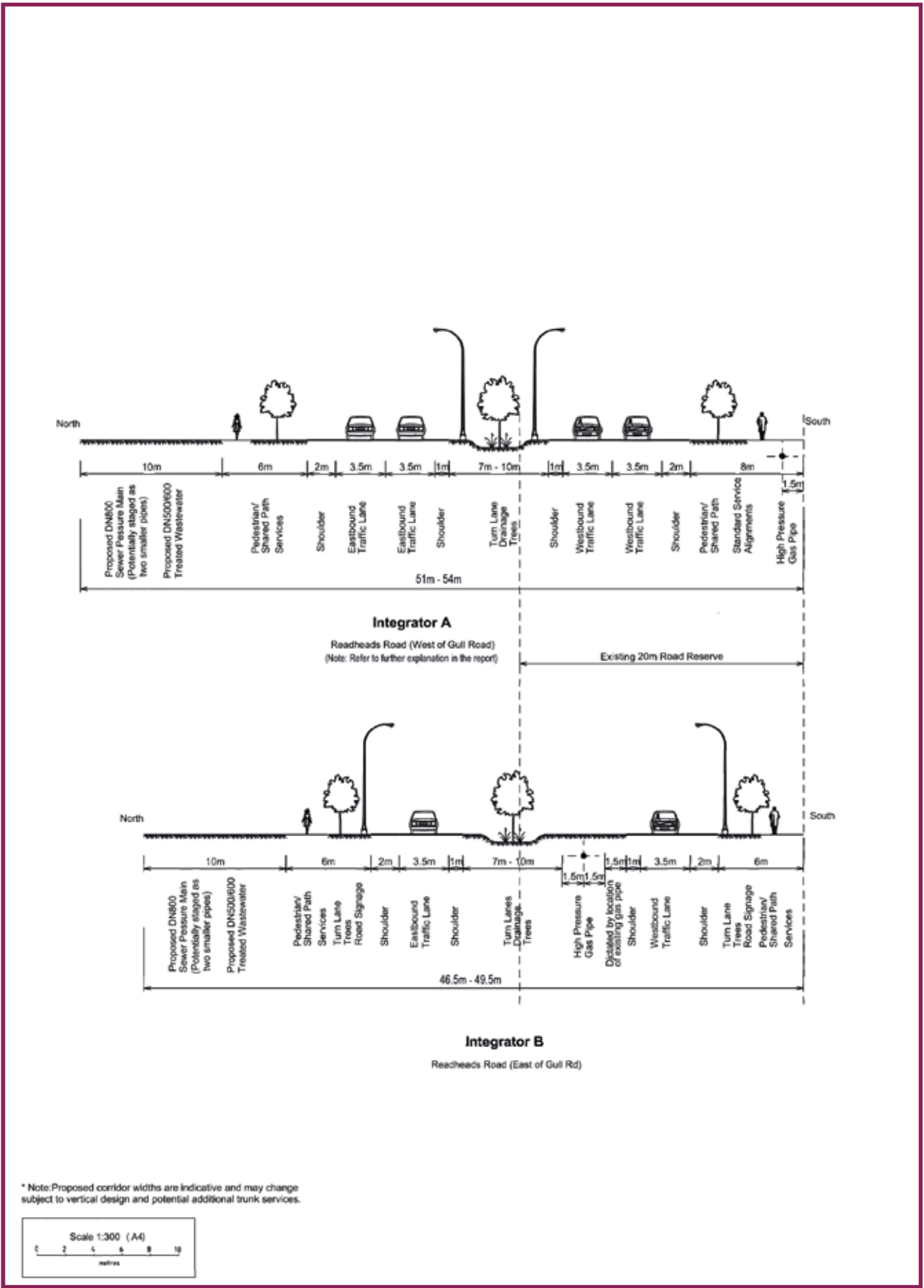
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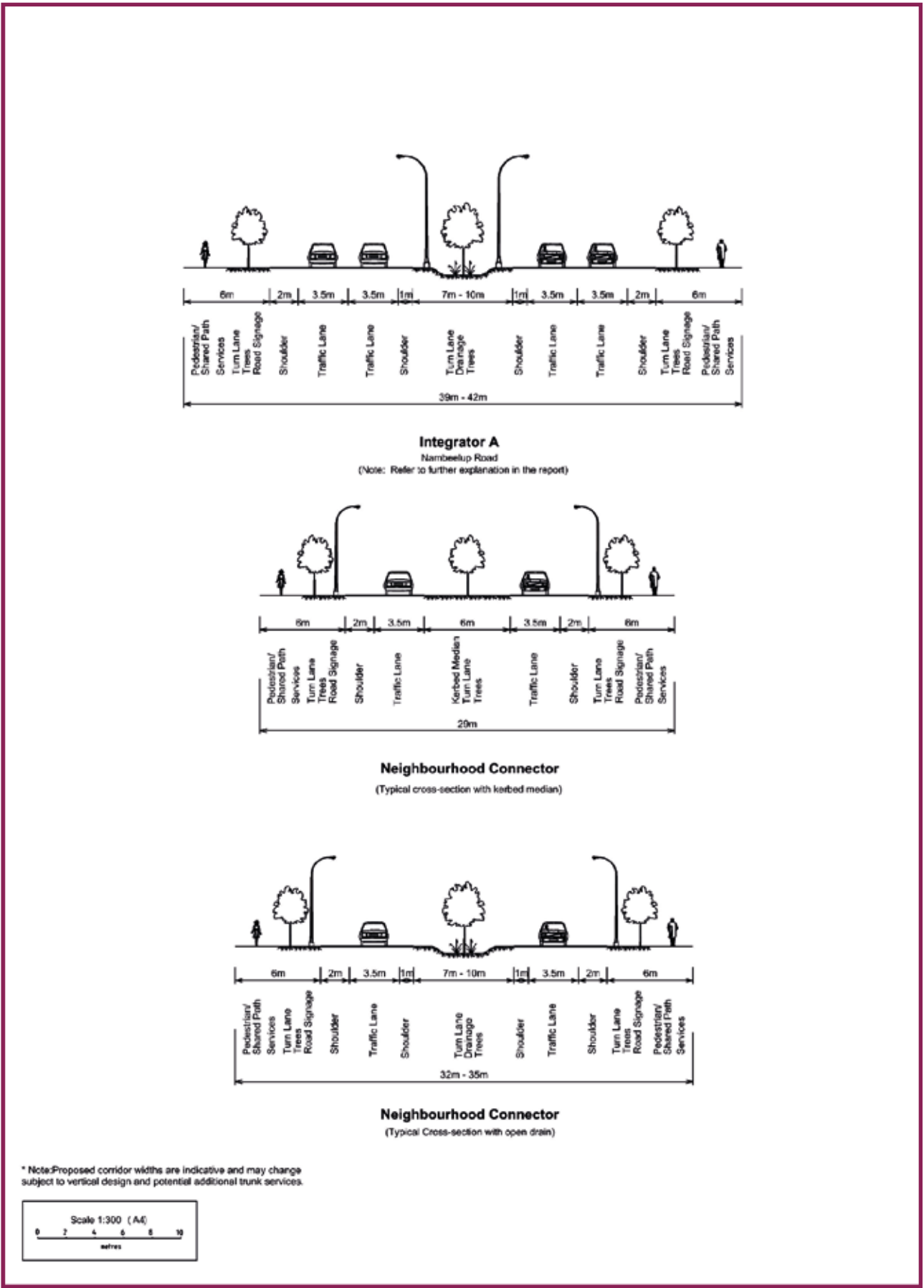
* Note: Proposed corridor widths are indicative and may change subject to vertical design and potential additional trunk services.



Appendix 1: Nambeelup Industrial Area – Typical road cross-sections



Appendix 1: Nambeelup Industrial Area – Typical road cross-sections



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