

latitude³²
INDUSTRY ZONE

LATITUDE 32
DEVELOPMENT AREA 3 STRUCTURE PLAN

March 2021

DESCRIPTION	VERSION	DATE	DISTRIBUTION
Draft for Review	1	12/12/2013	LandCorp, Local Governments
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Draft DA3 Structure Plan	6	16/07/2014	Department of Planning and DevelopmentWA
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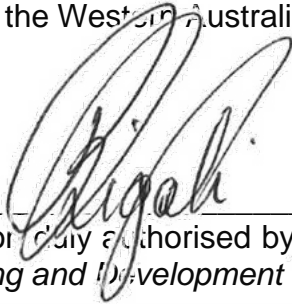
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IT IS CERTIFIED THAT AMENDMENT NO. 1 TO THE LATITUDE 32
DEVELOPMENT AREA 3 STRUCTURE PLAN WAS APPROVED BY
RESOLUTION OF THE WESTERN AUSTRALIAN PLANNING
COMMISSION ON: **03 MAY 2021**

Signed for and on behalf of the Western Australian Planning Commission

A handwritten signature in black ink, appearing to read 'Rigali', is written over a horizontal line. The signature is enclosed within a light grey rectangular box.

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

Table of Modifications

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MODIFICATION NO.	DESCRIPTION OF MODIFICATION	ADOPTED BY THE WESTERN AUSTRALIAN LAND AUTHORITY	APPROVED BY THE WESTERN AUSTRALIAN PLANNING COMMISSION
1	Amendment to levels and layout within DA3 North	14 December 2020	03 May 2021

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Executive Summary

The Fremantle Rockingham Industrial Area Regional Strategy 2000 was undertaken to protect and optimise the Kwinana Industrial Area, given the recognition of the Kwinana Industrial Area's importance to the State.

In accordance with the recommendations of the Fremantle Rockingham Industrial Area Regional Strategy, the Hope Valley-Wattleup Redevelopment Project, was established (and rebranded) as Latitude 32 in 2006. Latitude 32 is governed by the Hope Valley-Wattleup Redevelopment Act 2000 and excises the Act area, by repealing the relevant planning schemes. These are replaced by the Hope Valley-Wattleup Redevelopment Project Master Plan 2005 (as amended May 2013) (the Master Plan). The Master Plan, for all intents and purposes acts as the Planning Scheme for the Redevelopment Area.

Located approximately 30km south-west of the Perth CBD, 20km south of the Fremantle GPO and 10km north of the Rockingham CBD, in close proximity to existing and planned service and transport infrastructure, Latitude 32 comprising a total area of approximately 1400 hectares, is located within the municipal boundaries of both the Cities of Cockburn and Kwinana.

In order to meet the statutory requirements of the Act and the Master Plan, it is necessary to prepare a Structure Plan that provides for certainty and flexibility, enabling land development and the timely release of industrial land that responds to market requirements.

This Structure Plan, including an area of 311ha, has been prepared for Development Area 3 (the Structure Plan area), being just one of six (existing and proposed) Development Areas within Latitude 32.

The Structure Plan has been prepared pursuant to Part 6 of the Master Plan to:

- Enable general industrial development through establishing an appropriate planning framework and design concepts; and
- Guide and support subsequent subdivision and development proposals.

The Structure Plan comprises a Part One – Statutory Section; Part Two – Explanatory Section providing context and justification to the preparation of the Structure Plan; and Appendices - Including all specialist consultant reports and documentation used in the preparation of and to support the Structure Plan.

In order to guide and support subdivision and development proposals, Part Two of this Structure Plan includes indicative lot layouts to ensure the Structure Plan area can be appropriately developed for industrial purposes. There has been extensive engineering design undertaken relative to the existing and finished levels, including the design of utilities in response to the extraction of primary resources within and adjacent to the Structure Plan area. Where practicable lot sizes and gradients have been designed around existing cadastre to allow for landowners to develop at an individual level.

Due regard is to be given to the design principles and design rationale contained within the Structure Plan at the time of subdivision and development.

The logo features the word "latitude" in a bold, lowercase sans-serif font, followed by the number "32" in a larger, bold, uppercase sans-serif font. Below this, the words "INDUSTRY ZONE" are written in a smaller, all-caps, spaced-out sans-serif font. The background consists of a large red triangle on the left and a white triangle on the right, meeting at a diagonal line.

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Part One: Statutory Section

1 Part One

1.1 Structure Plan Area

The Structure Plan applies to the land identified within the black dashed line on the Structure Plan Map – *Plan 1* (the Structure Plan area). The Structure Plan is identified as the Development Area 3 Structure Plan.

1.2 Structure Plan Content

The Structure Plan comprises:

- **Part One – Statutory Section**

Part One of the Structure Plan includes the Structure Plan Map and provisions and requirements that have statutory effect.

- **Part Two – Explanatory Section.**

Part Two of the Structure Plan provides context, justifies and clarifies the provisions contained in Part One, and is used as a reference guide to interpret and implement Part One.

- **Appendices**

Includes all specialist consultant reports and documentation used in the preparation of and to support the Structure Plan.

1.3 Interpretation and Relationship to the Hope Valley-Wattleup Redevelopment Project Master Plan

This Structure Plan has been prepared under Part 6 of the Hope Valley-Wattleup Redevelopment Project Master Plan (the Master Plan). The terms used in this Structure Plan shall have the same meanings given to them in the Master Plan or where not defined in the Master Plan as defined in the Structure Plan. Pursuant to clause 6.2.11.2 of the Master Plan if any provision, standard or requirement of the Structure Plan is inconsistent with a provision, standard or requirement of the Master Plan, then the Master Plan prevails to the extent of the inconsistency.

1.4 Land Use, Subdivision and Development Requirements

Land use permissibility within the Structure Plan shall be in accordance with the land use permissibility prescribed for the Precinct by the Master Plan within which the subject land is located, except where Additional or Restricted uses are provided for by clauses 4.6 or 4.7 of the Master Plan.

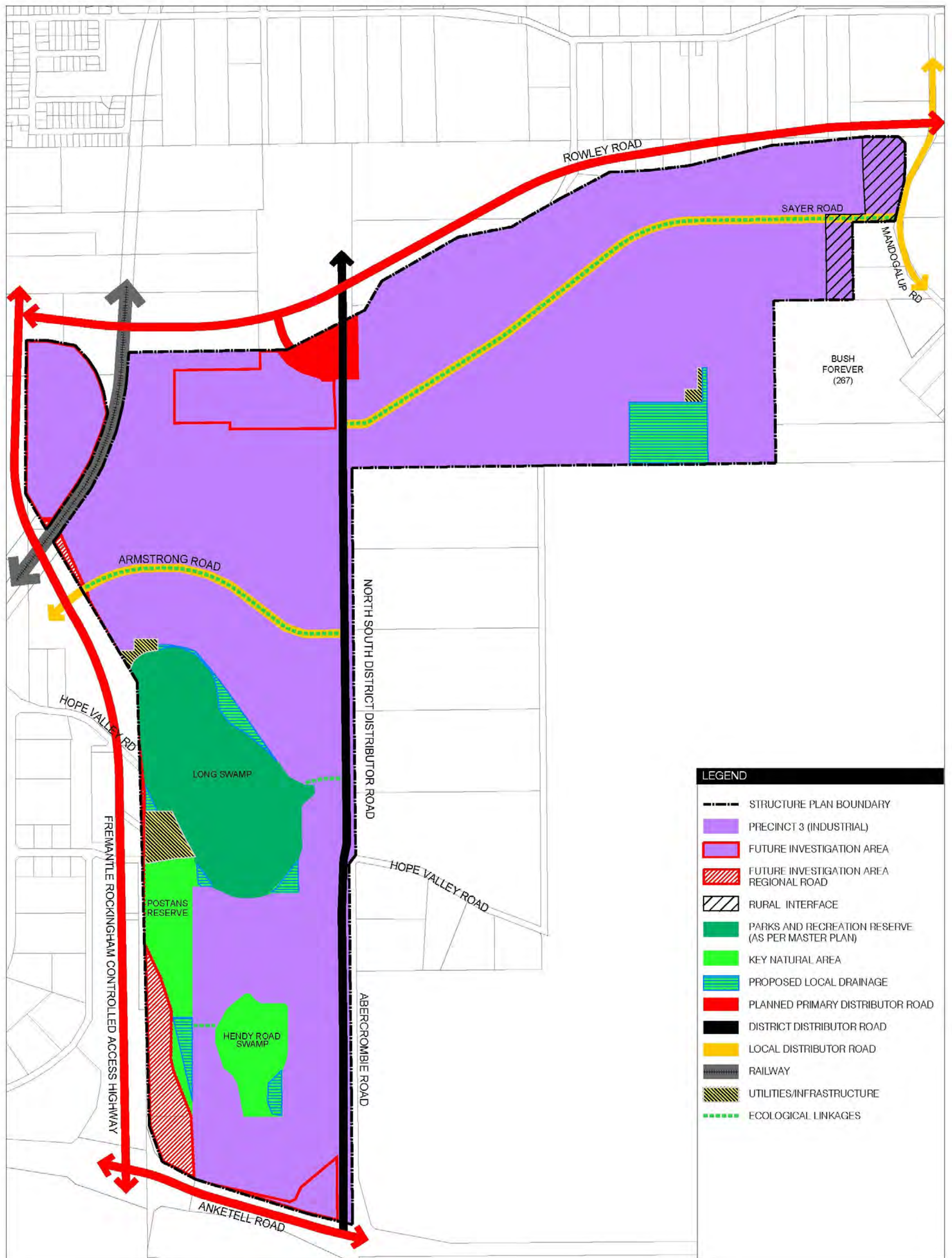
The subdivision and development of the land is to be generally in accordance with the Structure Plan.

The Structure Plan is located within Precinct 3 Industrial and Precinct 14 Long Swamp as described in Appendix 1 of the Master Plan. Land uses within the Structure Plan are to be in accordance with the land use permissibility prescribed by Table 1 of the Master Plan for Precinct 3 and Precinct 14 Long

Swamp, with the exception of the Restricted Uses listed in clause 4.7 of the Master Plan for the land described as Rural Interface on the Structure Plan.

In accordance with clause 6.2.3.2 and clause 6.2.3.3 of the Master Plan, the Structure Plan is to be given due regard when considering the subdivision and development of land within the Structure Plan area.

Subdivision and development should not be approved until a Development Contribution Plan (DCP) is in effect upon incorporation into Schedule 12 as per clause 6.3.4.



LEGEND	
	STRUCTURE PLAN BOUNDARY
	PRECINCT 3 (INDUSTRIAL)
	FUTURE INVESTIGATION AREA
	FUTURE INVESTIGATION AREA REGIONAL ROAD
	RURAL INTERFACE
	PARKS AND RECREATION RESERVE (AS PER MASTER PLAN)
	KEY NATURAL AREA
	PROPOSED LOCAL DRAINAGE
	PLANNED PRIMARY DISTRIBUTOR ROAD
	DISTRICT DISTRIBUTOR ROAD
	LOCAL DISTRIBUTOR ROAD
	RAILWAY
	UTILITIES/INFRASTRUCTURE
	ECOLOGICAL LINKAGES

Plan 1 Development Area 3 Structure Plan

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Part Two: Explanatory Section

1 Introduction

1.1 Introduction and Purpose

This Structure Plan has been prepared for Development Area 3 of the Master Plan (as described on *Figure 1 Proposed Latitude 32 Development Areas Plan*).

The Structure Plan has been prepared pursuant to Part 6 of the Master Plan to:

- Enable general industrial development through establishing an appropriate planning framework and design concepts; and
- Guide and support subsequent subdivision and development proposals.

1.2 Latitude 32 Background

The Fremantle Rockingham Industrial Area Regional Strategy 2000 (FRIARS), was undertaken to protect and optimise the Kwinana Industrial Area (KIA), given the recognition of the KIA's importance to the State.

In accordance with the recommendations of FRIARS, the Hope Valley-Wattleup Redevelopment Project, hereafter referred to as Latitude 32 was established. Latitude 32 is governed by the Hope Valley-Wattleup Redevelopment Act 2000 (the Act) and excises the Act area (Redevelopment Area) by repealing the relevant planning schemes. The Master Plan, gazetted in 2005, for all intents and purposes acts as the Planning Scheme for the Redevelopment Area.

Latitude 32, incorporating approximately 1,400 hectares of land, is strategically located within the Western Trade Coast (WTC) *Figure 2 Locality Plan*. The WTC is made up of four estates, of which one is Latitude 32. Latitude 32 has been planned to complement the other estates within the WTC by supplying general and transport industrial land to support the strategic heavy and special industrial projects.

Latitude 32 is located in close proximity to existing and planned service and transport infrastructure, including access to road, rail and sea.

Latitude 32 is required to meet the statutory requirements of the Act and the Master Plan and ensure the planning framework provides for certainty and flexibility, enabling land development and the timely release of industrial land that responds to market requirements.

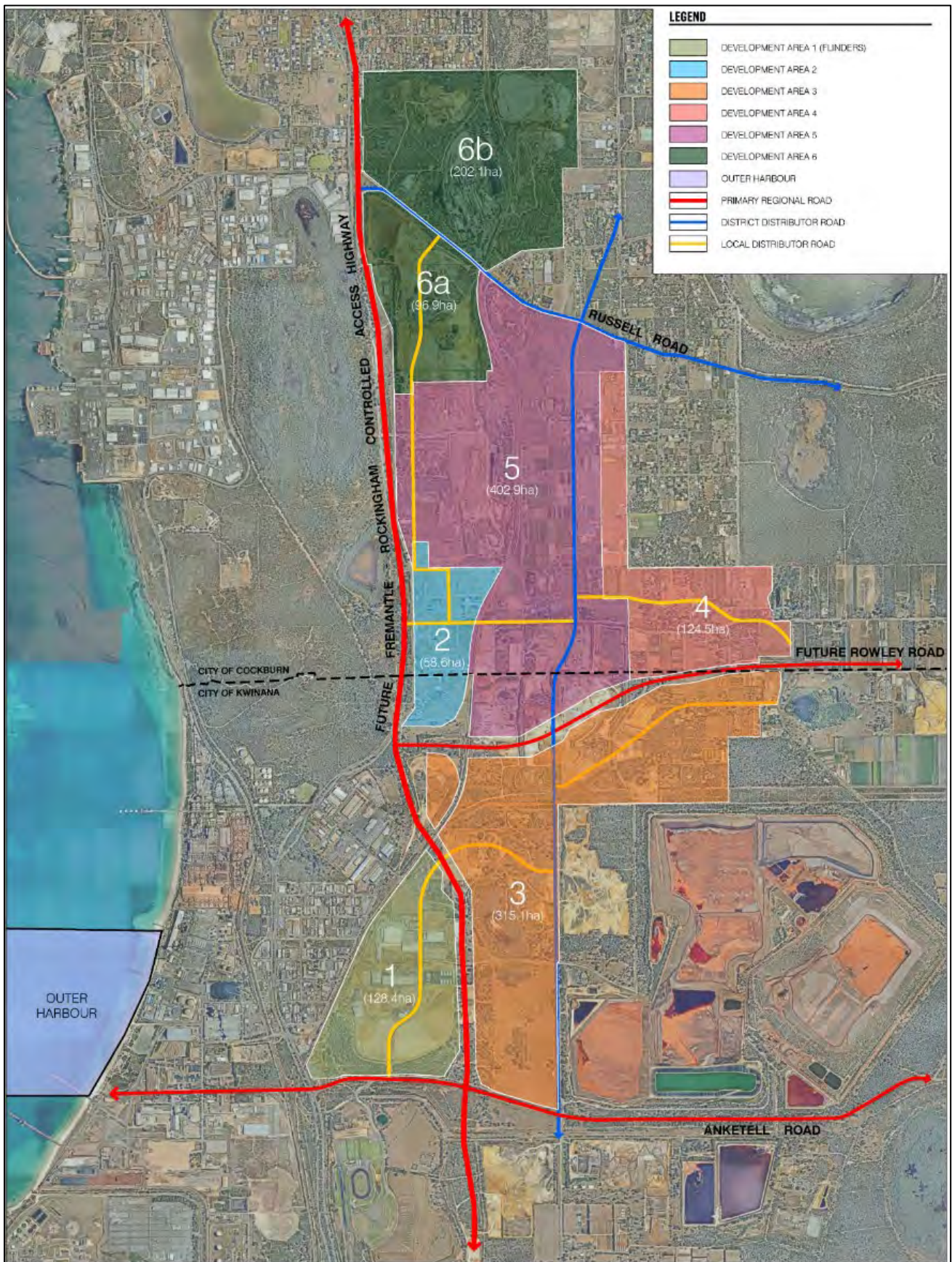


Figure 1 Proposed Latitude 32 Development Areas Plan

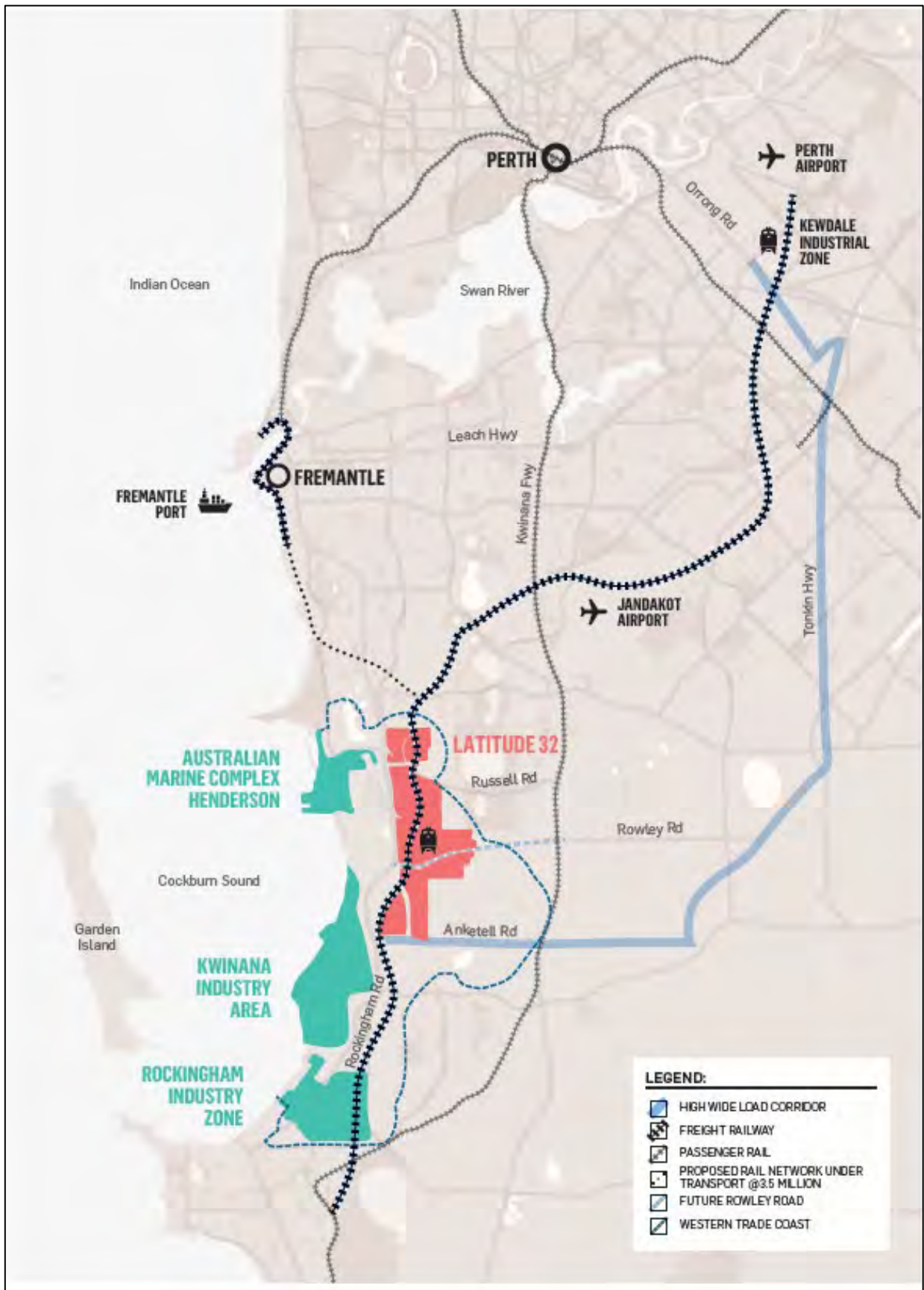


Figure 2 Locality Plan

1.3 Relationship to the draft Latitude 32 District Structure Plan

The draft Latitude 32 District Structure Plan (draft DSP) prepared in 2010 is a non-statutory document and is not a Structure Plan as envisaged under Part 6 of the Master Plan. It does not provide a comprehensive planning framework to facilitate the subdivision and development of land. The draft DSP has been formulated for the purpose of providing a framework to enable coordinated planning and delivery of key infrastructure at a district level.

The draft DSP is broad in nature and aimed to provide an outline of how the area will be developed, to guide the various approval bodies and developers when considering future comprehensive planning, including structure planning envisaged under Part 6 of the Master Plan. More recent DevelopmentWA planning has resulted in the change in the focus of the implementation strategy. This has resulted in a number of differences between the Structure Plan and the draft DSP which are outlined in Table 1 below:

Table 1 Draft DSP and Structure Plan Comparison

ASPECT	DRAFT DSP	DEVELOPMENT AREA 3 STRUCTURE PLAN	COMMENTARY
Objectives	The draft DSP seeks to <i>“Provide the framework to achieve best practice sustainability and environmental design innovation for industrial development within Latitude 32”</i> .	The Structure Plan seeks to provide a design which enables industrial development, particularly recognising the complexities of the Structure Plan area, including co-ordinated levels and fragmented landownership.	There is a focus on achieving outcomes in a shorter timeframe and with greater certainty.
Land Use	The draft DSP includes the provision of a range of land uses based on proximity to existing uses.	The Structure Plan provides for general industrial use.	The provision of the single industrial use provides additional flexibility and certainty for landowners. Permissible development will also be easily understood by any future developers.
Ecological Linkages	The draft DSP provides for ecological linkages in accordance with those identified within the Biodiversity Strategy.	In order to achieve appropriate industrial levels and retain existing biodiversity, the ecological linkages and protected areas have been amended.	The changes to the ecological linkages and local conservation areas have been workshopped with the Environmental Protection Agency, City of Kwinana and the Department of Parks and Wildlife in order to promote retention of existing biodiversity and focus on improving Key Natural Areas.
Heritage	The draft DSP notes the retention of de San Miguel Home.	The Structure Plan provides for the removal of de San Miguel Home and the establishment of an Interpretation Strategy which provides for the recognition of de San Miguel Home, Postans Cottage, Long Swamp and the Old Hope Valley School Site.	In order to achieve the development levels which are fundamental to enable industrial development, the retention of de San Miguel Home is not practical. An interpretation strategy has been developed to communicate the stories and heritage elements of this listed building.

			In principle support has been received from the City of Kwinana for the removal of de San Miguel Home.
Planning Areas	The draft DSP provides for 10 Planning Areas across Latitude 32.	The planning includes only 6 Development Areas across Latitude 32.	In order to provide the critical mass required for the activation of development, and provision of infrastructure via the DCP the logical consolidation of the Development Areas is now proposed. Master Plan Amendment No.9 has been undertaken to amend the boundaries relating to proposed Development Area 3.
Movement Network	The draft DSP maximises regional connectivity through east-west and north-south linkages and an indicative local road network.	The Structure Plan retains the strategic connection of the North South District Distributor Road (NSDDR). The northern and western boundaries allow for the Fremantle to Rockingham Controlled Access Highway (FRCAH) and Rowley Road.	The design of the Structure Plan has taken into account the need for strategic regional connections and internal legibility thus retaining the key principles of the draft DSP. In order to meet the objective for the development, and responding to the opportunities and constraints the local road network has been altered from that within the draft DSP.

1.4 Relationship to the Master Plan

As the key planning instrument for Latitude 32, the Master Plan is responsible for:

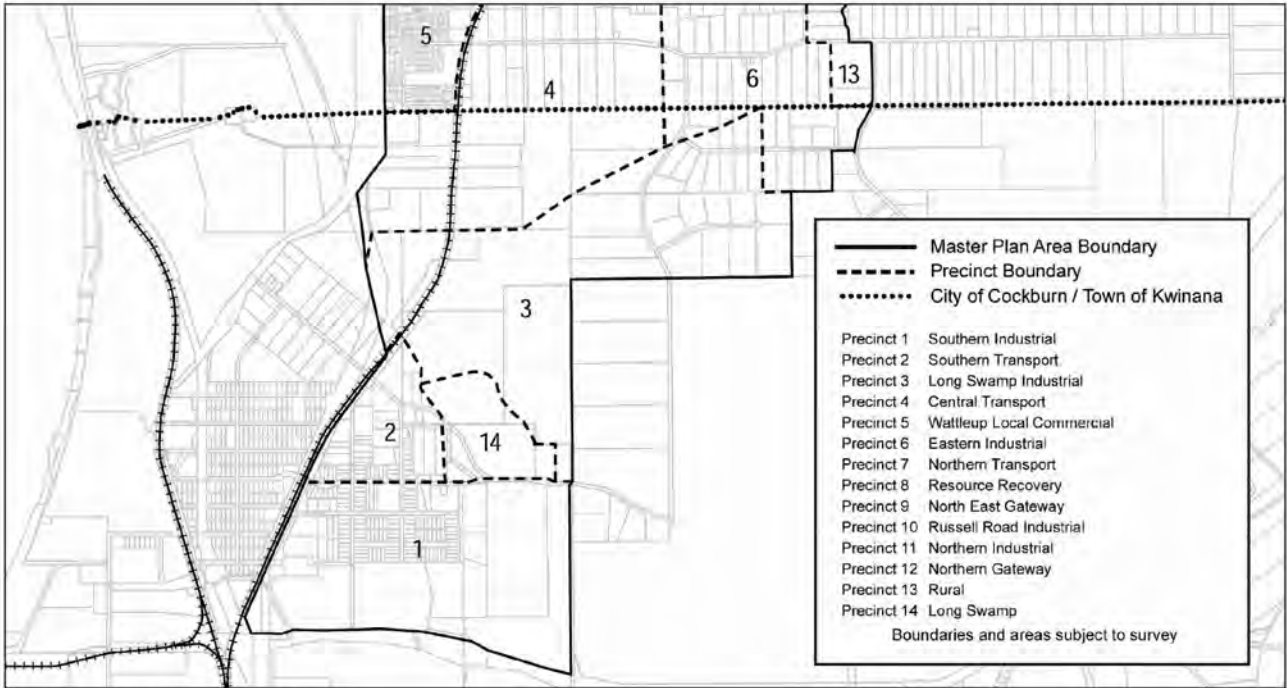
- Land use permissibility;
- Requirements for planning approval;
- Development contributions; and
- Protection of the environment and heritage.

To allow for the adoption of the Development Area 3 Structure Plan, amendments to the Master Plan are required. As such, Amendment No.9 was progressed concurrent with this Structure Plan and approved on 2 October 2015. The specific changes within Amendment No.9 included:

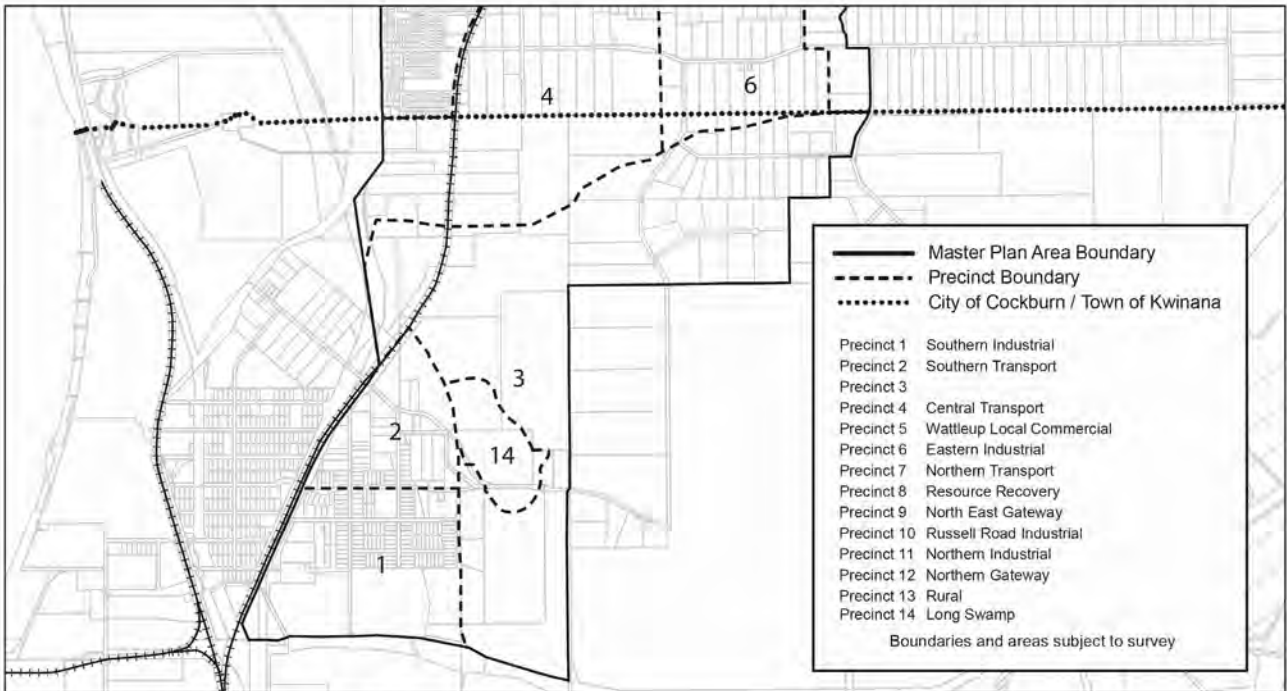
- Amending Appendix 1 – Hope Valley Wattleup Redevelopment – Master Plan Map to reflect the changes made to Precinct boundaries, as detailed on Figure 3;
- Amending Appendix 2 – Hope Valley Wattleup Redevelopment – Reserves Map to reflect changes made to the Parks and Recreation Reserve for Long Swamp, as detailed on Figure 4;
- Amending Appendix 3 – Hope Valley Wattleup Redevelopment – Development Areas and Development Contribution Areas Map to ensure alignment of the Development Area and Development Contribution Area boundaries with the Structure Plan, as detailed on Figure 5;
- Amending Table 1 – Precinct Land Use to:
 - replace the text ‘3 Long Swamp Industrial’ with ‘3’; and

- change land use permissibility within proposed Precinct 3;
- Modify Clause 4.7 of the Master Plan to allow for 'Restricted Uses' to be inserted into Schedule 3;
- Amending Schedule 3 to introduce restricted uses for the land identified on Map 1 as 'Rural Interface'; and
- Amending Schedule 11 – Development Areas to replace the text 'Long Swamp Industrial' with '3'.

The boundaries for Development Areas 2, 4, 5 and 6 (*Figure 1 Proposed Latitude 32 Development Areas Plan*) will be reflected in future structure planning and supporting master plan amendments to align the boundaries with the Master Plan.

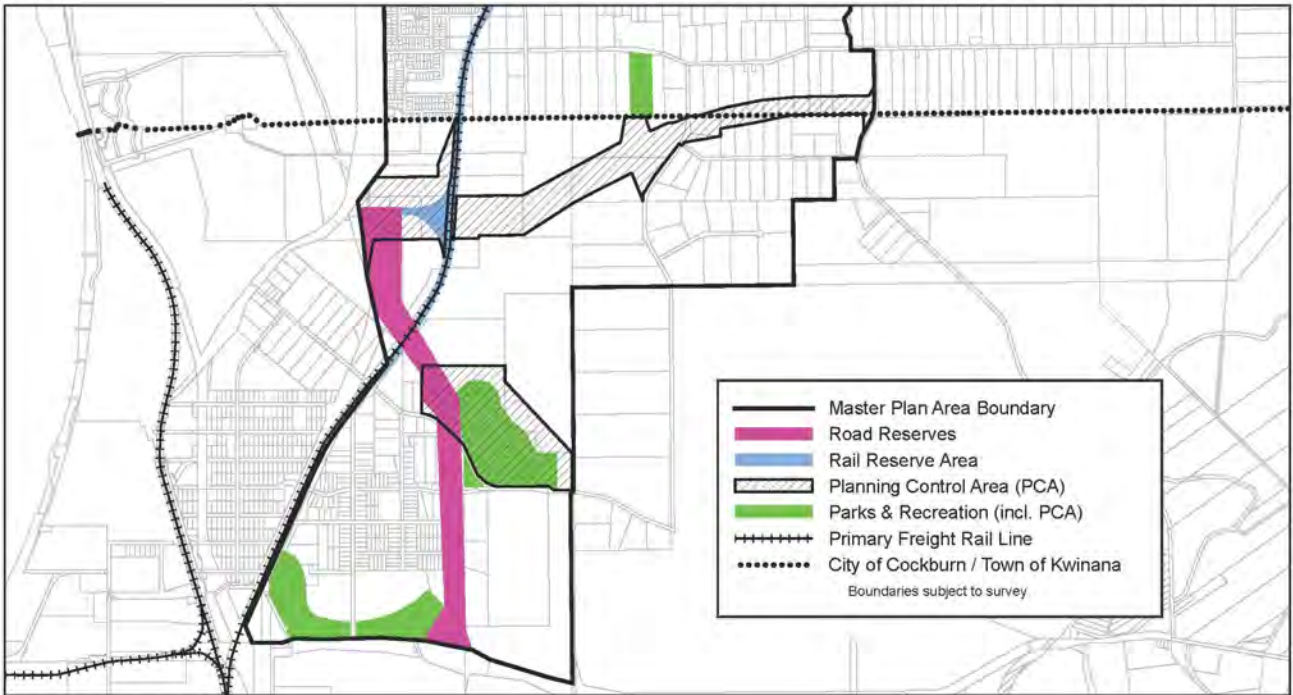


3A: Precinct Boundaries prior to Amendment No.9



3B: Current Precinct Boundaries

Figure 3 Master Plan Precinct Changes

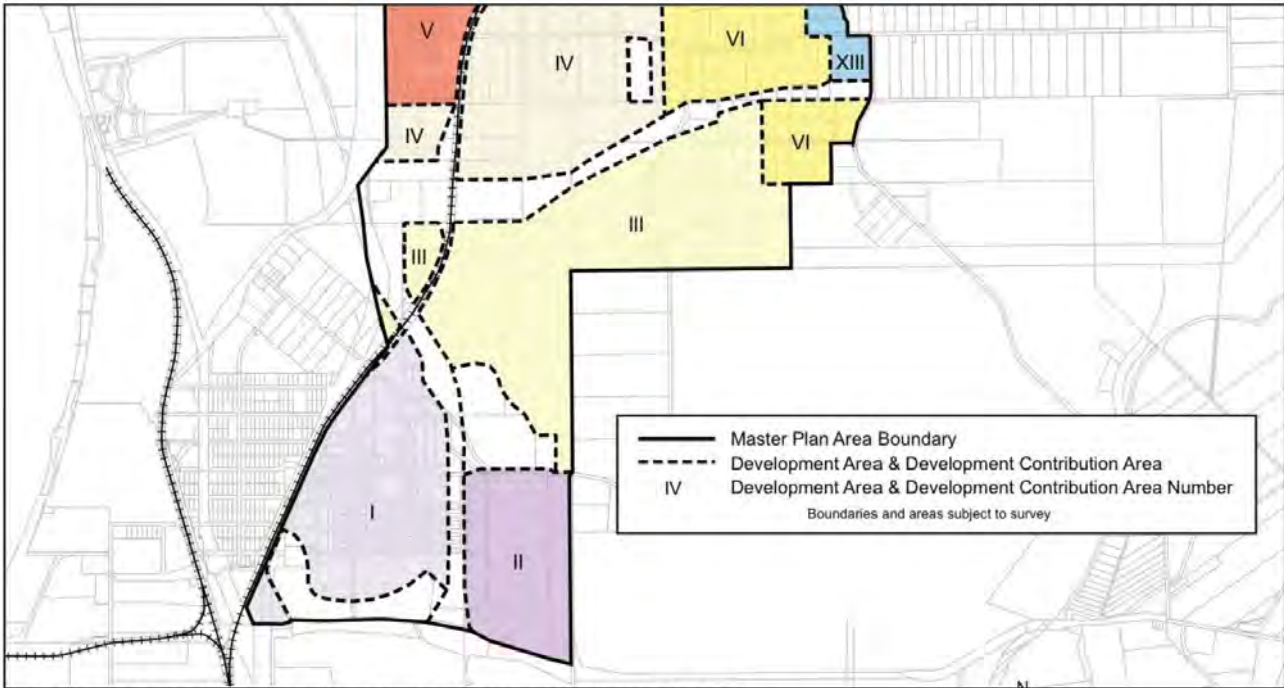


4A: Reserves prior to Amendment No.9

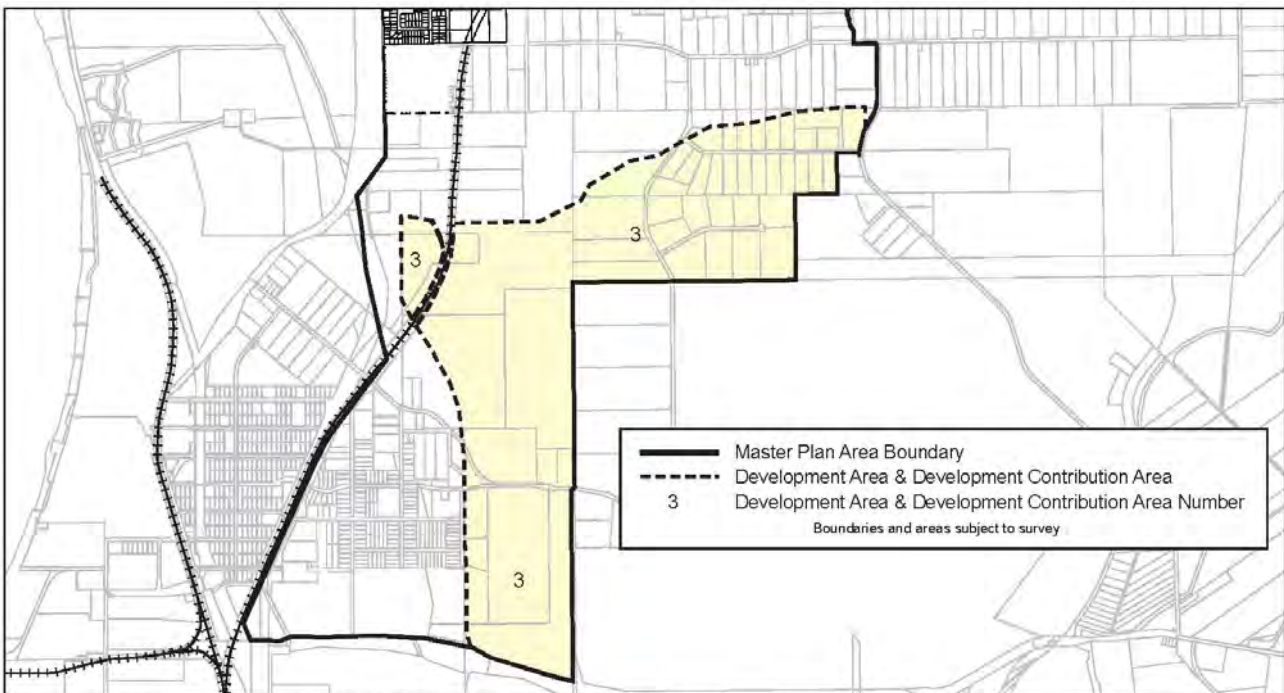


4B: Current Reserves

Figure 4 Master Plan Parks and Recreation Reserve Boundary Changes



5A: Development Areas and Development Contribution Areas prior to Amendment No.9



5B: Current Development Areas and Development Contribution Areas

Figure 5 Master Plan Development Area and Development Contribution Area Changes

2 Site Context

2.1 Land Description

The Structure Plan area covers 311ha to the south east of Latitude 32, as identified on *Figure 6 Structure Plan Location Plan*. It is located within the City of Kwinana, approximately 30km south-west of the Perth CBD, 20km south of the Fremantle GPO and 10km north of the Rockingham CBD.

The Structure Plan area is currently utilised for a number of land use activities ranging from resource extraction, to rural residential and turf farms, and temporary hardstand storage. The bulk of the Structure Plan area has been historically cleared for rural activities or the extraction of limestone and sand. The Structure Plan area has retained a number of Key Natural Areas, being Long Swamp, Hendy Road Swamp East and Postans Reserve which is under management by the City of Kwinana.

2.2 Legal Description and Ownership

The Structure Plan area is highly fragmented, with a total of 31 land owners wholly or partially located within the Structure Plan boundary.

Figure 7 Development Area 3 Land Ownership Plan depicts the landownership arrangements within the Structure Plan area.

A number of infrastructure easements are located over multiple properties within the Structure Plan area as depicted in *Figure 8 Structure Plan Easements*. These easements relate to the Western Power 330kv power lines, the Dampier to Bunbury Natural Gas Pipeline (DBNGP), Parmelia Natural Gas Pipeline (PNGP) and the Water Corporation Desalination Pipeline.

2.3 Structure Plan Area

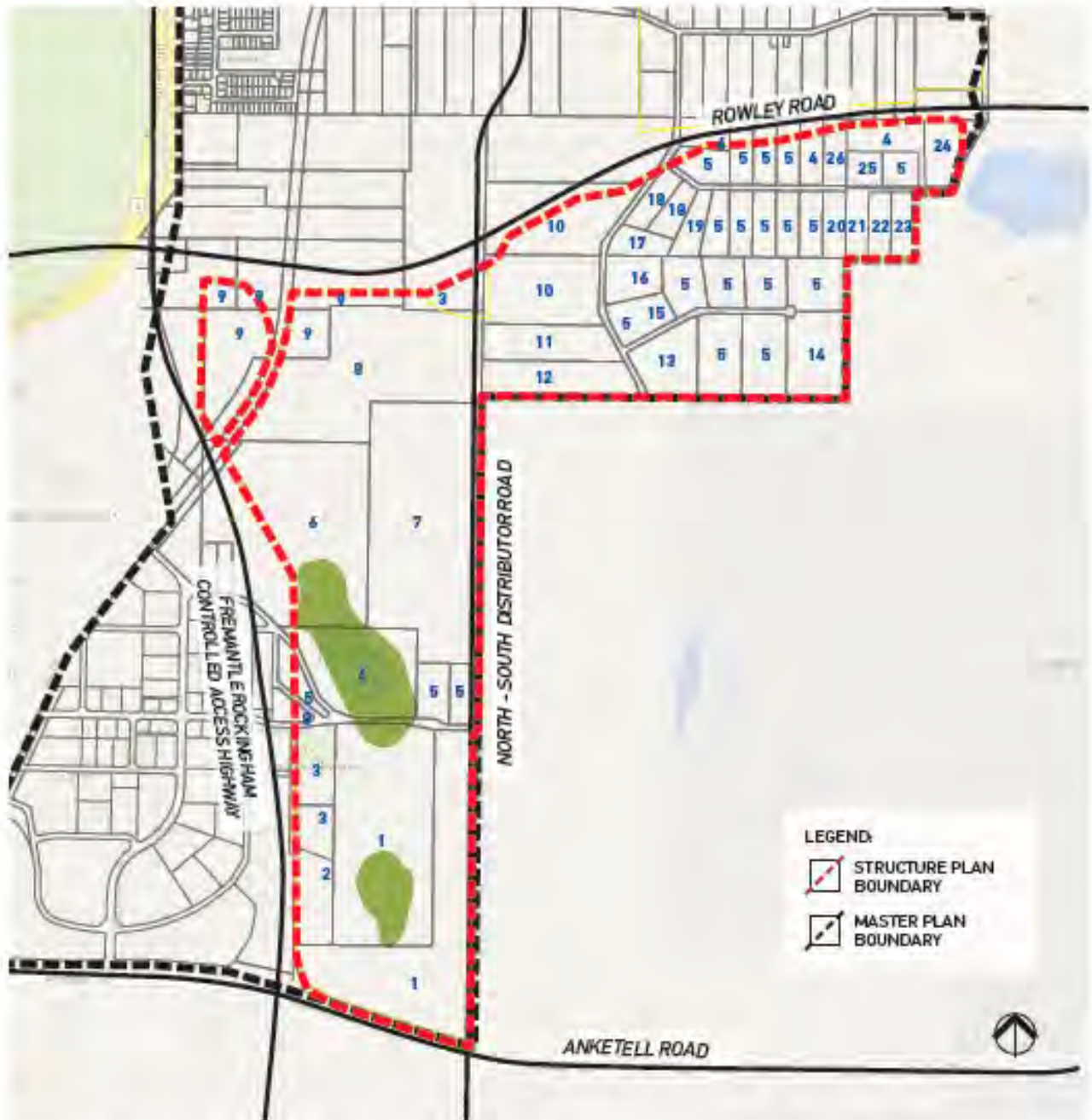
The Structure Plan area has been determined based on the following factors in order to ensure it is both consistent with statutory boundaries under the Master Plan and known alignment of key infrastructure items as outlined in *Table 2*:

Table 2 Structure Plan Area Description

BOUNDARY	DETERMINING FACTORS
North	The northern boundary has been determined via the design of the proposed Rowley Road extension (as at February 2014). It is considered that the alignment as discussed and confirmed by Main Roads Western Australia (Main Roads WA) is the most appropriate boundary in order to provide certainty for landowners, and to ensure development does not encroach into the land required for the Rowley Road extension.
East	The eastern boundary has predominantly been determined by the eastern edge of the Redevelopment Area. There is a small triangular section of Lot 379 (#4) Sayer Road that has been excluded as it will form part of the planned Rowley Road reservation.
South	The proposed southern boundary is consistent with the southern edge of the Redevelopment Area.
West	The western boundary has been determined by the Road Reserve set out within Appendix 2 – Hope Valley Wattleup Redevelopment Reserves Map of the Master Plan. This depicts the boundary of the Road Reserve for the FRCAH.



Figure 6 Structure Plan Location Plan



- | | | |
|-------------------------------------|--------------------------------------|--------------------------------------|
| 1. Radonich | 10. Lunard Pty Ltd | 19. Bianchini |
| 2. City Of Kwinana | 11. Waroona Resources Pty Ltd | 20. Soric |
| 3. State Of Western Australia | 12. Alcoa Of Australia Ltd | 21. Thillainath |
| 4. Western Aust Planning Commission | 13. Pierce | 22. Buchanan, Shelley Nicole |
| 5. Western Aust Land Authority | 14. Ashley Road Pty Ltd | 23. Cook Industrial Minerals Pty Ltd |
| 6. Paulik Flowers Pty Ltd | 15. Peeters | 24. Nandi Valley Pty Ltd |
| 7. Danehill Nominees Pty Ltd | 16. Ree Set Pty Ltd | 25. Geordie Pty Ltd |
| 8. Electricity Networks Corporation | 17. Eco-Growth International Pty Ltd | 26. Chiarelli, Angela Sarah |
| 9. PMR Quarries Pty Ltd | 18. Calva Pty Ltd | |

Figure 7 Development Area 3 Land Ownership Plan

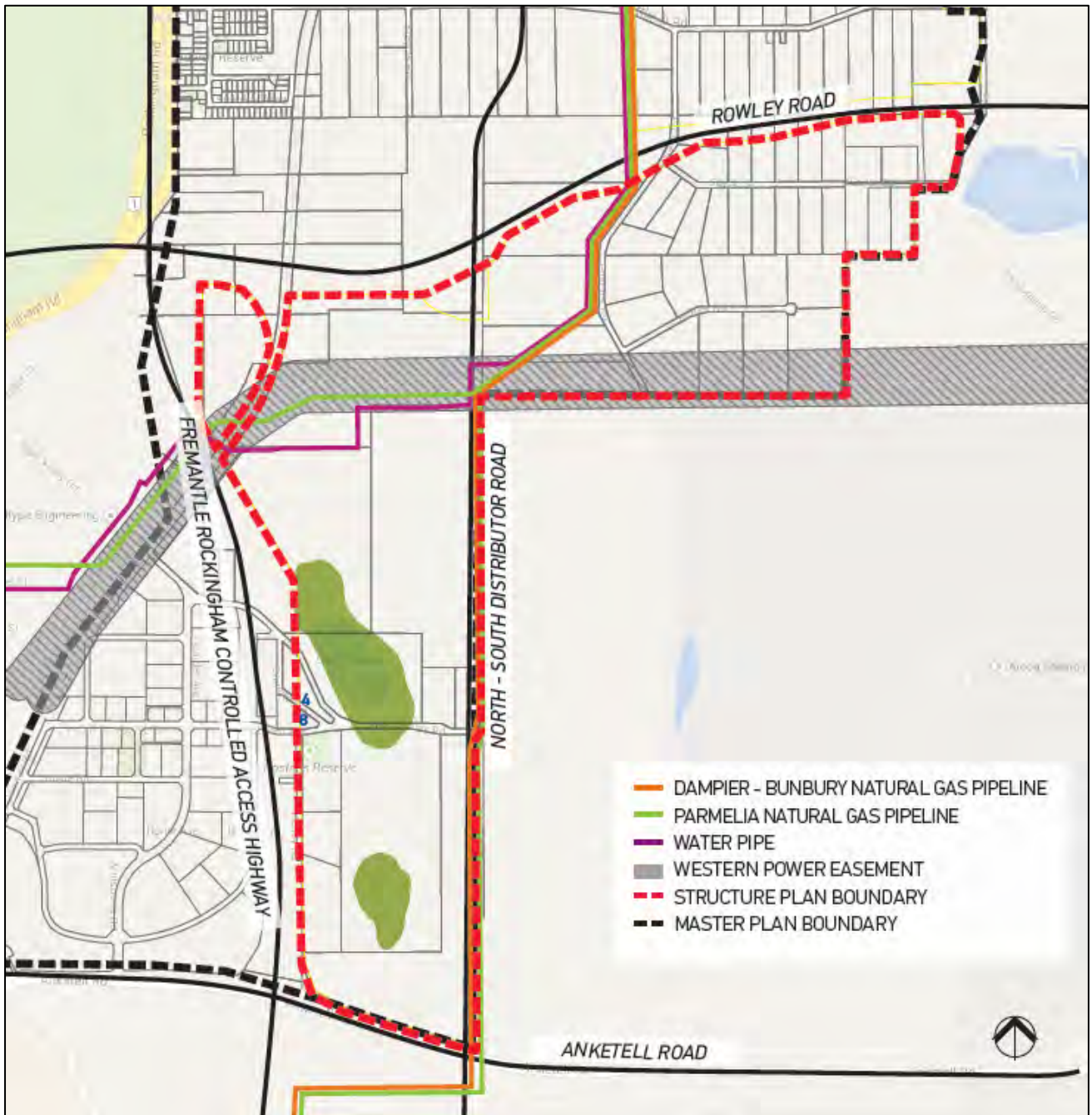


Figure 8 Structure Plan Easements

2.4 Surrounding Environment

As outlined in *Table 3* below, the Structure Plan area currently comprises a wide range of land uses from industrial to rural residential and recreation.

Table 3 Structure Plan Area Surrounding Environment

SURROUNDING ENVIRONMENT	EXISTING LAND USE	KNOWN FUTURE LAND USE
North	<p>Rural residential development consisting of former market gardens, turf farms and similar horticultural activities.</p> <p>Quarrying activities.</p> <p>Some temporary hardstand and storage uses have been established to support the demand for container storage and locating construction materials.</p>	<p>Industrial development as part of Latitude 32. These areas constitute Development Areas 2, 4, 5 and 6.</p> <p>The future Rowley Road creates the northern border of the Structure Plan area.</p>
East	<p>Alcoa Australia tailings facility is located to the east of the southern portion of the Structure Plan area.</p> <p>Rural residential land holdings and Wattleup Lake are located to the east of the northern portion of the Structure Plan area. Further to the east is a portion of the Beeliar Regional Park.</p>	<p>These areas are located outside of the Structure Plan area and Latitude 32 and as such existing land uses are expected to remain for the foreseeable future.</p>
South	<p>Quarrying activities located on rural residential land.</p> <p>Kwinana Wastewater Treatment plant is located to the south east of the Structure Plan area.</p> <p>The Kwinana Motorplex is located to the south west of the Structure Plan area (adjacent to Flinders Precinct).</p>	<p>These areas are located outside of the Structure Plan area and Latitude 32 and as such existing land uses are expected to remain for the foreseeable future.</p>
West	<p>The Flinders Precinct, structure planned in 2008 and currently being built out is located to the west of the Structure Plan area.</p> <p>The railway line runs through the north western corner of the Structure Plan area.</p> <p>Further west, making up part of the Western Trade Coast are the Naval Base, Kwinana Power Station and Kwinana Industrial Area.</p>	<p>The FRCAL once constructed will result in a physical barrier between Flinders Precinct and the Structure Plan area.</p> <p>The land to the west will be built out for industrial purposes in accordance with the Flinders Precinct Structure Plan and Design Guidelines.</p> <p>The land further west is outside of the Structure Plan area and Latitude 32 and will continue to be used for industrial purposes.</p>

3 Planning Background

3.1 Planning Framework

The following section sets out the key documents applicable to the preparation of the Structure Plan.

3.1.1 Fremantle to Rockingham Industrial Area Regional Strategy 2000

FRIARS investigated the planning issues including development and redevelopment opportunities within the Fremantle to Rockingham corridor.

FRIARS aimed to provide for the future planning, in particular the provision of additional land for industrial uses in an area which was strategically recognised at that time as the best location for industrial land within the Perth Metropolitan Region. FRIARS also took into account existing and potential land use conflicts, the protection of the Kwinana Industrial Area and management of associated buffers along with the protection and enhancement of key natural assets within the vicinity of the Structure Plan area and the need to provide certainty to landowners.

FRIARS investigated a number of development options in consultation with key stakeholders and the community. The recommendations of FRIARS included an expanded industrial area to provide a land use transition buffer between the Kwinana Industrial Area and sensitive land uses. The creation of a redevelopment area was to be implemented through specific legislation, a master plan and an implementing agency.

3.1.2 Hope Valley-Wattleup Redevelopment Act 2000

In accordance with the recommendations of FRIARS, development within Latitude 32 is governed by the Hope Valley-Wattleup Redevelopment Act 2000 (the Act). The area the subject of the Act is referred to as the Redevelopment Area.

The Act excises the Redevelopment Area by repealing the planning schemes in operation within the area, being the Metropolitan Regional Scheme and local planning schemes of the Cities of Kwinana and Cockburn. In response to this, the Act sets out key functions and the statutory mechanisms which guide land use and development in Latitude 32 including the requirement for a master plan.

The Act specifies the Authority, being the Western Australian Land Authority (trading as DevelopmentWA) and its function under the Act to plan, undertake, promote and coordinate the development and redevelopment of land in the Redevelopment Area.

3.1.3 Hope Valley-Wattleup Redevelopment Project Master Plan 2005 (as amended May 2013)

Prepared in accordance with the requirements of the Act, the Master Plan for all intents and purposes acts as the local planning scheme for the Redevelopment Area.

The Act provides for, and guides the preparation of the Master Plan in order to:

“Promote the orderly and proper planning, development and management of the redevelopment area, including any provision that may be made by a local planning scheme under the Planning and Development Act 2005.”

In summary, in accordance with the intent of FRIARS and the Act, the Master Plan aims to resolve land use conflicts, protect and conserve heritage and environmental assets, provide for development in the area in a proper and orderly way, and distribute costs of common infrastructure.

The Master Plan provides for the procedure to establish statutory documents including; Structure Plans, Design Guidelines and Planning Policies, along with the requirements for Planning Approvals and measures in which to control and guide land uses and development.

The Structure Plan is prepared in accordance with Part 6 of the Master Plan and is consistent with the aims for development within the Redevelopment Area.

The Master Plan and any amendments to the Master Plan are to be considered by the Western Australian Planning Commission (the Commission) and approved or refused by the Minister for Planning. The Master Plan provides for the approval of Structure Plans by the Commission and approval of Design Guidelines by the Authority or the Commission.

3.1.4 Draft Latitude 32 District Structure Plan 2010

The draft DSP was prepared in 2010 and provides a non-statutory form of guidance in the preparation of the planning framework to guide and inform the coordinated planning and delivery of infrastructure at a district level.

The draft DSP aimed to provide greater certainty in the long term planning and delivery of Latitude 32 and to ensure the final framework could be easily transferred to the relevant local government once normalisation occurs. At a broad level, the draft DSP included an outline of how the area will be developed, to guide the various approval bodies and developers when considering future structure plans.

This Structure Plan has been prepared having regard to the direction and provisions of the draft DSP. A summary of how this Structure Plan relates to the draft DSP is provided in section 1.3. It is intended that structure plans for each Development Area will progressively supersede the draft DSP and for this reason the draft DSP will not be further progressed beyond its draft status.

3.1.5 Hope Valley-Wattleup Redevelopment Project Water Management Strategy 2007

The Hope Valley-Wattleup Redevelopment Project Water Management Strategy (WMS) provides additional guidance in achieving the intentions of the Redevelopment Area, in particular meeting water quality objectives, targets and criteria. The WMS objective is to protect the key hydrological resources within and surrounding the Redevelopment Area.

The WMS develops an implementation framework and actions which guide the detailed investigations. The Strategy includes the requirement for a Local Water Management Strategy (LWMS) which addresses the objectives, design criteria and guidelines when preparing Structure Plans.

The Structure Plan has been prepared in accordance with the principles and requirements of the WMS as is outlined within Section 8 of this report. A LWMS has been prepared for the Structure Plan area.

In 2013, the Latitude 32 District Water Management Strategy (DWMS) was prepared to update the WMS in accordance with the Commission's *Better Urban Water Management (2008)*. The DWMS was approved by the Department of Water and Environmental Regulation (DWER) in May 2013.

3.1.6 Hope Valley-Wattleup Redevelopment Project Biodiversity Strategy 2007 (as amended 2015)

The Hope Valley-Wattleup Redevelopment Project Biodiversity Strategy 2007 (Biodiversity Strategy) as amended 2015, was prepared as a requirement of the EPA assessment (Condition 2 of Ministerial Statement No. 667) in order to protect and manage environmental assets in association with the future changes in land uses resulting from the Act.

The Biodiversity Strategy identifies Key Natural Areas (wetlands and remnant vegetation), provides for public open space, and identifies processes, policies and monitoring mechanisms to conserve and enhance biodiversity in the Redevelopment Area and adjacent environments. In providing guidance on the direction for biodiversity, the Biodiversity Strategy has assessed all flora, fauna and related biophysical attributes associated with the Redevelopment Area.

Strategic and management actions have been outlined to ensure the future planning and development of Latitude 32 is consistent with the objectives and direction of the Biodiversity Strategy.

The Biodiversity Strategy identifies Long Swamp and Hendy Road Swamp East as Conservation Category Wetland (CCW) and Resource Enhancement Wetland (REW) respectively. A historic wetland, Hendy Road Swamp West is also noted to be a multiple use wetland (MUW). Areas of remnant vegetation have been identified along with linkages between the wetlands within the Structure Plan area, and with the Conway Road Swamp and public open space located within Flinders Precinct to the west of the Structure Plan area.

Clause 7.1.5 of the Biodiversity Strategy requires a five-year review to ensure that the Biodiversity Strategy reflects current planning outcomes, current policies and best management practices in biodiversity and is updated and improved as more information and data becomes available. A review of the Biodiversity Strategy commenced in 2014 and the key outcomes of the review reflect the current environmental and localised structure planning for Latitude 32. The Biodiversity Strategy (as amended 2015) has been supported by the OEPA on a number of occasions.

The Structure Plan is consistent with the objectives, principles and management requirements of the Biodiversity Strategy and the Biodiversity Strategy Review. Additionally, the Structure Plan has given consideration to the requirements of the Biodiversity Strategy and Biodiversity Strategy Review when providing for the wetlands, wetland buffers, remnant vegetation and ecological linkages as outlined within Section 4.1 of this report.

4 Site Conditions

4.1 Biodiversity and Natural Area Assets

An Environmental Assessment of the Structure Plan has been undertaken and a copy of the Environmental Assessment Report (EAR) is located within **Appendix B**. This EAR addresses the following key environmental factors including:

- Vegetation and Flora;
- Fauna; and
- Wetlands.

The EAR provides a summary of the existing Structure Plan area conditions and provides an outline of how the design of the Structure Plan responds to these site conditions creating a balance between protecting the biodiversity and natural assets whilst allowing for industrial development.

Supplementary Environmental Advice – Amendment 1 was provided in support of Amendment No.1 to the Structure Plan (refer **Appendix B1**)

4.1.1 Vegetation and Flora

The primary areas accommodating remnant vegetation include Long Swamp, Hendy Road Swamp East and Postans Reserve, these are referred to as Key Natural Areas within the Biodiversity Strategy and the Biodiversity Strategy Review. There are no Bush Forever sites within the Structure Plan area; however Bush Forever Site No. 267 is located adjacent to the north eastern boundary.

The condition of vegetation within the Structure Plan area generally ranges from Completely Degraded to Good with localised areas of excellent vegetation within Long Swamp. *Figure 9 Development Area 3 Key Natural Areas and Ecological Linkages*, maps the Key Natural Areas within the Structure Plan area. The condition of the vegetation is based on the following classifications or combinations thereof:

- CI : Cleared
- CD : Completely Degraded
- D : Degraded
- G : Good
- E : Excellent

It is acknowledged that historic land uses have resulted in the clearing and degradation of much of the vegetation within the Structure Plan area. In addition, the topography of the Structure Plan area will result in the requirement for significant earthworks prior to the establishment of industrial activities thus limiting the ability for the retention of remnant vegetation outside of the wetlands and Key Natural Areas. This loss of vegetation has been factored into the Biodiversity Strategy and Biodiversity Strategy Review and the determination of Key Natural Areas and ongoing rehabilitation and management of these areas.

In accordance with the Biodiversity Strategy, the Structure Plan provides for the retention of vegetation within the wetlands, local conservation areas and ecological linkages.

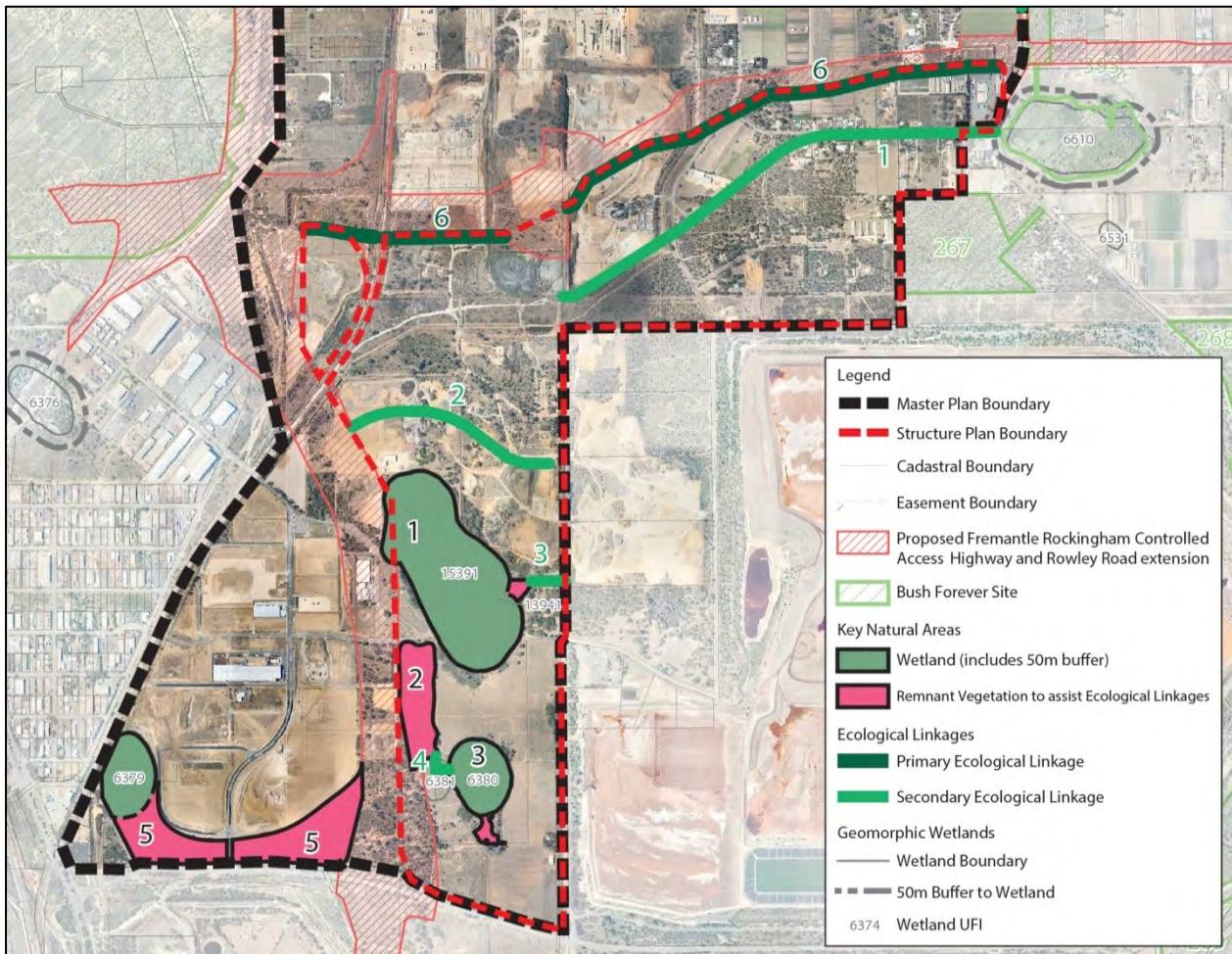


Figure 9 Development Area 3 Key Natural Areas and Ecological Linkages

4.1.2 Fauna

Long Swamp, Hendy Road Swamp East and areas of adjacent remnant vegetation provide for a number of fauna species. A fauna assessment conducted in 2005 found the potential for numerous frog, reptile, birds and mammals to inhabit the Structure Plan area.

Due to the urbanised environment many of the potential species would not survive and as such fauna is likely to be limited to avian species, the brush-tailed possum and some species of bats.

The assessment also observed evidence in the vicinity of the Structure Plan area of Carnaby's Black Cockatoo and the Native Bee which are classified as 'Endangered' and 'Critically Endangered', respectively. A Survey for Black Cockatoo habitat and significant trees was undertaken in October 2013. A Significant Impact Assessment is being undertaken in order to determine if the Structure Plan area requires a referral under the *Environmental Protection Biodiversity Conservation Act 1999* (Commonwealth). Where required this process will be undertaken independent of the Structure Plan.

4.1.2.1 Structure Plan Response to Fauna

The reduction in vegetation and flora has a direct result on the fauna within the Structure Plan area. In accordance with the Biodiversity Strategy, fauna is to be provided for through the planting of avian ecological linkages within the road reserves between the wetlands and Key Natural Areas. The

ecological linkages within the Structure Plan area are depicted on *Figure 9 Development Area 3 Key Natural Areas and Ecological Linkages*.

Where the environment will no longer be viable for the habitation of fauna, the existing fauna within the Structure Plan area will be relocated into the adjacent Bush Forever sites.

4.1.3 Wetlands

The Structure Plan area contains three wetlands being Long Swamp, Hendy Road Swamp East and Hendy Road Swamp West as shown in *Figure 10 Development Area 3 Wetlands*. These wetlands occur as surface expressions of the Valley Groundwater System and are indirectly connected despite the absence of any direct hydrological connection.

4.1.3.1 Long Swamp

Long Swamp is classified as a CCW by the Department of Conservation *Geomorphic Wetlands of the Swan Coastal Plain* database and is additionally protected under the *Environmental Protection (Swan Coastal Plain Lakes) Policy 1992*.

The portion of Long Swamp to the north of Hope Valley Road is owned by the Commission and a private landowner and is a Parks and Recreation reservation under the Master Plan. The portion of Long Swamp to the south of Hope Valley Road is currently in private ownership and was subject to Amendment No. 9 to include this area as a reserve.

Amendment No. 9 rationalised the current Parks and Recreation reservation boundary by excluding areas of degraded cleared land from the reserve and including an additional area of remnant vegetation into the Parks and Recreation reservation.

As a CCW, the protection and preservation of Long Swamp is a consideration within the Structure Plan design. No development or clearing is to be undertaken within Long Swamp or the associated buffer, and works are to be undertaken to restore the wetland, in particular the southern portion as part of a Wetland Management Plan.

4.1.3.2 Hendy Road Swamp East and West

Hendy Road Swamp East and West are classified as REW and MUW, respectively. Both wetlands are located within land parcels which are in private ownership.

As a REW the Hendy Road Swamp East wetland has been identified for restoration and management to be undertaken as part of a Wetland Management Plan. It is noted that the boundary of the wetland includes a large portion of cleared paddock on the northern end of the wetland basin and the management buffer from the wetland boundary is almost entirely cleared paddock with the exception of the southern end. The southern end of the wetland gradually transitions into upland vegetation that is outside of the buffer. The Structure Plan proposes the relocation of the boundary identifying the Key Natural Area to exclude the northern portion, which does not include any significant environmental values, and include the vegetated area to the south. This will provide a net benefit for the environmental qualities of Hendy Road Swamp East.

Hendy Road Swamp West has not been afforded any protection and will be developed as industrial land.

4.1.4 Wetland Buffers

In accordance with the Biodiversity Strategy wetland management buffers and zones of secondary influence are identified for Long Swamp and Hendy Road Swamp East.

Buffers for the wetlands are:

- 50m management buffer measured from the edge of the DEC mapped wetland boundary or wetland dependant vegetation, and
- 200m zone of secondary influence.

The wetland buffers are designed to protect wetlands from potential adverse impacts in order to safeguard and maintain ecological processes and functions within the wetland buffer.

No clearing or development is to occur within the 50m management buffer of each wetland. Development within the 200m zone of secondary influence is restricted to low risk development in accordance with the Biodiversity Strategy. This is to ensure that development is not precluded from these areas whilst ensuring there is minimal impact on the wetland from industrial activities. Management of activities within the 200m zone of secondary influence is to be enforced via the Latitude 32 Design Guidelines (Design Guidelines).

4.1.5 Ecological Linkages

In accordance with the principles of the Biodiversity Strategy, the Structure Plan incorporates the following ecological linkages, as depicted on *Figure 9 Development Area 3 Key Natural Areas and Ecological Linkages*:

- Between environmental assets within Latitude 32 and those within the significant environmental assets to the east and west of the Structure Plan area as depicted on *Figure 6 Structure Plan Location Plan*;
- Between the wetlands and adjacent conservation areas by way of ecological corridors within road reserves and existing vegetated reserves (Postans Reserve); and
- Along the southern side of Wattleup Road for avian movement and habitats through the planting of a variety of endemic species of an appropriate size.

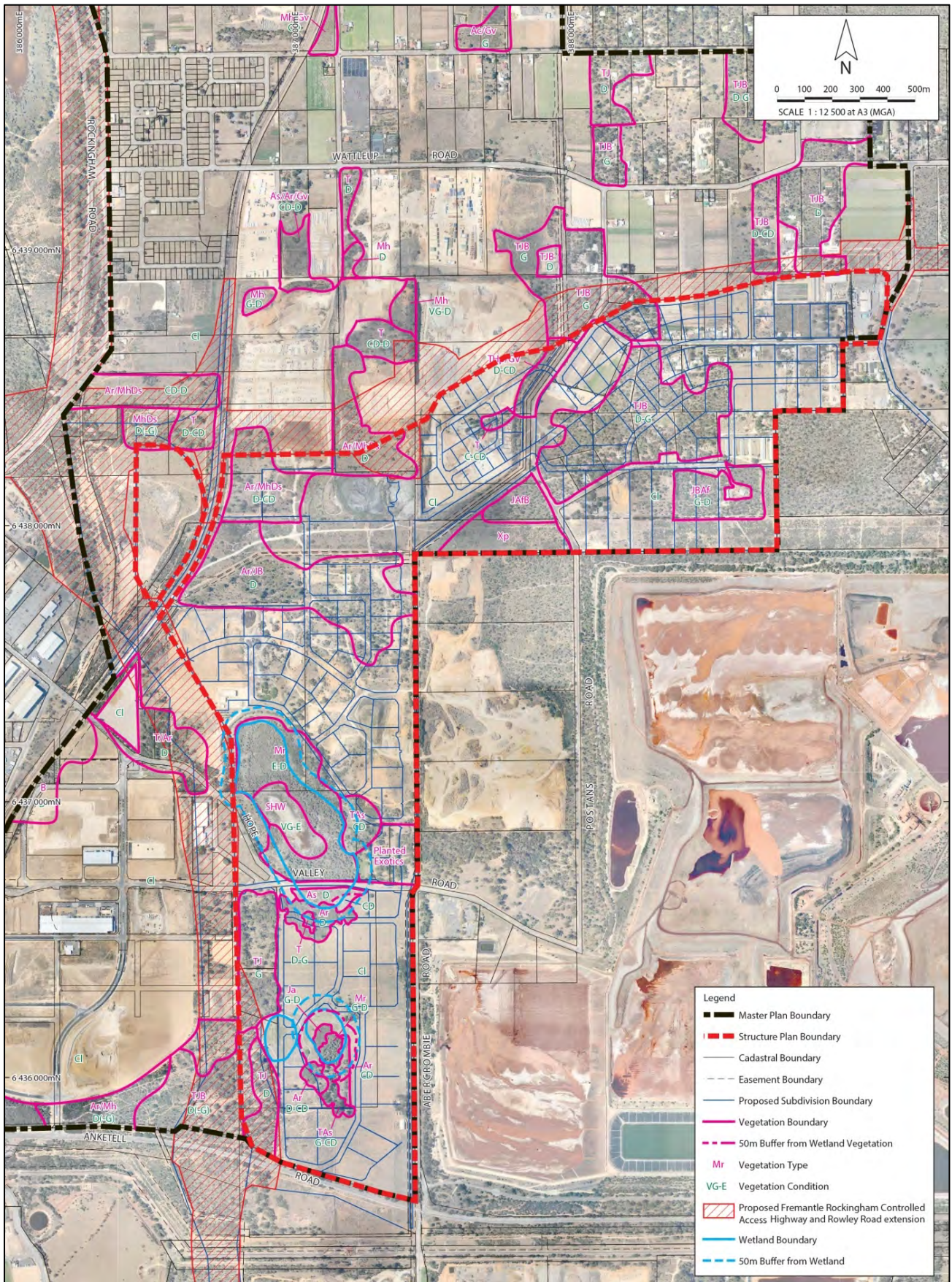


Figure 10 Development Area 3 Wetlands

4.2 Landforms and Soils

A desktop assessment concluded that the land is generally undulating with slope gradients varying between 3° and 10°, however the centre of the Structure Plan area is consistently less than 3°. The Structure Plan area ranges in topography from 2m AHD to greater than 35m AHD. Long Swamp comprises the lowest point within the Structure Plan area at 2m AHD. The existing site levels generally increase to 10m AHD over a distance of 150m away from Long Swamp.

The Structure Plan area is located in the Swan Coastal Plain within the Spearwood Dune System. Hendy Road Swamp generally consists of sand, whilst Long Swamp primarily consists of silt. The Structure Plan area is underlain by the sands and limestone of the Tamala Limestone formation.

The Acid Sulphate Soil (ASS) Risk Map, Swan Coastal Plain identifies the Long Swamp area as having a 'High' to 'Moderate' risk of ASS and potential ASS at depths greater than 3m. Long Swamp is reserved under the Master Plan and will not be developed; it is therefore unlikely that ASS would be disturbed.

4.3 Groundwater and Surface Water

The Structure Plan area is located within the Valley Groundwater System, a part of the broader Cockburn Groundwater Area. The area is underlain with a superficial limestone, marl and cemented sand aquifer. The aquifer is recharged by rainfall and some upward leakage from the Leederville aquifer which is located further below. Groundwater flows in a westerly direction through the Structure Plan area to Cockburn Sound.

Preliminary geotechnical investigations have determined that the groundwater depth decreases in a westerly direction from 12m AHD at Mandogalup Road to approximately 1m AHD at the Rockingham Road and Cockburn Road intersection.

Five groundwater monitoring bores were installed in May and June 2013. The bores were constructed suitably for groundwater quality monitoring, and installed to the top of the superficial aquifer. The monitoring program consists of quarterly groundwater quality samples and monthly groundwater level readings of the installed bores, as well as three DoW bores in the vicinity of the area.

The Structure Plan area does not contain any flowing surface water features (streams, creeks, drains). The majority of road drainage generally runs off road pavement and infiltrates within the verge.

4.4 Bushfire Hazard

A Bushfire Management Plan (BMP) has been prepared for the purpose of identifying and reducing the threat of bushfire on the future development of the Structure Plan area. A copy of this report is located in **Appendix C**.

The BMP identifies most of the Structure Plan area as Bushfire Prone Land. The main hazard vegetation is within existing reserves and proposed vegetation buffers as well as on undeveloped land. The proposed development will generally have a BAL - Low rating with those lots within 100m of hazard vegetation being large enough to have internal development sites with a BAL-29 rating. A BAL rating below BAL-29 and which complies with the Bushfire Protection Criteria; and does not increase the

threat of bushfire. The BMP recommends subdivision or development applications have consideration to the following:

1. That the structure plan defines bush fire prone land being land within 100m of classified hazard vegetation.
2. That buildings within the bush fire prone land shall be constructed as far as is practicable in accordance with AS3959.
3. That the subdivision be designed to generally facilitate development with a BAL12.5 classification.
4. That the relevant Design Guidelines promote fire awareness for the design of factories and buildings in the bush fire prone land by such measures as not placing major openings to buildings on the closest wall to the hazard vegetation.
5. That a BAL definition plan be prepared for each stage of the subdivision. This is to have regard to any classified vegetation within 100m of each lot whether is it part of the Structure Plan area or not.
6. The BAL classification plan may be amended by the lodgement of a revised assessment for an individual lot as part of the Building Licence application.
7. All lots within 100m of hazard vegetation are to have an asset protection zone. This is to be a either 20m or as per a BAL-29 setback (whichever is greater).
8. On lots which immediately adjoin hazard vegetation the asset protection zone is to be accommodated within the lot boundary, unless there is an adjoining subdivision road.
9. That any evaporative air conditioners on buildings in bush fire prone areas shall be fitted with ember screens are constructed of corrosion resistant steel, bronze or aluminium mesh with a maximum aperture of 2mm.
10. That dual use paths / strategic firebreaks be provided around the wetland POS areas.
11. That all lots comply with the provisions of the City's Fire Notice.
12. The development of lots is expected to be connected to a reticulated water supply. No temporary development or land use shall be approved unless there is a suitable water supply for fire fighting purposes.
13. That as a condition of subdivision a detailed plan demonstrating the location and capacity of fire emergency infrastructure (hydrants) shall be submitted and approved by Department of Fire and Emergency Services.
14. In addition to complying with the City's Fire Notice properties all subdivided land is to be maintained in a fire safe state during the fire season. This includes the removal of rubbish and the slashing of grass to a maximum height of 100mm.

15. That any staging of the subdivision address temporary fire management issues including provision of hazard separation zones and multiple access.
16. That the construction of the subdivision works includes appropriate fire management precautions.
17. That a notification shall be placed upon the Certificate of Title of all lots pursuant to Section 70A of the Transfer of Land Act advising landowners within the defined bush fire prone land of this Fire Management Plan and that special construction standards for buildings are required.

4.5 Heritage

The Structure Plan area includes four European heritage sites being; de San Miguel Home and Postans Cottage (built heritage); Long Swamp (natural heritage); and the site of the Hope Valley School (no built form remaining) as depicted in *Figure 11 European Heritage Assets*. A summary of each heritage site is provided in section 4.5.1 below with a full Heritage Strategy being located within **Appendix D**.

Assessment of the Aboriginal heritage associated with the Structure Plan area has been undertaken as per the reports located within **Appendix E**. These studies have found that there are no previously recorded Aboriginal archaeological sites; however an ethnographic survey is required to be undertaken. A summary of this study and the recommendations are provided under 4.5.2 below.

4.5.1 European Heritage

4.5.1.1 Postans Cottage

Postans Cottage represents the most significant European heritage site within the Structure Plan area, being one of the first residences constructed in the area circa 1882. Postans cottage consists of the ruins of the former residence of George Postans and his family, one of the earliest settlers in the area and responsible for the naming of Hope Valley.

The Heritage place is currently included on the Master Plan Heritage List, the City of Kwinana Town Planning Scheme No.2 ('the Scheme') and the City of Kwinana Municipal Heritage Inventory (MHI). Further, this heritage place is also on the State Heritage Office Assessment Program to determine whether the place is of State heritage significance and should be included on the State Heritage Register.

Postans Cottage will be retained within an area of public open space located in the south of the Structure Plan area commonly referred to as Postans Reserve.

4.5.1.2 De San Miguel Home

De San Miguel Home was constructed circa 1886 and is located to the north of Long Swamp. The heritage place is currently included on the Master Plan Heritage List and the City of Kwinana MHI. De San Miguel Home is listed as a Category A place under the City of Kwinana MHI, despite the acknowledgement that the dwelling has been substantially modified and is noted to be in fair condition with a moderate degree of integrity and authenticity.

As mentioned in this report, the Structure Plan area requires the significant alteration of ground levels. In particular, the land surrounding Long Swamp requires significant cut and fill to ensure that the Structure Plan area is suitable for future industrial development. To facilitate an implementable design, de San Miguel Home is proposed to be demolished.

On further investigation into the remnant fabric of de San Miguel Home it became apparent that the retention and adaption of this building is not the most suitable long-term management approach, based on the following:

- **Alterations to the place:** de San Miguel Home has been subsumed by the timber weatherboard residence constructed over it, which has concealed the original building's front façade and involved the removal of the original roof and other original fabric. These changes obscure the aesthetic value of the place as a picturesque collection of Late Colonial buildings. Much work would need to be done to remove the weatherboards structure and reconstruct the original building. Any reconstruction would be conjectural at best given the limited historic records on the place.
- **Changing context:** the rural setting will be changed by the redevelopment of the area into an industrial estate. Given this and the fact that the original form of the building is obscured it is unlikely that the casual observer will understand, appreciate and value the history of this place.
- **Use:** when the industrial development occurs the place will no longer be suitable for residential purposes and an alternative use would need to be found for the building. Given the small nature of the spaces within the building, it would not be suitable for most uses and would require further adaptation to meet current day needs and building regulations. These changes have the potential to further impact on the already degraded intactness, authenticity and appreciation of the place.

The Master Plan provides a level of protection for those places on the Heritage List. The inclusion of a place on the Heritage List does not prohibit development, including demolition. Rather it requires that the heritage values of a place are considered in consultation with relevant stakeholders (such as the City of Kwinana) before development is approved.

In compliance with the Master Plan, it is the role of the Interpretation Strategy discussed in Section 4.5.3 to recognise and celebrate the history and value of de San Miguel Home. Consultation, via a series of meetings, written correspondence and a Councillor Workshop has been undertaken with both the Officers of the City of Kwinana and the Elected Members. The proposed removal had preliminary (pre-advertising) support from the City of Kwinana at officer level.

4.5.1.3 Long Swamp

Long Swamp is a natural heritage site included under Category A in the City of Kwinana MHI and the Master Plan Heritage List. Long Swamp is considered to be of aesthetic value as a natural wetland with surrounding bushland; historic value as the basis for early settlement in the Hope Valley area; and scientific value as a part of an important system of lakes and wetlands and feeding ground for waterbirds.

Long Swamp will be protected and rehabilitated in accordance with the Biodiversity Strategy and the relevant Wetland Management Plan.

4.5.1.4 Site of the Original Hope Valley School

The site of the Original Hope Valley School has previously been subject to development works and no longer contains any built form. The school was demolished in the 1950's by the Electricity Commission WA and is included on the City of Kwinana MHI under Category B. After its demolition, the site was marked by a granite monolith commemorating its contribution to the expansion of settlement in the Hope Valley area - this monolith has since been removed. The key management principle recommended by the heritage studies is for the appropriate recognition of the site through interpretation. It is the role of the Interpretation Strategy discussed in Section 4.5.3 to recognise and celebrate the history and value of the Original Hope Valley School.

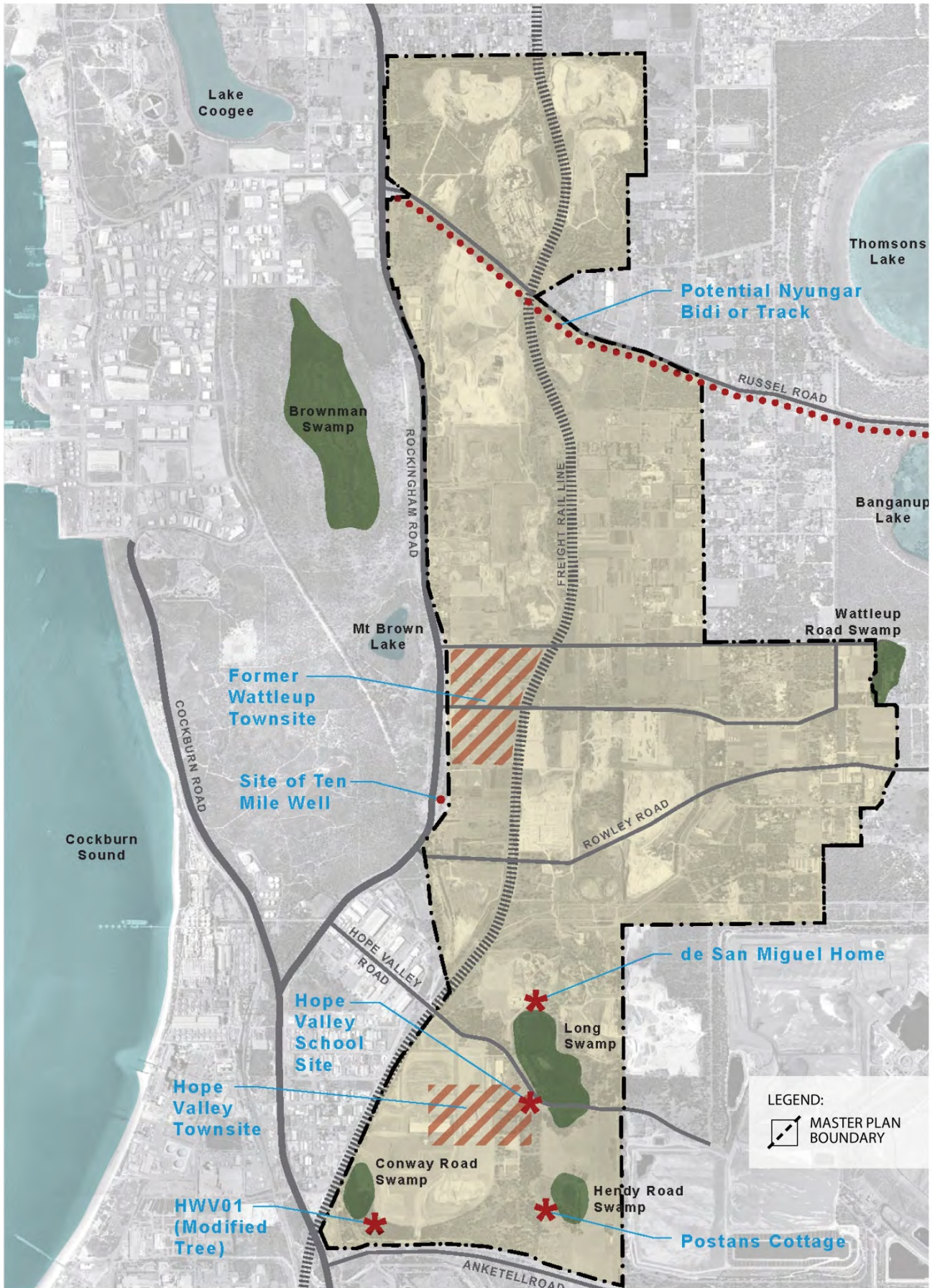


Figure 11 European Heritage Assets

4.5.2 Aboriginal Heritage

Two reports have been prepared addressing Aboriginal Heritage in relation to the Structure Plan area:

- A desktop Aboriginal Heritage Assessment; and
- An Aboriginal Archaeological Survey.

The Executive Summary of the desktop Aboriginal Heritage Assessment and the Aboriginal Archaeological Survey are included within **Appendix E**.

4.5.2.1 Desktop Aboriginal Heritage Assessment

The desktop research has found that there are no previously recorded Aboriginal archaeological or ethnographic sites located within the Structure Plan area. However, there is the potential to contain currently unidentified archaeological sites, particularly within the remnant bushland around Long Swamp (McDonald 2001:21, McDonald 2002:28). There is a lower potential for archaeological material to be located in the developed parts of the Structure Plan area and at further distances from the swamps.

There is a potential for Long Swamp, Hendy Road Swamp East and other wetlands in the area to be identified by the Aboriginal community as ethnographic sites and specifically mythological sites associated with the Waugal. Based on previous surveys undertaken in the Structure Plan area, however, it would seem that there is a very low potential for any other ethnographic sites to be reported. The Aboriginal community are also generally concerned with the protection of the environment including the waterways and minimising clearance of remnant bushland where possible.

4.5.2.2 Aboriginal Archaeological Survey

The Aboriginal archaeological survey subsequently surveyed all of the Structure Plan area and no archaeological sites were located during the Survey. Five isolated stone artefacts were located. Details of these artefacts are supplied in the full Aboriginal Archaeological Survey Report.

The area around Long Swamp was unable to be properly inspected for archaeological materials because of the particularly dense melaleuca and sedge vegetation that surrounds the body of water in the middle of the swamp. Consequently it is recommended that monitoring for any excavation work within the area of Long Swamp and Hendy Road Swamp.

4.5.2.3 Recommendations

The recommendations of the Aboriginal Heritage Assessment and the Aboriginal Archaeological Survey include:

- An ethnographic survey of the Structure Plan area be undertaken with 'relevant Aboriginal people' and that consultations are conducted in relation to any archaeological sites that may be subject to a Section 18 Notice(s) in accordance with the Aboriginal Heritage Act 1972 in future; and
- Any ground disturbing work within the vicinity of Long Swamp and Hendy Road Swamp as identified on Map 4 of the Aboriginal Archaeological Survey should be monitored by a

suitably qualified archaeologist and representatives of the Gnaala Karla Booja native title claim group.

4.5.3 Interpretation Strategy and Plan

In response to the array of heritage elements associated with the Structure Plan, an Interpretation Strategy has been prepared to provide a means of communicating the history and value of the Structure Plan area. The Interpretation Strategy, located in **Appendix F** addresses the following key areas in fostering public awareness and engagement in the heritage elements:

- **Place** – a context analysis an inventory of places that tell the stories of the area.
- **People** – an audience profile to establish the target audience and what information they will want.
- **Purpose** – setting a vision for the interpretation and sets out the themes and stories associated with the Structure Plan area.
- **Projects** – strategies for implementing the interpretation and communication of stories about the Structure Plan area.

Methods of communicating the heritage aspects within the future development of the Structure Plan area are outlined in *Table 4* and depicted in *Figure 12 Interpretation Nodes*. Responsibilities for the implementation of the Interpretation Strategy are outlined within section 11.

The implementation of the Interpretation Strategy will be undertaken in the preparation of an Interpretation Plan prior to subdivision or development. The Interpretation Plan will be developed in consultation with the City of Kwinana to fully inform the design, content and delivery of the primary, secondary and tertiary nodes (and 3 directional markers), which includes interpretive signage and in some places seating. Oral histories will need to be undertaken as part of the preparation of the Interpretation Plan.

Table 4 Interpretation Nodes

NODE TYPE	LOCATION	PURPOSE	WAY-FINDING	THEME	MESSAGE	NODES
Primary Node No. 1	Long Swamp Amenity Node	Introduce audience with the area and interpretive elements	"Where to" and Orientation map	Theme 3.11 - Altering the Environment	Explore the changing approaches to development in the State, which now has a strong emphasis on social and environmental principles. Explore how the development of Latitude 32 has resulted in the closure of the Hope Valley and Wattleup townships.	<ul style="list-style-type: none"> – Interpretive signage. – Seating to be provided under mature trees. – Location outside 50 metre buffer and in highly visible location along local road.
Secondary Node No. 1	Postans Cottage	Interpretive content and secondary orientation node	Orientation map and direction to nearest attraction/node	Theme 4.6 - Remembering significant phases in the development of settlements	Explore how the place demonstrates the challenges and achievements of early colonial settlement by small landholders who built a community and school at Hope Valley focusing on the contribution of George Postans and his family.	<ul style="list-style-type: none"> – Tangible historic heritage evidence (ruin). – Interpretive signage. – Seating to be provided.
Secondary Node No. 2	de San Miguel Home	Interpretive content and secondary orientation node	Orientation map and direction to nearest attraction/node	Theme 4.6 - Remembering significant phases in the development of settlements	Explore how the place demonstrates the challenges and achievements of early colonial settlement by small landholders who built a community at Hope Valley focusing on the contribution of Angel de San Miguel and his family.	<ul style="list-style-type: none"> – Original site. – Interpretive signage. – To be positioned in a visible location along a local road. – Use limestone of house/sheds in interpretive signage.
Secondary Node No. 3	South of Long Swamp	Interpretive content and secondary orientation node	Orientation map and direction to nearest attraction/node	Theme 1 - Tracing the Evolution of the Australian Environment	Explore how the natural environment (Long Swamp) has provided the foundation upon which all the stories of human occupation and use of the place rest. Explore how and why the condition and habitat of the swamp has been damaged and what is being undertaken to rehabilitate it.	<ul style="list-style-type: none"> – Interpretive signage. – To be positioned in a visible location along a local road.
Tertiary Node No. 1	Hendy Road Swamp	Interpretive content and directional orientation	Direction to nearest attraction/node	Theme 1 - Tracing the Evolution of the Australian Environment	Explore how and why the condition and habitat of the swamp has been damaged and what is being undertaken to rehabilitate it.	<ul style="list-style-type: none"> – Interpretive signage. – Location outside 50 metre buffer and in visible location along local road.
Tertiary Node No. 2	East of Long Swamp	Interpretive content and secondary orientation node	Direction to nearest attraction/node	Theme 2.1 - Living as Australia's earliest inhabitants Theme 3.4 - Utilising natural resources	Explore the specific Aboriginal heritage significance of the study area and surrounding landscape including its Dreamtime stories, the initiates' trail, movement runs, resource utilisation, the chain of lakes, etc.	<ul style="list-style-type: none"> – Interpretive signage. – To be positioned in a visible location along a local road.
Directional Marker 1	NSDDR leading to Long Swamp	Supports way finding and orientation network	Direction to Long Swamp	N/A	N/A	N/A
Directional Marker 2	NSDDR leading to Hendy Road Swamp	Supports way finding and orientation network	Direction to Hendy Road Swamp and Postans Cottage	N/A	N/A	N/A
Directional Marker 3	Local road	Supports way finding and orientation network	Direction to Postans Cottage	N/A	N/A	N/A

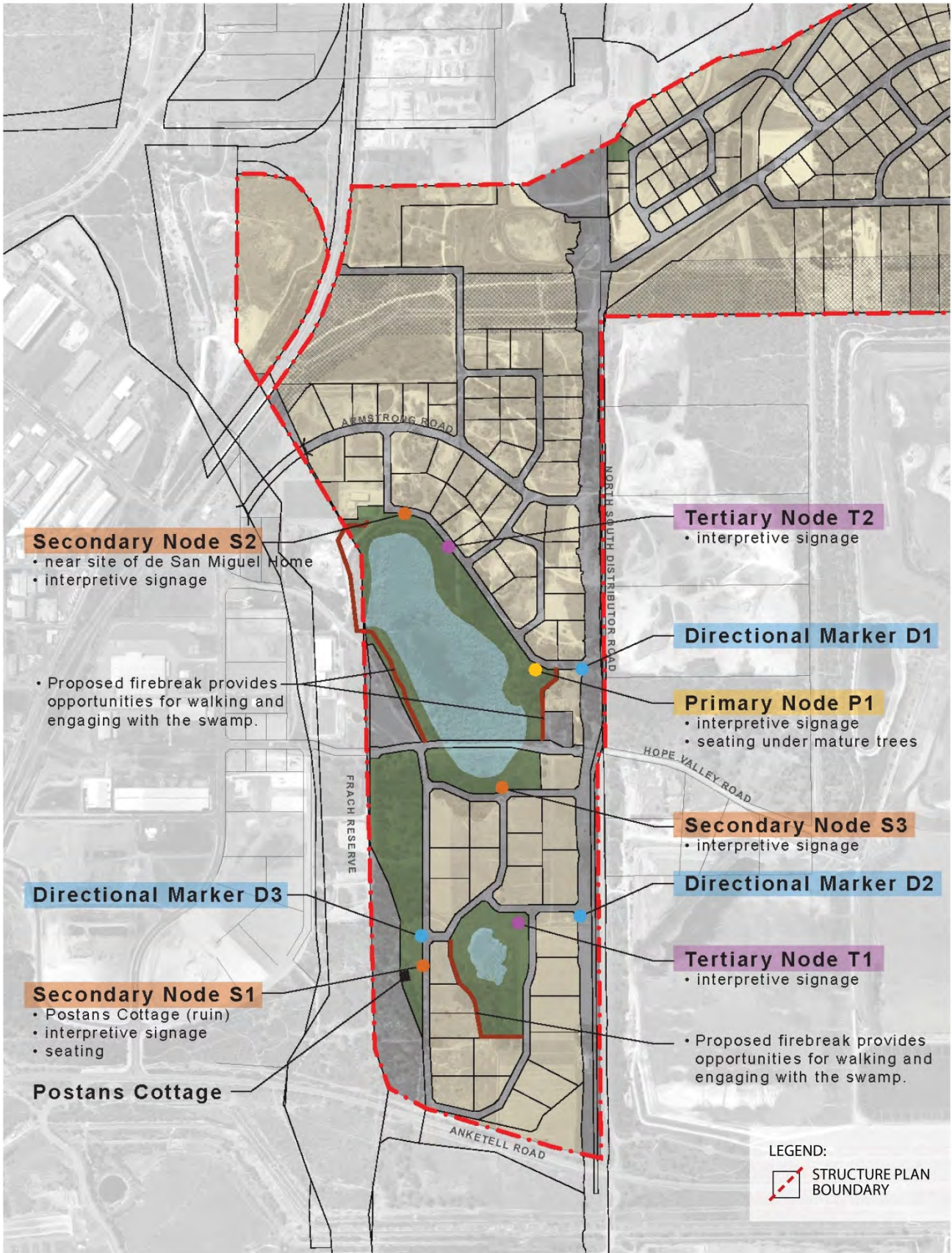


Figure 12 Interpretation Nodes

5 Opportunities and Constraints

5.1 Summary

In order to gain an insight to the development parameters, site particulars and to guide design outcomes for the preparation of the Structure Plan and the ultimate industrial development, an Opportunities and Constraints Plan has been prepared and is summarised below (*Figure 13 Opportunities and Constraints Plan*):

- Existing utilities and services running through and adjacent to the Structure Plan area;
- Characteristics including existing structures, heritage, vegetation, and water bodies;
- Movement network including the future Fremantle Rockingham Controlled Access Highway (FRCAH), Anketell Road, the future Rowley Road and Abercrombie Road;
- Opportunities relating to wetlands, heritage, accessibility and groundwater;
- Constraints relating to heritage, natural features, accessibility, easements and fragmented ownership; and
- The ability to achieve the appropriate levels to accommodate development.

5.2 Opportunities

The opportunities for the Structure Plan area can be broken down into four distinct categories being: Movement, Natural Environment, Landscape and Development. A summary of the relevant opportunities are set out in *Table 5* below along with responses, where appropriate, as to how these have been incorporated into the design of the Structure Plan.

Table 5 Structure Plan Opportunities and Design Responses

OPPORTUNITY	DESIGN RESPONSE
Movement	
Increased accessibility to the Structure Plan area through the future completion of the future FRCAH and Rowley Road.	The Structure Plan sets out the local road network and site levels to ensure integration with the future regional and district road network.
Increase in traffic flow efficiency through splitting traffic volumes across the local distributor roads (LDRs) and the NSDDR.	The inclusion of the LDRs and the NSDDR will provide important connections between the Structure Plan area and other adjacent precincts as well as the wider transport network.
Potential for internal roads to be unaffected by the timing of completion of Rowley Road.	The road layout and levels plan guide the final levels of the Structure Plan area.
Natural Environment	
Create an ecological linkage between Long Swamp and Hendy Road East Swamp.	The ecological linkage connecting Long Swamp with Hendy Road East Swamp has largely been facilitated through the existing reserves managed by the City of Kwinana.
Large portions of the Structure Plan area have been historically cleared.	The Structure Plan provides for the concentration of development in areas which have been historically cleared.
The soils are suitable for the infiltration of stormwater.	N/A
The over 4m separation from natural ground level to groundwater is provided across the Structure Plan area.	N/A

OPPORTUNITY	DESIGN RESPONSE
Landscape	
Opportunity to minimise and/or simplify verge treatments in favour of strategic large scale planting to reduce capital and maintenance costs.	The Structure Plan identifies several areas for extensive landscaping and rehabilitation works to satisfy environmental requirements and contribute to the amenity of the estate.
Rehabilitate the 50m buffer around Long Swamp and restore ecological linkages for use for 1 in 5 year ARI events.	The Structure Plan provides for the linkage of Long Swamp, Hendy Road Swamp East and the broader ecological network through existing reserves and planting within the median of LDRs referred to as ecological linkages.
Lower levels around overhead power lines to allow for the planting of larger tree species.	N/A
Incorporate water wise landscaping through investigation of low water use grass and other monocotyledon species for groundcover.	Dry grass species and water wise plants have been included within the Design Guidelines which relate to the Structure Plan area.
Limit entry statements and pick up on existing style.	The provision of entry signage has been limited to the key entrances to each precinct. The design of the entry signage has taken into account the previous styles and developed these into a simple, informative, hardwearing and effective design.
Development	
Opportunities for resource extraction	Lower the levels to improve opportunities for resource extraction within the eastern portion.
Land tenure for utilities to be primarily located on DevelopmentWA land	Where possible the structure plan locates utilities such as drainage and pump stations on land owned by DevelopmentWA. This allows private land to be developed for industrial land uses.
Establishment of development blocks to allow subdivision to reflect market demands	Allowing for flexible layouts within the established road network which can be easily amended to respond to market demand.

5.3 Constraints

The constraints relevant to the Structure Plan area can be generally categorised into Natural Environment, Utilities and Accessibility, and Access and Tenure. A summary of the relevant constraints are set out in *Table 6* below along with responses, where appropriate, as to how these have been factored into the design of the Structure Plan.

Table 6 Structure Plan Constraints and Design Responses

CONSTRAINT	DESIGN RESPONSE
Natural Environment	
Required earth works will significantly impact the retention of existing vegetation.	The Structure Plan provides for significant areas of rehabilitation and the provisions of vegetation corridors within road reserves of LDRs.
Potential for high salt levels throughout the Structure Plan area.	N/A
Interface with adjacent Bush Forever site.	Design Guidelines have been developed to specifically address the interface between industrial development and sensitive land uses adjacent to the Structure Plan area.
Potential change to water levels in wetland areas as a result of vegetation removal and nearby development.	The Structure Plan aims to retain and restore the natural drainage system and integrate this system into the urban landscape.

CONSTRAINT	DESIGN RESPONSE
Impact of buffers for Long Swamp and Hendy Road East Swamp.	Development will be subject to some restrictions within 200m of Long Swamp and Hendy Road Swamp East which are managed through the Design Guidelines.
Potential transfer of contaminants through the wetlands as a result of stormwater drainage.	A range of non-structural source controls will be implemented to minimise pollutant inputs.
Disturbance of fauna inhabiting Long Swamp from light spill, noise and human disturbance.	The Design Guidelines set out specific requirements for development within 200m of the primary habitat areas to minimise disturbance to flora and fauna.
The presence of a contaminated site in the north west of the Structure Plan area.	In accordance with consultation with Synergy, the fly ash site will be rehabilitated and retained as parkland.
The presence of multiple heritage sites throughout the south west portion of the Structure Plan area.	The Structure Plan includes the provision of a Heritage Interpretation Strategy to outline actions for the future management of heritage places within the Structure Plan area.
Utilities and Other Activities	
The location of the DBNGP and PNGP will significantly impact levels and setback requirements throughout the Structure Plan area.	The levels have been configured around the fixed levels of the pipelines. The setbacks associated with the dual pipelines have been taken into account in considering depths between roads for future lots to ensure sufficient unconstrained land is available for industrial development. Restrictions on development within the buffers are outlined within the Design Guidelines.
The Water Corporation SN1200 transfer main is located in the northern portion of the Structure Plan area.	The levels have been configured around the fixed levels of the transfer main thus allowing the main to be retained and protected.
Presence of a significant Western Power easement across the Structure Plan area housing a major transmission line which restricts the form of use and development in this area.	The land use restrictions within the Western Power easement have been taken into account in determining the road locations and lot layout. The ability to create lots of an appropriate size to allow for sufficient unrestricted industrial land has been factored into the design.
The future potential for Western Power Switching Yards within the Structure Plan area.	The switching yards have been provided for as an individual development cell. Access has been provided to and around the Structure Plan area to ensure it does not impact on the ability to activate and release the surrounding land.
The ongoing extraction at the Stone Ridge Quarry for potential 10-15 years.	The Structure Plan allows for Stoneridge Quarry to undertake its ongoing extraction and provides certainty over the possible future industrial development design of the quarry.
The presence of land uses located in the north east portion of the Structure Plan area.	The land uses have been noted and provided for in the design of the Structure Plan.
Access and Tenure	
Location and form of intersections at the NSDDR and Rowley Road.	Traffic modelling has been undertaken to demonstrate the opportunities for intersections in proximity of the Rowley Road intersection.
The existing cessation of Abercrombie Road at the Hope Valley Road intersection.	The construction of the NSDDR will be facilitated by the Structure Plan and the associated DCP to provide access to the Structure Plan area.
Restricted levels within the Structure Plan area may impact access to and from the NSDDR.	Intersection access has been provided taking into account the levels and has resulted in some restrictions on vehicle movements, priority intersections and signalised intersections.
Access restrictions due to inflexible levels will impact intersection distances and arrangements.	The road layout and intersection design has minimised the impact of levels on intersection distances and arrangements.
Access restrictions to the north and west associated with the proposed Rowley	The Structure Plan includes service roads where appropriate to ensure development can occur independent of the Rowley Road and FRCAH construction.

CONSTRAINT	DESIGN RESPONSE
Road extension and the proposed FRCAH.	
Fragmented ownership across the Structure Plan area will present a challenge for the coordination of future development.	The Structure Plan and the associated DCP will enable the coordination of infrastructure and development across the Structure Plan area.

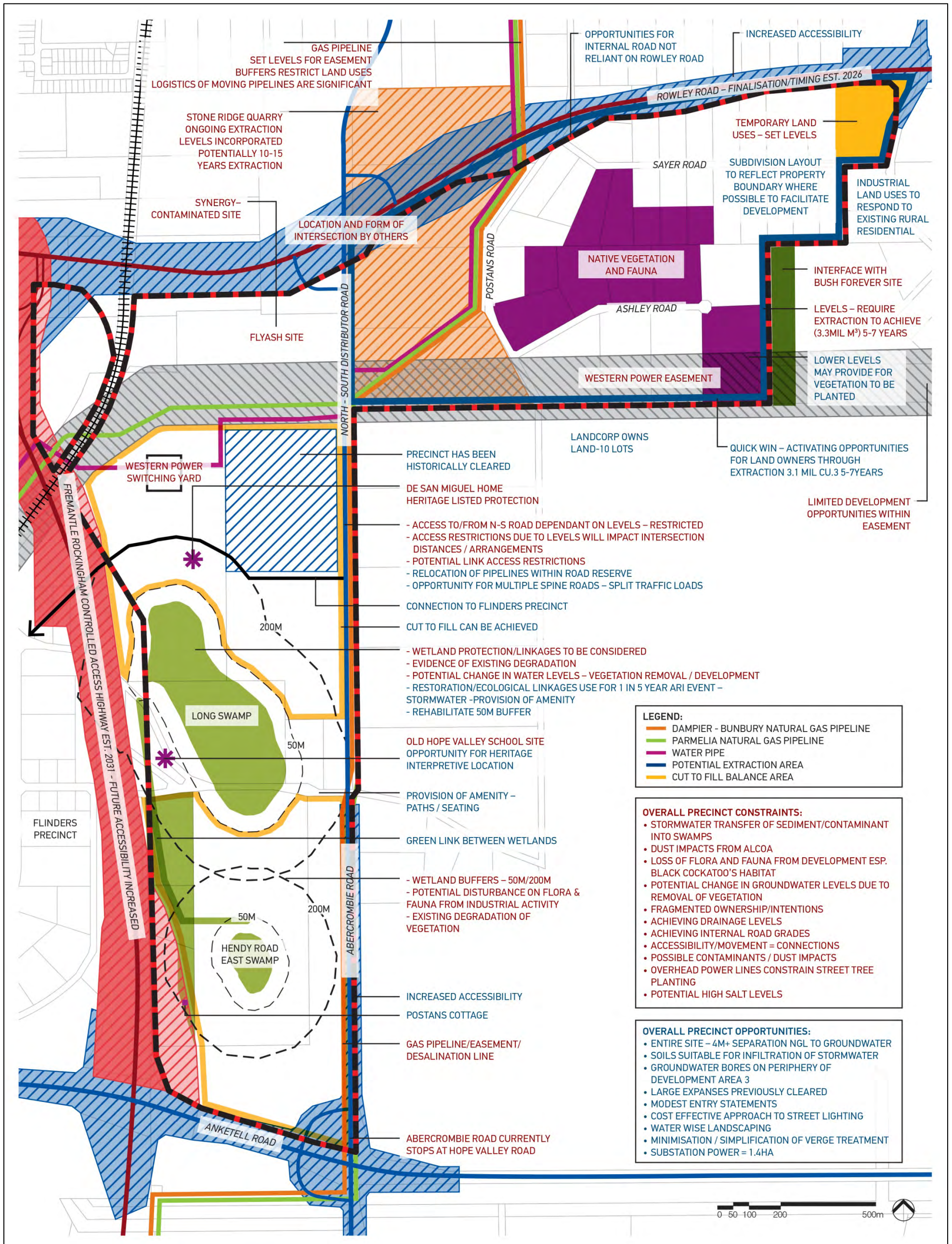


Figure 13 Opportunities and Constraints Plan

6 Structure Plan

6.1 Structure Plan Area

As outlined within Section 2.3 the establishment of the Structure Plan area has been determined in order to facilitate an effective Structure Plan to guide future subdivision and development. The Structure Plan area aligns with the Latitude 32 project area boundaries and Development Area 3 within the Master Plan, as modified by Amendment No. 9.

The eastern and southern boundaries have been established through mirroring the Redevelopment Area boundaries as determined by the Act. The western boundary follows the Road Reserve (being the road reserve for the FRCAH) set out in Appendix 2 – Hope Valley Wattleup Redevelopment Reserves Map, of the Master Plan.

The northern boundary, being the southern extent of the proposed Rowley Road has been established through the detailed planning and design work that has progressed for Rowley Road. Although Rowley Road does not currently have an associated reserve in Appendix 2 of the Master Plan, planning and design has been significantly advanced, including detailed designs and the identification of land requirements. In-principle support has been provided by Main Roads WA for the proposed alignment of Rowley Road. A small portion of Lot 379 (#4) Sayer Road which is located within the Redevelopment Area has been excluded from the Structure Plan area.

6.2 Structure Plan Design Formulation

Due to the significant constraints relating primarily to the fixed levels across the Structure Plan area, indicative lot layouts have been established to ensure the Structure Plan area can be appropriately developed for industrial purposes. Lot sizes and gradients have taken into account the fixed levels across the Structure Plan area and where practicable have been designed around existing cadastre to allow for landowners to develop at an individual level.

Figure 14 – Non-Statutory Structure Plan Map should be read in conjunction with *Table 7* below, which provides a more detailed framework for planning and describes the many issues that have been taken into consideration when preparing the Structure Plan. As per the Commissions Structure Plan guidelines this is an indicative plan that is intended to provide a framework for further subdivision and development.

In the event that a landowner wishes to vary from the Structure Plan's indicative lot pattern when preparing a subdivision application, *Table 7* outlines those matters that should be taken into consideration.

Finished lot levels as identified within *Figure 15 Development Area 3 Levels Plan* have been established via the Latitude 32 Levels Planning Policy. The extensive levels planning responds to the significant fixed level constraints and ongoing extraction of primary resources within and adjacent to the Structure Plan area.

Table 7 Structure Plan Design Parameters

DESIGN PRINCIPLES	DESIGN RATIONALE	VARIATIONS TO FIGURE 14 NON-STATUTORY STRUCTURE PLAN MAP (INDICATIVE PATTERN OF SUBDIVISION)
<p>Levels Planning and Earthworks</p> <p>The extraction of resource has been factored into the forward planning. Co-ordinating levels is critical in activating industrial development whilst providing opportunities for resource extraction, meeting state requirements for both resource extraction and the supply of industrial land.</p> <p>The design recognises:</p> <ul style="list-style-type: none"> – Priority Resource Location under State Planning Policy 2.4 (SPP2.4) Basic Raw Materials; and – Shortage of sand resource across the Perth metropolitan area. 	<p>In accordance with SPP 2.4 the design allows for the extraction of all high quality limestone within the Structure Plan area to 2-3 metres above the water table (in accordance with Department of Water and Environmental Regulation Policy).</p> <p>To achieve coordinated levels (post resource extraction), the final extraction level has been identified to reduce the amount of backfill. In areas of limestone extraction, the industrial development level is the lowest possible level to achieve access and standard engineering requirements, refer <i>Figure 15 Development Area 3 Levels Plan</i>.</p> <p>The opportunity for sand extraction has also been incorporated within the design. Given the sand resource located in the north-eastern portion of the Structure Plan area, as well as the significant variation in existing levels, there is the opportunity to significantly lower the industrial development level whilst meeting the necessary engineering requirements.</p> <p>Compliance with the levels plan will facilitate the extraction of 3.5 million bulk cubic metres of sand resource.</p>	<p>Due regard is to be given to the design principles and design rationale in considering any subdivision application that proposes to vary from the <i>Figure 14 Non-Statutory Structure Plan</i> and the indicative pattern of subdivision that is proposed and compliance with all of the following design criteria:</p> <ol style="list-style-type: none"> 1. Proposals must demonstrate the need to alter the levels depicted on <i>Figure 15 Development Area 3 Levels Plan</i>; 2. Proposed modification must maintain the ability for reasonable provision of gravity sewer, drainage and servicing across the Redevelopment Area, with any amendments to servicing strategies being approved by the relevant approving authorities; 3. Proposed design change must have regard to existing and proposed road and infrastructure (gas pipelines and power lines) levels; 4. Proposed levels shall have regard to existing and proposed levels on adjacent sites and must not adversely affect the ability of any other land parcel to comply <i>Figure 15 Development Area 3 Levels Plan</i> and to be serviced with gravity sewer, drainage and other utilities; 5. Staging and the retention of access to existing dwellings; 6. The process for modification to the lot boundaries will need to demonstrate no adverse impact on adjoining landowners; and 7. Where a variation is proposed across cadastral boundaries a modification to the Structure Plan is required.
<p>Utilities and Services Staging</p> <p>Development relies on the appropriate provisions and staging of critical infrastructure. The design of the utilities has been undertaken in consultation with the utility providers and landowners. It is for guidance purposes only.</p>	<p>Any variations to the staging strategy to undertake non-frontal development is likely to lead to temporary infrastructure requirements, the costs of which will be borne by the landowner or developer without reimbursement via the DCP.</p>	
<p>Movement Network</p> <p>The movement network has been designed having regard to:</p> <ul style="list-style-type: none"> – Staging of development; – Retention of existing rural residential dwellings; – Retention of dwellings during resource extraction; – Standard engineering requirements for roads within industrial developments; and – Provide a flexible road system that provides for efficient movement. 	<p>The movement network has been designed in accordance with the following:</p> <ul style="list-style-type: none"> – To maximise the industrial land yield; – To recognise the fragmented nature of land ownership and provide for independent subdivision wherever possible; – To facilitate a variety of lots sizes; – Road grades not to exceed 3% and allow for gravity sewer and drainage to regional low point within the catchment; and – To allow development prior to the construction of the abutting regional roads by providing a series of internal parallel roads abutting the regional road system. 	
<p>Land Use and Lot Size</p> <p>Latitude 32 is a long term project with demand for industrial land changing over time. The design allows for flexible and adaptable land use and lot sizes allowing market forces to shape development and supply.</p>	<p>The design allows for flexibility in relation to lot size, configuration, frontage, depth and utility to accommodate changes in market demands. This flexibility is however, premised on compliance with the design principles and design rationale described above.</p> <p>The lot configuration also accommodates appropriate interface to wetlands, vegetation and pipeline corridors.</p>	
<p>Fragmented Ownership</p> <p>It has been recognised that the Structure Plan area is in fragmented ownership, particularly the north east portion (east of the NSDDR).</p>	<p>Where practicable the Structure Plan has been designed around existing cadastre to allow for landowners to develop individually.</p>	

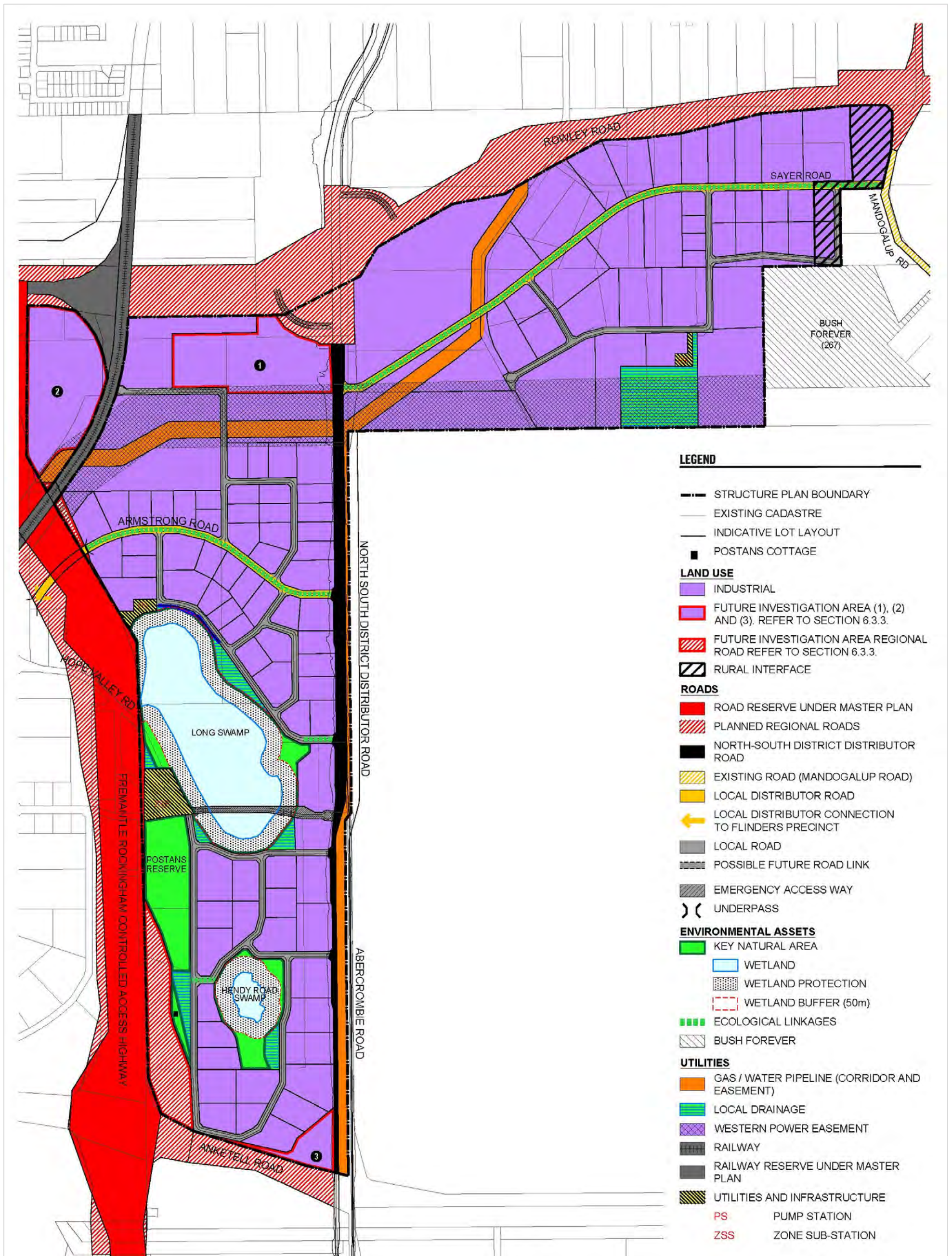


Figure 14 Non-Statutory Structure Plan Map

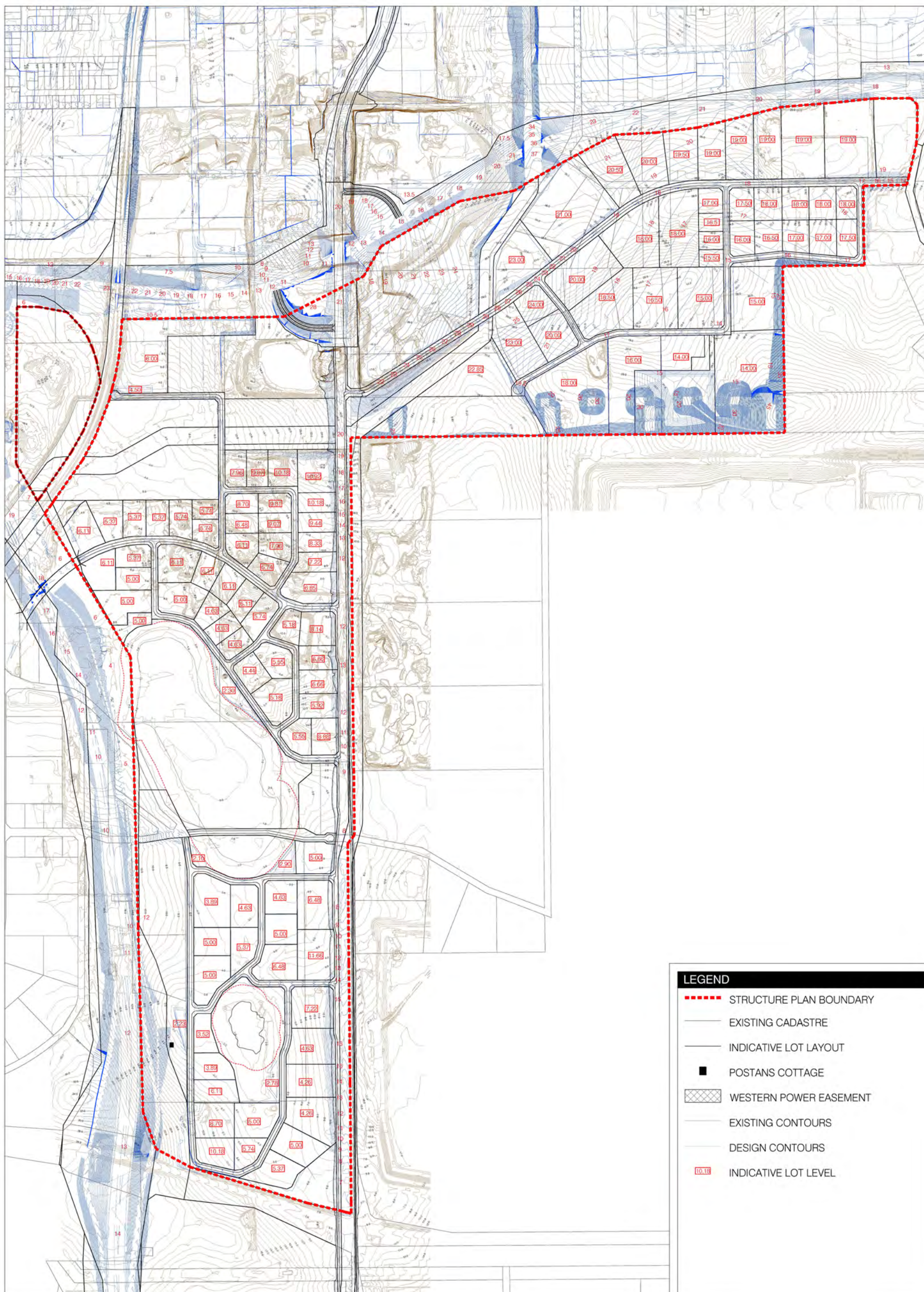


Figure 15 Development Area 3 Levels Plan

6.3 Land Use

The land use permissibility relating to the Structure Plan is set out within Precinct 3 and Precinct 14 within Table 1 of the Master Plan (as modified by Amendment No.9).

'Industry' is the primary land use within the Structure Plan area and captures all developable land as noted on *Figure 14 Non-Statutory Structure Plan Map*. The intention of the 'Industry' classification is to provide for a range of industrial uses within the Structure Plan area, providing for a flexible approach to development. This aims to allow landowners, developers and market forces to determine where specific activities will be located.

An outline of the uses within the Structure Plan area, other than 'Industry' are set out in the sections below.

6.3.1 Rural Interface

A rural interface has been established within the Structure Plan area in order to protect the amenity of adjacent rural residential properties and protect the industrial development from reverse sensitivity effects.

Lots located within the rural interface are as highlighted within *Figure 16 Rural Interface*. Uses within this area have been restricted to ensure potential effects from the operation of industrial activities on these sites does not result in any land use conflicts with the existing rural residential activities, consistent with State Planning Policy 4.1 Industrial Buffers.

Investigations associated with Improvement Plan No. 47 (IP 47), generally located to the east of Mandogalup Road, are considering land use options for the area situated between Development Area 3 and IP 47. The future subdivision and/or development of land within the Structure Plan area that is subject to the rural interface designation should give consideration to the outcomes of these investigations and any potential recommendations, as applicable.



Figure 16 Rural Interface

6.3.2 Roads

The Structure Plan incorporates district and local level roads in order to provide appropriate access through the Structure Plan area and to industrial lots.

All land required for the construction of roads within the Structure Plan area, including batters and embankments are to be set aside as road reserve at the time of subdivision and development.

6.3.3 Future Investigation Areas

The Structure Plan includes four Future Investigation Areas, as identified on *Figure 14 Non-Statutory Structure Plan Map* and described below.

6.3.3.1 Portion of Lot 1 Hope Valley Road

The fly ash site, located on Lot 1 Hope Valley Road and noted as 1 on *Figure 14 Non-Statutory Structure Plan Map* is known to be subject to contamination. The level of contamination across the site and potential ability to remediate parts or the entire site is unknown. Prior to the use of this land for industrial purposes, investigations including (but not limited to) a full Contaminated Site Assessment shall be undertaken and appropriate remediation completed.

6.3.3.2 Portions of Lots 72 and 650 Hope Valley Road and Lots 102 and 712 (No. 15 and 25) Lussy Road

Access to Lots 72 and 650 Hope Valley Road and Lots 102 and 712 (No. 15 and 25) Lussy Road is via Lussy Road. The future proposed regional road network and existing Kwinana Midland Railway Line will result in access constraints to the lots. Prior to any industrial development on this land an investigation into the options for achieving access will need to be resolved by the landowner in consultation with the Local Government, Main Roads WA and all relevant stakeholders. Consideration is also to be given to the potential land requirements associated with the regional road network in this area. This Future Investigation Area is noted as 2 on *Figure 14 Non-Statutory Structure Plan Map*.

6.3.3.3 Proportions of Lot 112 (No. 205) Abercrombie Road

Lot 112 (No. 205) Abercrombie Road, adjacent to the intersection of Anketell Road and future NSDDR (currently Abercrombie Road) has in the past been designed by Main Roads WA as potentially required for a grade separated interchange. The most recent traffic modelling undertaken to support the Structure Plan indicates that grade separation is not required in this location.

Prior to any development being undertaken on this land an investigation into the final land requirements for the intersection shall be resolved in consultation with the Local Government, Main Roads WA and all relevant stakeholders. This Future Investigation Area is noted as 3 on *Figure 14 Non-Statutory Structure Plan Map*.

6.3.3.4 Portions of Lots 124, 319 and 2 (No. 19, 35 and 41) Hendy Road

The future alignment of the FRCAH as contemplated by Main Roads WA and DevelopmentWA extends into Lots 124, 319 and 2 (No. 19, 35 and 41) Hendy Road. This portion of land may be subject to a future proposal to amend the Master Plan. Prior to any development being undertaken on this land an investigation into the final land requirements for the FRCAH shall be resolved in consultation with the Local Government, Main Roads WA and all relevant stakeholders. This Future Investigation Area is noted as Regional Road on *Figure 14 Non-Statutory Structure Plan Map*.

6.3.4 Utility Operator Land Use Restrictions

There are a number of key utilities running across the Structure Plan area. These utilities include the DBNGP, PNGP, the Western Power 330kv power lines, and the Water Corporation DN 1200 transfer main.

In order to protect the utilities, and to avoid reverse sensitivities utility operators often place restrictions on land within and adjacent to their easements. The Structure Plan is subject to utility operator land use restrictions within and adjacent to the Western Power easement and the combined DBNGP and PNGP easements.

6.3.4.1 Western Power Land Use Restrictions

Western Power has a standard set of conditions for the development and use of land which are subject to the Western Power easement. The northern area of the Structure Plan contains a drainage basin within the Western Power easement which will be configured to account for existing powerline infrastructure and ensure there is no permanent waterbody residing in the basin. The relevant conditions relating to Western Power easements relate to:

- Altering or disturbing the present level of the surface of the land within the easement except in the course of normal farming operations or otherwise with the prior written consent of Western Power on each occasion;
- Constructing, erecting or setting up of any building, structure or improvement within the easement other than a fence or trellis not exceeding two metres in height from the natural surface of the land, earthed to the satisfaction of Western Power in the case of a metallic fence or trellis;
- Constructing, erecting, setting up, improving, enlarging or altering any contour bank, fenced storm water drain or compensating basin, or fenced artificial lake within the easement without prior written consent of Western Power;
- Growing, cultivating or maintaining any vegetation exceeding one metre in height from the natural surface of the land within the easement;
- Stacking, placing or storing any material within the easement;
- Bringing within the easement any vehicle; or machinery, which together with any attachment, aerial or accessory exceeds 4.5 metres in height from the natural surface of the land;
- Parking or leaving stationary within the easement any vehicle or machinery exceeding 2.5 metres in height from the natural surface of the land;
- Bringing onto or permitting to be brought onto the easement any explosives, flammable or unstable substance or material other than agricultural crops;

- Blasting or permitting any blasting within the easement;
- Carrying on or permitting to be carried on any activity or operation, which endangers the safety of the transmission works or the safe, efficient and continuous operation of those works; and
- Windows and openings on facades directly facing the easement are to be minimised. Where administrative buildings require windows and openings facing the easement, appropriate noise attenuation measures are to be imposed to negate potential acoustic effects from the power lines.

All applications for the use and development of land affected by a Western Power easement shall be referred to Western Power for consideration. Developers and/or designers are encouraged to liaise with Western Power's Environmental and Land Management Branch prior to the preparation of plans for any development within the vicinity of any Western Power Easement.

These conditions are incorporated into the Design Guidelines.

6.3.4.2 Pipeline Land Use Restrictions

The Russell Road Lateral (RRL) of the DBNGP operated by Dampier Bunbury Pipelines (DBP) and the PNGP and associated east-west twin laterals operated by APA Group extend through the Structure Plan area. The location of the pipelines and associated corridors/easements are depicted in *Figure 17 Pipeline Locations and Corridors*.

Lots containing or adjacent to the DBNGP and PNGP are subject to land use restrictions which are typically as identified within the Commissions Planning Bulletin 87 (PB87) – High Pressure Gas Transmission Pipelines in the Perth Metropolitan Region.

As the Structure Plan area contains a lateral to the DBNGP and not the main line, it has been necessary for DevelopmentWA to commission the preparation of a Pipeline Quantitative Risk Assessment (Pipeline QRA), relative to this lateral. The Pipeline QRA is used to determine the setback distances corresponding to the designated risk thresholds within PB87 (rather than using the prescribed setbacks identified in Table 1 of PB87).

The Pipeline QRA is included within **Appendix G** of the Structure Plan and the implications for land use and setback are summarised below.

Within the Structure Plan area the RRL runs adjacent to the PNGP. The QRA results for the PNGP undertaken for PB87 have been used to determine the combined individual risk. The individual risk from the RRL is significantly lower than the PNGP resulting in an insignificant impact on the combined risk transect. The individual RRL and PNGP pipeline setbacks can be applied irrespective of whether the pipelines are adjacent or separated.

The setback for industrial land use in the Structure Plan area is the greater of:

- 45 m from the edge of the APA Parmelia corridor / easement as per PB87; or
- The edge of the DBP Russell Road Lateral corridor / easement.

The implications and setback requirements are identified within *Figure 17 Pipeline Locations and Corridors* and an outline of these conditions are incorporated into the Design Guidelines.

In cases where the pipeline regulator or pipeline operator(s) advise that a subdivision or development proposal may affect or be affected by the pipeline(s) or associated easements, an AS2885 Qualitative Risk Assessment and/or a Pipeline Risk Management and Protection Plan may be required.

If required, the Qualitative Risk Assessment and/or Pipeline Risk Management and Protection Plan is to:

- Be prepared and implemented by the landowner/applicant to the satisfaction of the Commission on advice from the pipeline regulator and/or pipeline operator(s); and
- Identify threats to pipeline integrity and easement requirements and risk mitigation measures to be implemented to achieve a minimum of as low as reasonably practicable (ALARP) risk levels to the pipeline(s) and nearby land users. This requirement may apply to land outside of the setbacks prescribed by PB87.

In cases where a subdivision or development proposal affects the DBNGP corridor, the landowner/applicant is required to obtain approval in writing of the DBNGP Land Access Minister, pursuant to the Dampier to Bunbury Pipeline Act 1997. Any subdivision or development proposal involving land near the junction of the RRL, PNGP and the planned Rowley Road is to acknowledge, in consultation with the pipeline regulator and operators, works that may be necessary within and adjacent to the DBNGP corridor to accommodate the future RRL and PNGP crossing of Rowley Road.

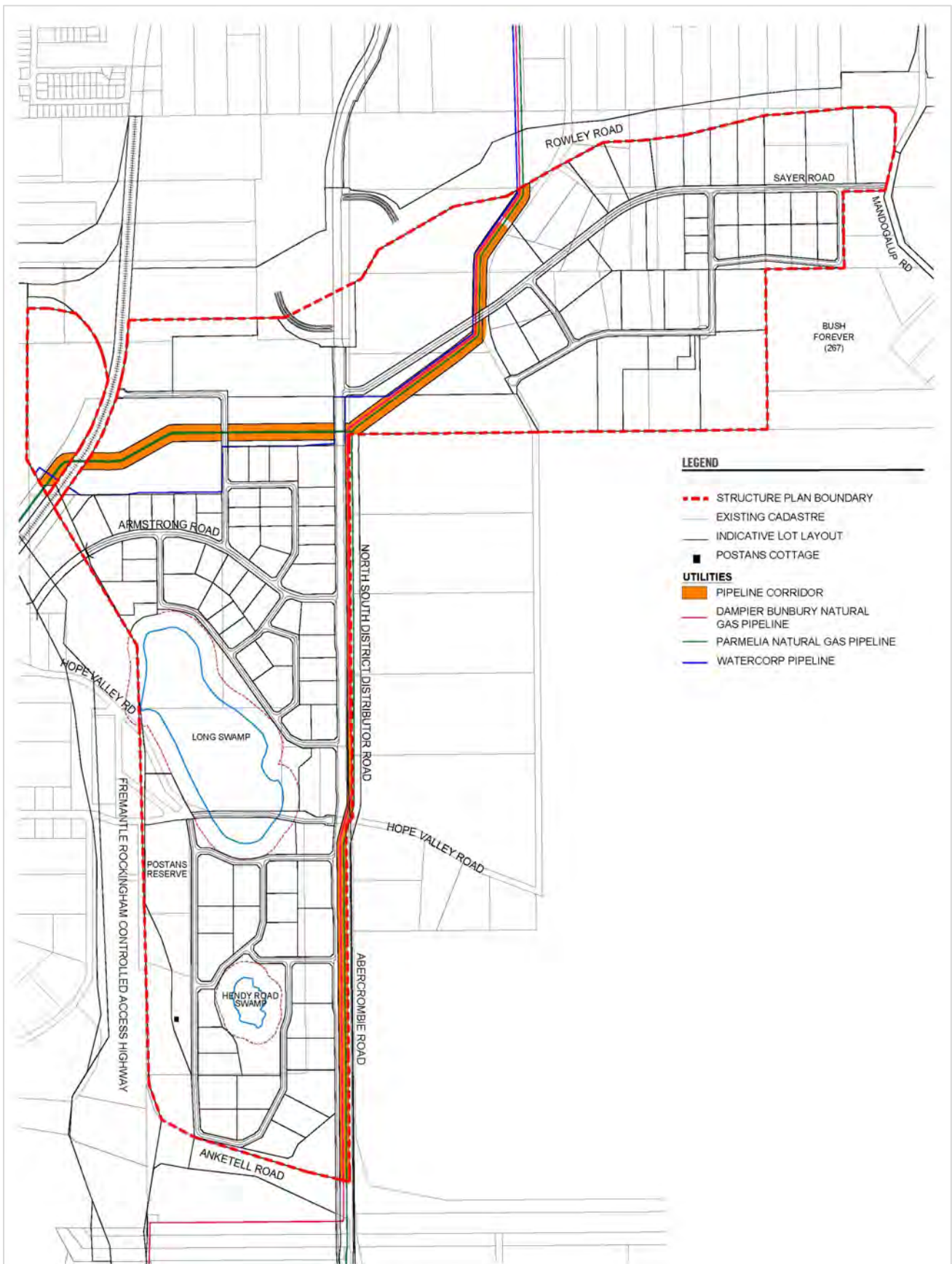


Figure 17 Pipeline Locations and Corridors

6.3.5 Environmental Assets

The Structure Plan area includes Key Natural Areas (KNA) as discussed in Section 4.1 of this report and illustrated in *Figure 9 Development Area 3 Key Natural Areas and Ecological Linkages*. More specifically, the areas within the Biodiversity Strategy Review (2015), identified for protection and relevant to the Structure Plan area are illustrated in *Figure 18 Development Area 3 Environmental Assets* and identified below:

- KNA 1 – Long Swamp (CCW) and associated 50m buffer;
- KNA 2 – Upland vegetation known locally as Postans Reserve; and
- KNA 3 – Hendy Road Swamp East (REW) and associated 50m buffer.

The status, function, management and funding of the environmental assets are summarised in *Table 8* and generally described below.

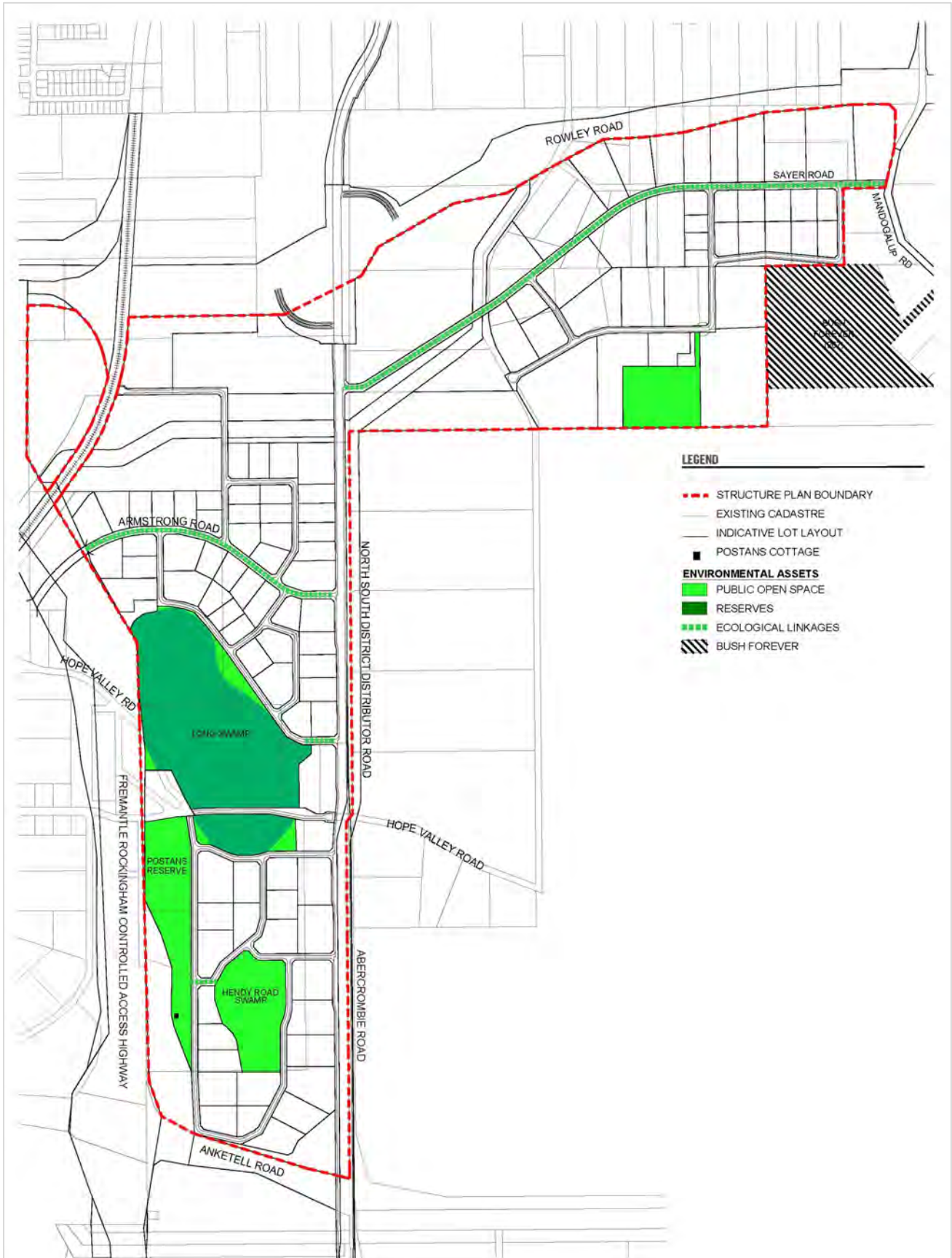


Figure 18 Development Area 3 Environmental Assets

6.3.5.1 Key Natural Area 1 – Long Swamp

Key Natural Area 1 includes:

- Wetland – Long Swamp CCW;
- Wetland Protection Buffer – 50m protection zone from the edge of the wetland dependant vegetation; and
- Upland vegetation that is outside of the buffer.

A portion of Long Swamp is partly owned by the Commission and reserved under the Master Plan with the remainder of the reserve being established through a rationalisation process undertaken via Amendment No. 9. Amendment No. 9 rationalised the current reserved land to ensure that the wetland proper and remnant vegetation was protected and enhanced through the inclusion of an additional 2.88ha of wetland proper and buffer area and the removal of 2.93ha of pasture. The revised reservation for Long Swamp is illustrated in *Figure 19 Reserves*.



Figure 19 Reserves

The land tenure/acquisition of the area of Long Swamp, whether the existing reservation or the proposed reservation under Amendment No. 9 is to be subject to negotiation with the Commission at the time of subdivision.

The rehabilitation and management (5 years) of Key Natural Area 1 is to be provided for within the DCP. After 5 years Long Swamp is to be maintained and managed by the City of Kwinana.

6.3.5.2 Key Natural area 2 – Postans Reserve

Key Natural Area 2 is identified as the upland vegetation locally known as Postans Reserve. Postans Reserve is owned by the State of Western Australia and is under management by the City of Kwinana.

Postans Reserve contains upland vegetation consisting of mature Tuart and Jarrah, many of which may provide future breeding habitat for Carnaby's Black Cockatoo. This area provides a non-contiguous link between Long Swamp, Hendy Road Swamp East and Conway Road Swamp/Bushland.

The cost of rehabilitation of Key Natural Area 2 has been provided for within the DCP. The management is not included within the DCP as it is already subject to a management agreement.

6.3.5.3 Key Natural Area 3 – Hendy Road Swamp East

Key Natural Area 3 is in private ownership and includes:

- Wetland - Hendy Road Swamp East REW;
- Wetland Protection Buffer – 50m protection zone from the edge of the wetland dependant vegetation; and
- Upland vegetation that is outside of the buffer.

The Structure Plan proposes the relocation of the wetland boundary identifying the Key Natural Area to exclude the northern portion, which does not include any significant environmental values, and include the vegetated area to the south. This will provide a net benefit for the environmental qualities of Hendy Road Swamp East.

Hendy Road Swamp East's inclusion as an item in the DCP will be determined by Amendment No.10 to the Master Plan. In the event that it is not included the future ownership will be determined at the subdivision and/or development stages.

The rehabilitation and management (5 years) of Key Natural Area 3 has been provided for within the DCP. After 5 years Hendy Road Swamp East is to be maintained and managed by the City of Kwinana.

6.3.5.4 Ecological Linkages

The ecological linkages provide vegetated linkages between the wetlands and adjacent conservation areas by way of ecological corridors within road reserves and existing vegetated reserves. Ecological linkages are described within the Biodiversity Strategy and Biodiversity Strategy Review as non-contiguous vegetation which connect larger areas of native vegetation within, and external to the Structure Plan area.

The ecological linkages within the Structure Plan are nominated as secondary linkages under the Biodiversity Strategy. The ecological linkages are to be approximately 5m wide and will be constructed as part of the landscaping works for the Development Area, as a requirement of subdivision. Species within the ecological linkages are to be endemic and of the mid- upper storey to allow for the movement of avifauna.

The planting and interim management (5 years) for the ecological linkages is provided for within the DCP.

Table 8 Environmental Assets Summary

ENVIRONMENTAL ASSET	COMPONENTS	STATUS	USE / FUNCTION	CURRENT OWNERSHIP	PROPOSED OWNERSHIP	FUNDING
Key Natural Areas						
1. <i>Long Swamp</i> As depicted within the outer green line of Long Swamp on <i>Figure 14 Non-Statutory Structure Plan Map</i> .	Wetland – Long Swamp CCW (also identified as an EPP Lake). Wetland Protection Buffer –50m protection zone from the edge of the wetland dependant vegetation; and Upland vegetation that is outside of the buffer.	Reserved under the Master Plan including existing reserved areas and proposed reserved areas as per Amendment No.9.	CCW to be preserved and protected through restoration works. No clearing or development to be undertaken within the wetland proper or protection buffer.	Reserve north of Hope Valley Road owned by the Commission, DevelopmentWA., Paulik, and Danehill Nominees Ltd Reserve south of Hope Valley Road owned by Radonich.	Area north of Hope Valley Road (not currently owned by the Commission) to be ceded to the Crown. Area south of Hope Valley Road to be ceded to the Crown.	Land ceding to be determined by the Commission through the subdivision or the development process. Rehabilitation and Management (5yrs) incorporated into the DCP and apportioned across the entire Redevelopment Area.
2. <i>Postans Reserve</i> As depicted within the outer green line of Postans Reserve on <i>Figure 14 Non-Statutory Structure Plan Map</i> .	Postans Reserve. Postans Cottage.	Not reserved under the Master Plan.	Postans bushland containing upland vegetation.	Crown land managed by the City of Kwinana.	Crown land – to remain unchanged. Management by the City of Kwinana is to be retained.	Rehabilitation incorporated into the DCP and apportioned across the entire Redevelopment Area. Existing funding/management arrangement to continue.
3. <i>Hendy Road Swamp East</i> As depicted within the outer green line of Hendy Road Swamp East on <i>Figure 14 Non-Statutory Structure Plan Map</i> .	Wetland – Hendy Road Swamp East REW; Wetland Protection Buffer –50m protection zone from the edge of the wetland dependant vegetation; and Upland vegetation that is outside of the buffer.	Not reserved under the Master Plan.	REW to be rehabilitated. No clearing or development to be undertaken within the wetland proper or protection buffer.	Radonich	Ceded free of cost to the Crown.	Land ceding to be determined by the Commission through the subdivision or development process. Rehabilitation and Management (5yrs) incorporated into the DCP and apportioned across the entire Redevelopment Area.
Ecological Linkages						
4. <i>Armstrong Road</i> ; 5. <i>Sayer Road</i> ; and 6. <i>Local Road (x2)</i> .	Vegetation within road reserves.	Not reserved under the Master Plan.	Providing avifauna links between wetlands and Key Natural Areas within and adjacent to the Structure Plan area as required by the Biodiversity Strategy Review.	Paulik Danehill Nominees Lunard Pty Ltd Feegate Pty Ltd Calva Pty Ltd DevelopmentWA Pedefferri / Bianchini Radonich	Crown Land (Department of Planning Lands and Heritage). Managed and operated by City of Kwinana.	Establishment of ecological linkages incorporated into the DCP and apportioned across the entire Redevelopment Area.

6.3.6 Utilities and Infrastructure

To appropriately service development areas for utilities, infrastructure and local drainage are identified within the Structure Plan. Utilities and infrastructure are indicated on *Figure 17 Pipeline Locations and Corridors* and the infiltration basins are identified within *Figure 25 Stormwater Management Plan*. These areas do not constitute reserves under the Master Plan and are to be utilised for the purposes of:

- A Western Power zone substation in order to supply the required power to the Structure Plan area, and wider Latitude 32;
- A Waste Water Pump Station (WWPS) site; and
- Local drainage.

Further details pertaining to the design and operation of the utilities are provided within Section 9 Infrastructure and Servicing.

Land for utilities and infrastructure is to be ceded free of cost to utility providers as outlined in *Table 9*. The zone substation is to be funded and constructed by Western Power and the WWPS it to be constructed and funded by Water Corporation as it is standard practice that infrastructure is provided by the service provider.

Table 9 Utilities and Infrastructure Summary

INFRASTRUCTURE / UTILITY ASSET	STATUS	USE / FUNCTION	CURRENT OWNERSHIP	PROPOSED OWNERSHIP
Zone Substation	<p>Provision of land for zone substation site and associated earthworks required to facilitate transfer of the land to Western Power.</p> <p>To be ceded to Western Power at time of subdivision.</p>	<p>Western Power (Networks Strategic Division) has confirmed the need for 3 zone substations to service the power requirements of industrial development within Latitude 32 based on a 200kVa/Ha power load assumption.</p>	The Commission and Electricity Corporation	Western Power
Waste Water Pump Station (WWPS)	<p>Provision of land for WWPS's and associated earthworks required to facilitate transfer of the land to the Water Corporation.</p> <p>To be ceded to Water Corporation at time of subdivision.</p>	<p>A Type 180 transfer sewer pump station designated WWPS X, is required to pump waste water from the 'transfer' catchment (collecting waste water from the gravity network and other smaller pump stations) to the Kwinana Waste Water Treatment Plant.</p> <p>Two Type 40 pump stations (WWPS W in the south-east and WWPS Z in the north) are required to pump waste water from the catchments to WWPS X.</p>	DevelopmentWA	Water Corporation
Drainage	<p>Provision of drainage infrastructure to service industrial development (including acquisition of land for drainage basins).</p> <p>To be established as part of subdivision works.</p>	<p>The extent of drainage infrastructure is identified by the Local Water Management Strategy (LWMS).</p>	Various	City of Kwinana

7 Movement Network

The movement network is critical to the viability and efficiency of any industrial estate. The movement network for the Structure Plan area has been designed in accordance with the following objectives:

- To maximise the industrial land yield;
- To recognise the fragmented nature of land ownership and provide for independent subdivision wherever possible;
- To facilitate a variety of lots sizes;
- Road grades not to exceed 3%;
- To allow development prior to the construction of the abutting regional roads by providing a series of internal parallel roads abutting the regional road system; and
- To provide a flexible road system that provides for efficient movement throughout the Structure Plan area.

A Transport Assessment has been undertaken for the Structure Plan area. Outlined below is a summary of the report and the full report is included at **Appendix H**.

7.1 Movement Network

The Structure Plan area is located between Anketell Road in the south, the future Rowley Road in the north and Mandogalup Road to the east, refer *Figure 6 Structure Plan Location Plan*. The surrounding road network also comprises Rockingham Road which will form part of the future FRCAH; and Abercrombie Road which will eventually form the NSDDR.

There are also a number of local roads that extend through the Structure Plan area including Sayer Road, Postans Road, Ashley Road and Hope Valley Road. All of the aforementioned roads will either be realigned or partially closed to facilitate the construction of the FRCAH and the proposed development.

The movement network has been derived based on linkages to the existing road network and taking into consideration the severance of the Structure Plan area that will occur with the construction of the future Rowley Road and the FRCAH. The access to the Structure Plan area is described below and illustrated in *Figure 20 Movement Network Plan* and comprises the following:

- **The extension of Abercrombie Road** - forming the NSDDR, being the key north south movement through the Structure Plan area, providing access between the Structure Plan area and the regional road network. The NSDDR is ultimately proposed to consist of 2 traffic lanes in each direction;
- **The realignment of Sayer Road** - a LDR providing east west access from Mandogalup Road to the NSDDR. This road comprises 1 traffic lane in each direction and includes street tree planting in recognition of its function as an ecological linkage; and
- **The realignment of Armstrong Road** - to retain a secondary access to Flinders when the FRCAH is constructed. This road is a similar design to Sayer Road comprising 1 traffic lane in each direction and includes street tree planting in recognition of its function as an ecological linkage.

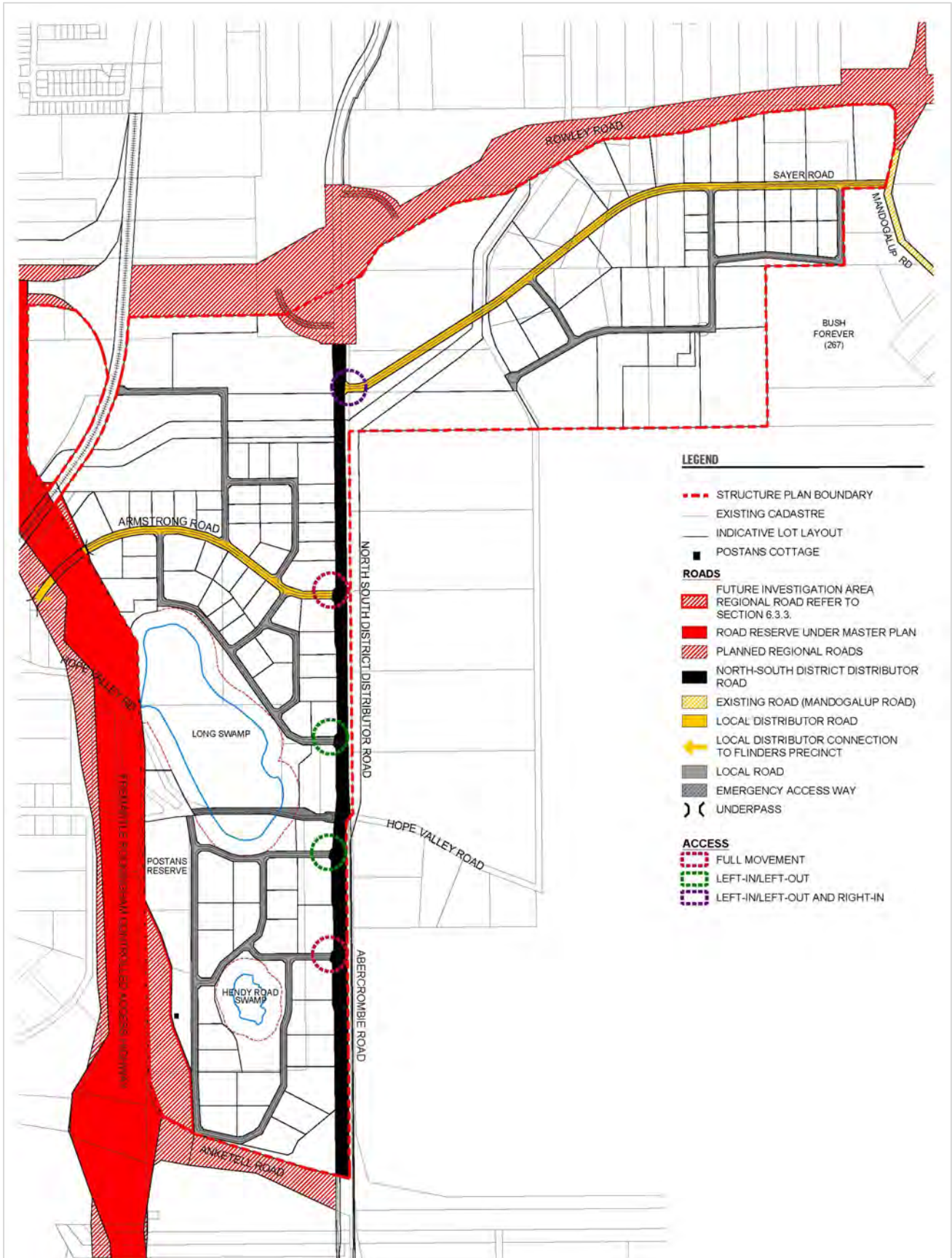


Figure 20 Movement Network Plan

7.2 Proposed Road Reserve Widths

The road reservation widths for the key roads are illustrated below. A full set of cross sections are included within the Transport Assessment, **Appendix H**:

7.2.1 North South District Distributor Road (NSDDR)

The NSDDR is ultimately proposed to be constructed as a 4-lane divided carriageway, consisting of:

- Two 7.0m carriageways with a 0.5 sealed shoulder;
- Separated by a wide central median; and
- With left and right-turning pockets at all access points.

Overall road reserve widths range from between 31.0m and 34.5m north of Hope Valley Road (including a 7.0m median to assist right-turning traffic movements) and between 59.0m and 62.5m south of Hope Valley Road (including a 22.5m gas pipeline corridor to accommodate the DBNGP and PNGP).

Refer *Figure 21 Proposed Road Reservation Width and Cross-Section for the NSDDR - North of Hope Valley Road* and *Figure 22 Proposed Road Reservation Width and Cross-Section for the NSDDR - South of Hope Valley Road*.

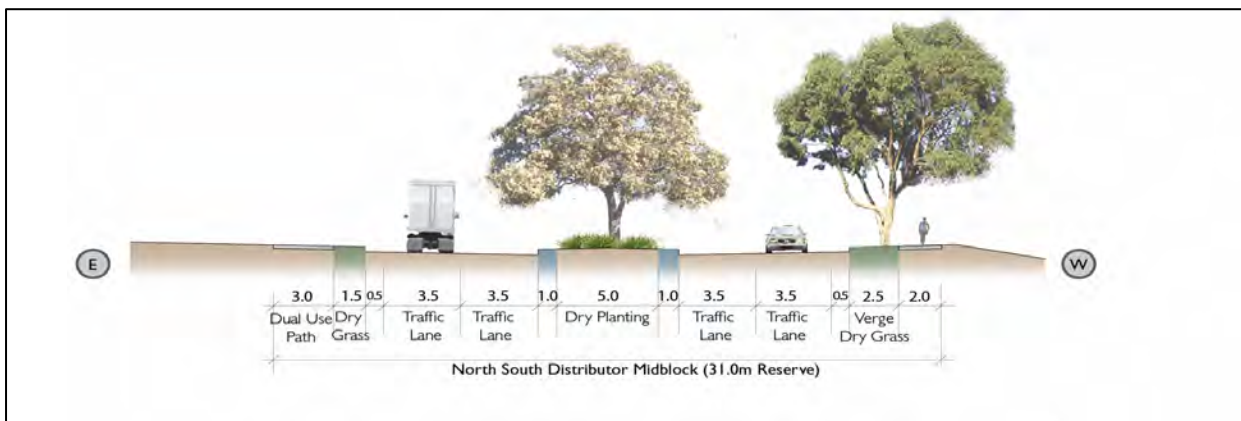


Figure 21 Proposed Road Reservation Width and Cross-Section for the NSDDR - North of Hope Valley Road

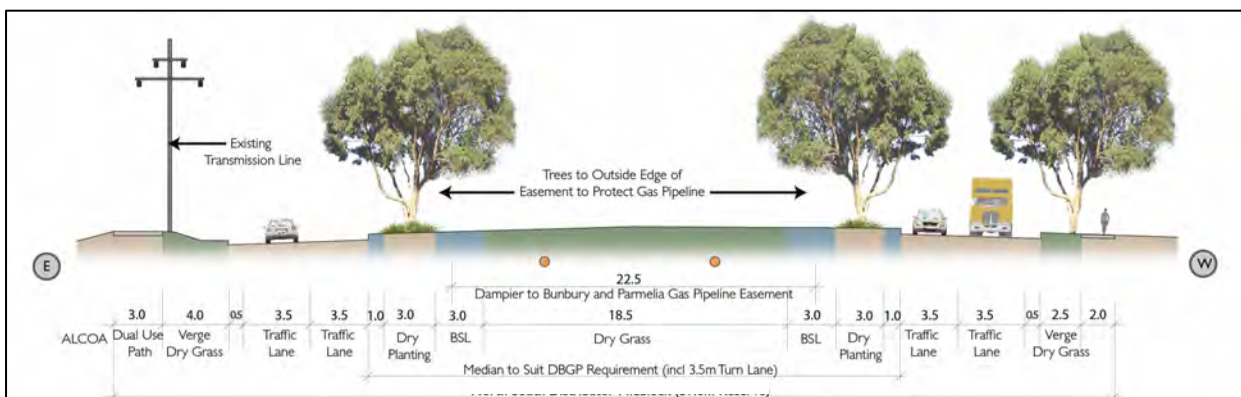


Figure 22 Proposed Road Reservation Width and Cross-Section for the NSDDR - South of Hope Valley Road

7.2.2 Local Distributor Roads (LDRs) - Armstrong Road and Sayer Roads (with Ecological Linkage)

The LDRs are proposed to have a 25.0m road reservation width to allow for turning pockets for right-turning vehicles, as well as a 2.5m parking and a 5m verge (ecological corridor) on the southern side and a 4.5m verge on the northern side, refer *Figure 23 Proposed Road Reservation Width and Cross-Section for the LDR*.

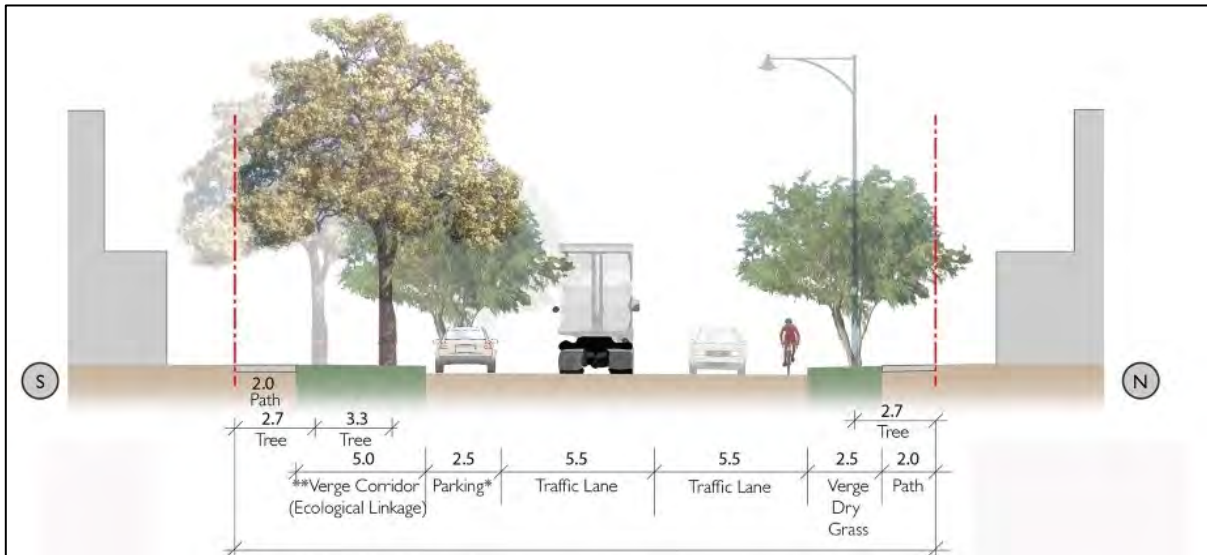


Figure 23 Proposed Road Reservation Width and Cross-Section for the LDR

7.2.3 Local Roads

Local roads are proposed to have a 20.0m road reservation width, which includes 2.5m of sealed parking and 4.5m verge in each direction, refer *Figure 24 Proposed Road Reservation Width and Cross-Section for the Local Roads*. The proposed road cross-section for the local roads allows sufficient width for heavy vehicle movements along these roads.

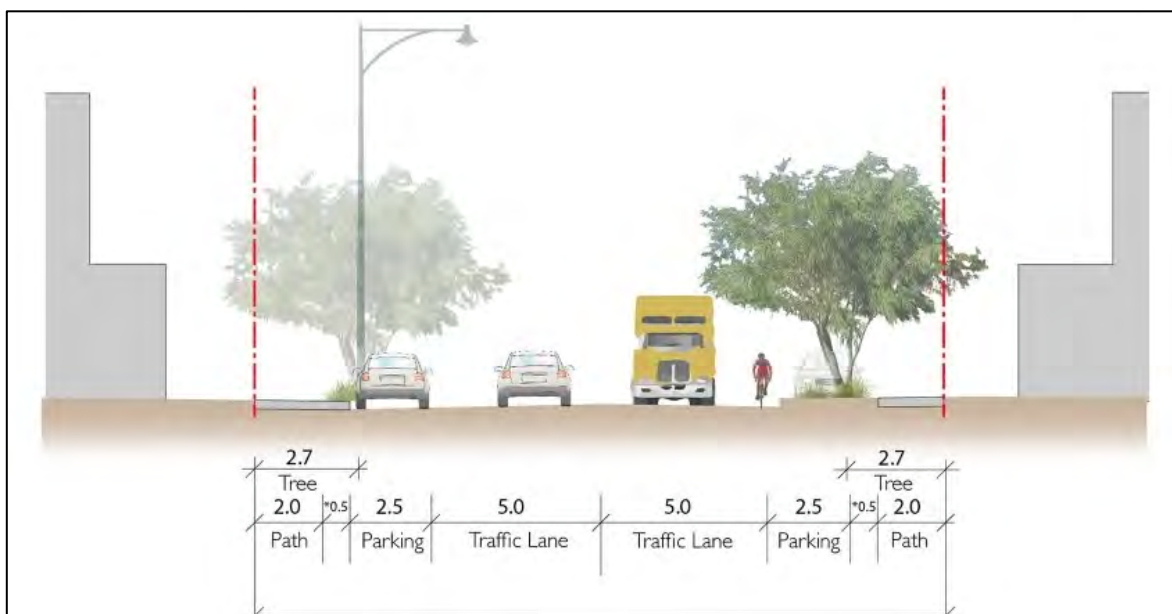


Figure 24 Proposed Road Reservation Width and Cross-Section for the Local Roads

7.3 Road Contributions

Proportional road contributions are proposed based on the traffic modelling that has been undertaken. A draft of the DCP items is included as **Appendix I**. The final DCP items will be determined via Master Plan Amendment No.10.

7.4 Public Transport and Pedestrian and Cycling Infrastructure

The Structure Plan area is not serviced by public transport and the nearest public transport route runs between Fremantle and Rockingham via Rockingham Road.

The Public Transport Authority has indicated that a number of key changes will occur in the future, regarding public transport services in proximity to the Structure Plan area. These changes include:

- Bus interchange and park and ride train station planned for Aubin Grove to commence service in 2016;
- The potential for a future train station feeder bus service between the future Aubin Grove station and the Structure Plan area; and
- The diversion of the 920 bus service to run along the FRCAH once completed.

There is no existing cycle or pedestrian infrastructure within the Structure Plan area. The development of the NSDDR and the completion of Rowley Road will include the provision of an off-road 3.0m shared path along the eastern boundary and a 2.0m footpath on the western boundary.

8 Water Management

A Local Water Management Strategy (LWMS) has been prepared in respect of the Structure Plan, (refer **Appendix J**). An addendum to the LWMS has been prepared to support Amendment No.1 to the Structure Plan (refer **Appendix J1**). The original drainage strategy for the Structure Plan area is depicted within *Figure 25 Stormwater Management Plan* with the amended strategy for Development Area 3 North shown in *Figure 25A Stormwater Management Plan – DA3 North Updates*.

The LWMS provides an integrated total water cycle management approach to development, with an assessment of:

- The pre-development environment;
- Development of water use sustainability initiatives;
- A stormwater management strategy; and
- A groundwater management strategy; and
- A plan for implementation of individual subdivision plans.

Key elements of the LWMS are outlined below.

8.1 Water Use Sustainability Initiatives

Development of the Structure Plan area will lead to an increased demand for water for new industry. Water conservation measures implemented to reduce scheme water consumption within the development will be consistent with Water Corporation's "Waterwise" land development criteria, and include:

- Promotion of use of waterwise practices including water efficient fixtures and fitting (taps, showerheads, toilets and appliances, rainwater tanks, waterwise landscaping);
- Use of native plants in drainage corridor areas and within lots; and
- Maximising on site retention and infiltration of stormwater.

To best manage water demands within the Structure Plan, the landscape design focuses on the remediation of natural areas, creating biodiversity linkages and street plantings. The landscape design included in **Appendix K** also proposes the use of waterwise plants.

8.2 Stormwater Management Strategy

The term 'water sensitive urban design' (WSUD) is commonly used to reflect the planning and design of urban environments that is sensitive to the issues of water, sustainability, and environmental protection (Institution of Engineers, 2006).

Although Latitude 32 is industrial (rather than urban development), the best management practices, structural controls and non-structural controls generally associated with WSUD are considered to be relevant. A summary of WSUD initiatives are outlined in the *Table 10*.

Table 10 Summary of WSUD

	STRUCTURAL CONTROLS	NON-STRUCTURAL CONTROLS
Development Scale	<ul style="list-style-type: none"> - Infiltration basins for all storm events up to the 1 in 5 year ARI adjacent to wetlands. - All other basins infiltrating all storm events up to 1 in 100 year ARI. - Planting of sedges to assist in stripping nutrients prior to infiltrating into the groundwater table. 	<ul style="list-style-type: none"> - Planning of conservation areas and buffer areas to protect wetlands and groundwater dependent ecosystems. - No active public open space and reduced turfed area to reduce nutrient inputs. - Street sweeping. - Monitoring.
Lot Scale	<ul style="list-style-type: none"> - Infiltration at source for all storm events up to 1 in 20 year ARI. - Bunded washdown areas. - Bunded hazardous materials areas. 	<ul style="list-style-type: none"> - Stormwater contamination risks identified and addressed in engineering design. - Car park maintenance.

8.2.1 Stormwater Modelling

All stormwater across the Structure Plan area is proposed to be infiltrated. Adjacent to wetland areas infiltration storage areas have been modelled to infiltrate all events up to and including the 1 in 5 year ARI storm with greater storms discharging via overland flow paths to the wetland. In other catchments, stormwater storage areas have been sized to infiltrate the 1 in 100 year ARI event.

No run-off has been assumed to contribute from individual lots for events up to 20 year ARI. Consistent with Industrial Zones Guidelines (City of Kwinana, 2010), it has been assumed that each individual lot will retain all flows up to and including the 1 in 20 year ARI event. Stormwater modelling was undertaken based on defined catchments. Post development catchment mapping and land use breakdown is illustrated in *Figure 25 Stormwater Management Plan*.

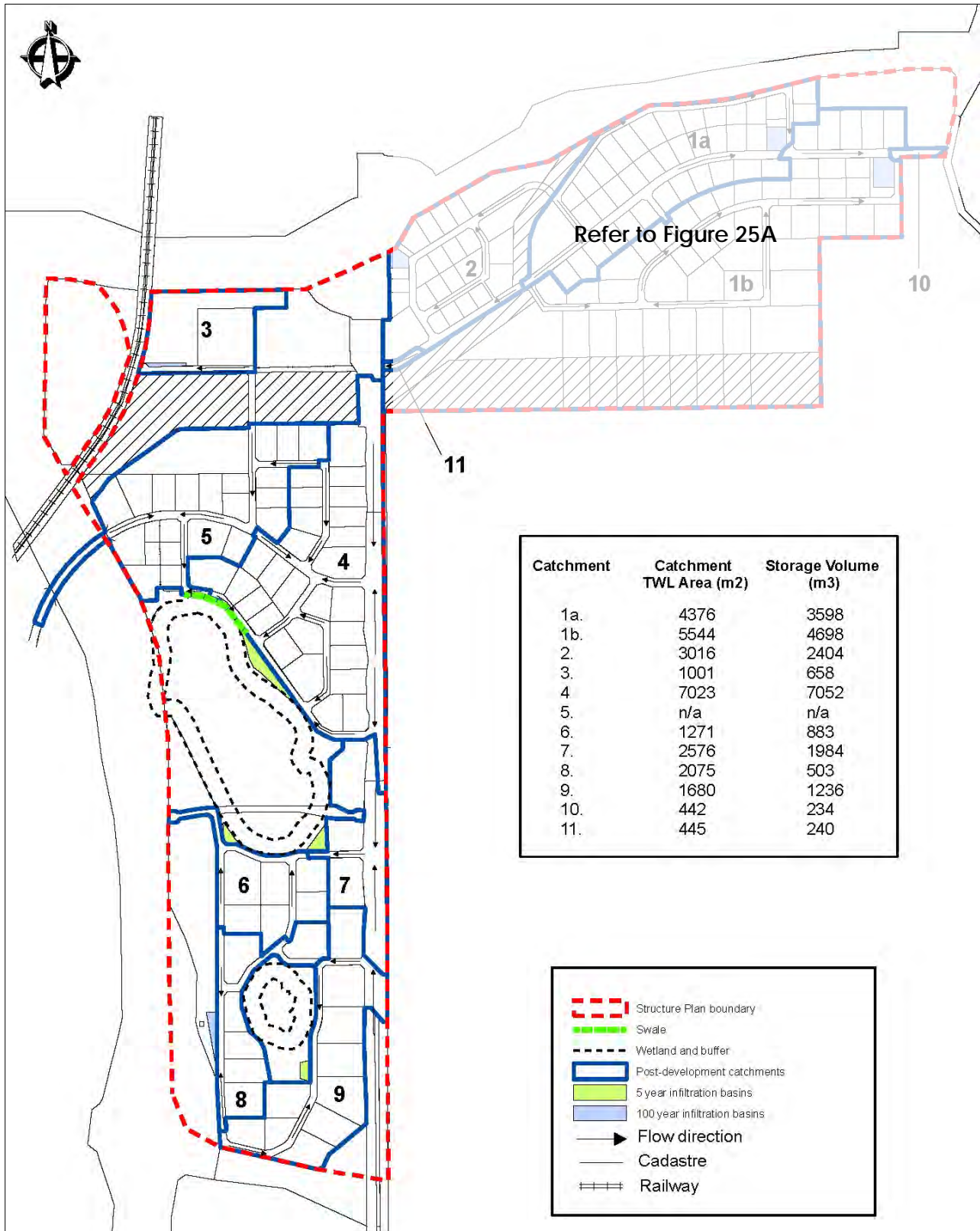


Figure 25 Stormwater Management Plan

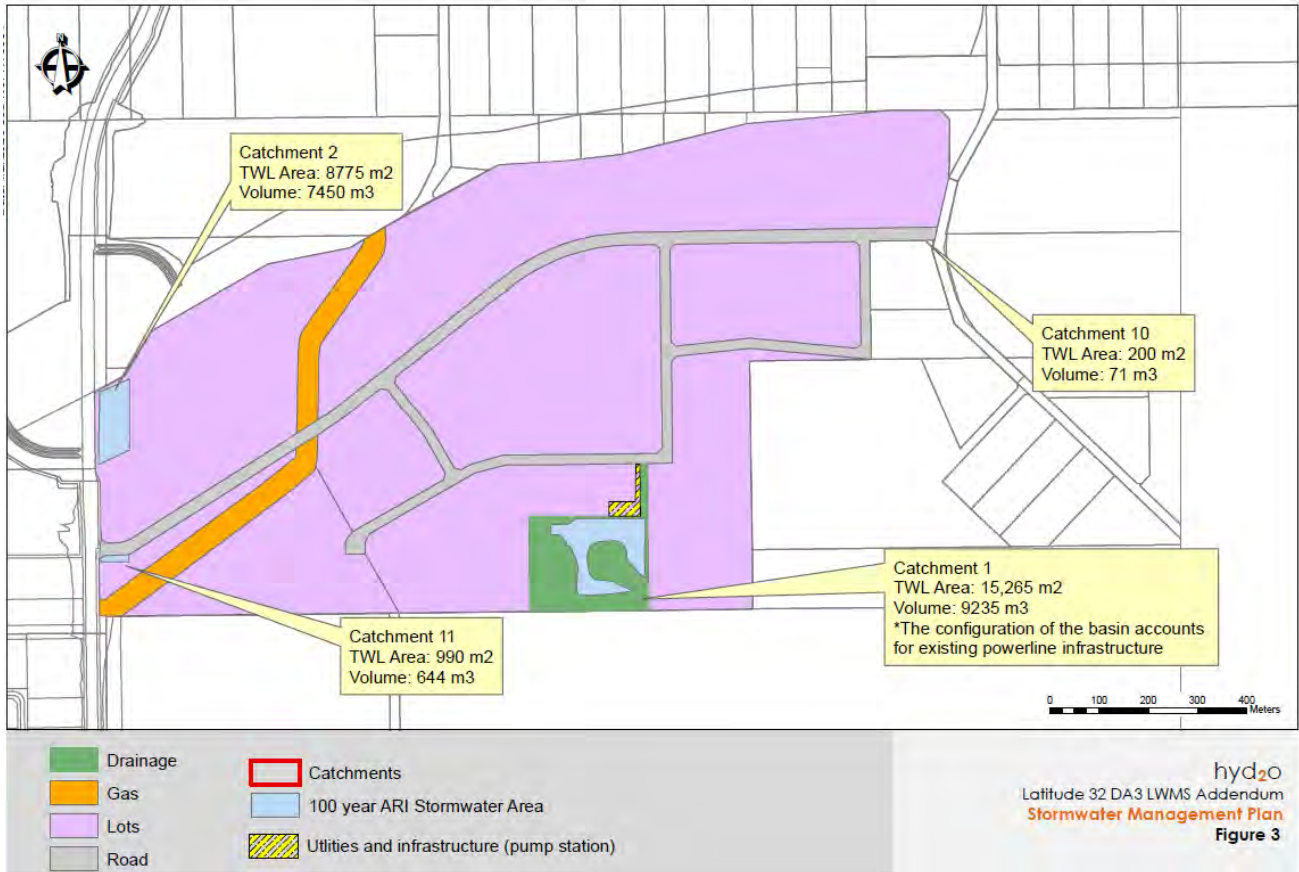


Figure 25A Stormwater Management Plan – DA3 North Updates

8.3 Groundwater Management

Depth to groundwater varies over the Structure Plan area from approximately 5.0 m to 38.0 m below the existing natural surface. Due to the need for a co-ordinated industrial development, the Structure Plan includes a Levels Plan as set out in *Figure 15 Development Area 3 Levels Plan*. Proposed lot levels vary from 3.52m AHD surrounding low lying wetland areas to a height of 23.0m AHD in the northwest corner of the Structure Plan area.

Due to this clearance to groundwater (minimum of approximately 3.0 m) and the sandy soil profile, it is unlikely that imported fill will be required for the Structure Plan area. As a result of the above factors, subsoil drainage will not be necessary within the Structure Plan area.

8.4 Subdivision and Urban Water Management Plans

Consistent with processes defined in Better Urban Water Management (the Commission 2008), an Urban Water Management Plan (UWMP) should be developed and submitted to support the subdivision application/s for the Structure Plan area. Preparation of the UWMP will be the developer's responsibility.

8.5 Groundwater Monitoring

The pre-development monitoring programme was completed in late 2014. Where applicable, additional data collected from this programme will be used to inform the development of the UWMP.

Post-development groundwater monitoring is proposed in all pre-development groundwater monitoring bores to provide suitable coverage of the Structure Plan area. The following frequency of monitoring is proposed:

- Monthly groundwater level measurements; and
- Monthly groundwater quality analysis within wetlands and areas upstream and downstream of the conservation area.

Monitoring will be undertaken by the landowner/developer for a three year period post development consistent with usual DWER requirements. An annual report will be prepared summarising the results of the program.

8.6 Implementation

A summary of roles, responsibilities and funding to implement the LWMS is provided in *Table 11*.

Monitoring outcomes will be used in a continual improvement capacity to review the implemented WSUD within the Structure Plan area and inform the planning and design approaches for subsequent stages of development.

Any modification required to the LWMS as a result of monitoring outcomes would be identified through the review process of monitoring data and would require the agreement of all parties (DoW, Developer, and City of Kwinana).

Table 11 Implementation, Roles and Responsibilities

IMPLEMENTATION ACTION	LANDOWNER DEVELOPER	FUTURE INDUSTRY (LOT SCALE)	CITY OF KWINANA	DEPARTMENT OF WATER AND ENVIRONMENTAL REGULATION
Completion of District Scale Predevelopment Monitoring Programme	<input checked="" type="checkbox"/>			
Preparation of UWMP	<input checked="" type="checkbox"/>			
Review and Approval of UWMP			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Construction of infiltration stormwater storage areas and landscaping	<input checked="" type="checkbox"/>			
Construction and design of lot scale stormwater drainage system		<input checked="" type="checkbox"/>		
Street sweeping for initial 1 year	<input checked="" type="checkbox"/>			
Street sweeping after 1 year			<input checked="" type="checkbox"/>	
Landscape maintenance for initial 2 years	<input checked="" type="checkbox"/>			
Landscape maintenance after 2 years			<input checked="" type="checkbox"/>	
Assessment of development applications for future industry			<input checked="" type="checkbox"/>	
Post Development Monitoring Program and Reporting	<input checked="" type="checkbox"/>			
Review of Annual Monitoring Report				<input checked="" type="checkbox"/>

9 Infrastructure and Servicing

The facilitation of development relies on the appropriate provisions and staging of critical infrastructure. An Earthworks and Infrastructure Servicing Strategy (Engineering Strategy) and an Earthworks and Servicing Strategy – Supplementary Report (Supplementary Report) has been prepared for the Structure Plan area, refer **Appendix L and L1**. A summary of requirements and assumptions is provided below and depicted within *Figure 26 Infrastructure and Servicing Plan*.

9.1 Earthworks

Investigations for the Structure Plan area include an earthworks and levels strategy based on logical servicing and implementation considerations. Developing the strategy included consultation with landowners in the Structure Plan area. The Engineering Strategy includes final design levels and a summary of assumptions and methodology. The servicing strategies outlined within the Engineering Strategy assume the final levels follow the earthworks plans. It should however, be noted that where high grade limestone is identified, levels are required to maximize potential for extraction while allowing logical development and servicing to occur.

Landowners or developers must comply with the final levels as shown on the Levels Plan (refer *Figure 15 Development Area 3 Levels Plan*) to allow for industrial development and logical servicing over the undulating existing surface of the Structure Plan area. Any variation of the design levels would require assessment to ensure impacts on any other landowners are addressed adequately.

9.2 Roads

Existing roads within the Structure Plan area are built to a rural un-kerbed standard except for the recently upgraded Sayer Road. Despite retaining existing road alignments where possible, all roads will require reconstruction, widening or upgrading to bring them up to industrial standards.

GHD undertook a previous design of the NSDDR based on conservative assumptions. Updated traffic information (refer Transport Assessment, **Appendix H**) suggests reduced road standards, including that of the NSDDR, are appropriate. Subsequently, levels and cross sections by GHD for the NSDDR have been reviewed by Wood and Grieve in light of revised levels and traffic modelling. The details of the design for the NSDDR are contained in Appendix 3 of the Engineering Strategy.

The cross section included in the Engineering Strategy reflects the reduced requirements. The construction of the dual lane NSDDR is unlikely to occur until completion of either Rowley Road and/or the FRCAH. Until this has occurred, the NSDDR shall comprise a single carriageway.

9.3 Drainage

The servicing strategies assume the requirement for individual lots to contain all stormwater up to the 20 year ARI rainfall event on the Structure Plan area.

Proposed street drainage for the Structure Plan area is via a major minor approach, the minor event being the 5 year ARI and major events being greater than 5 year ARI. Pit and pipe and/or swale conveyance systems will accommodate minor event stormwater runoff from road reserves in

accordance with City of Kwinana standards. Major event flows will overtop the drainage networks for conveyance as overland flow within road reserves.

All stormwater flows are to be directed to the basins and swales, located in areas identified as part of the earthworks and levels strategy.

The Structure Plan Area south provides basins and swales adjacent to Long Swamp and Hendy Road Swamp will retain the 5 year ARI event with overflow to the wetland system for greater events. Basins and swales without direct outlets to wetlands but with extreme event (>100 year ARI) flood paths to regional wetlands are to be designed to retain and infiltrate 100 year ARI flows, including flows from lots after the 20 year ARI storage is exceeded. Fully trapped basins and swales are to be designed to the 100 year ARI including excess runoff from lots, with appropriate contingency in place to prevent or minimise flooding to lots in major (>100year ARI) flood events.

The Structure Plan area North provides for the management of stormwater via pits and pipes for the 5 year ARI event with overland flows for the extreme events (>100 year ARI) running to identified catchment basins. Basins are located within industrial lots for the 1 in 20 year ARI with the drainage basin located in Catchment 1 for extreme events. This basin is located within the Western Power easement and will be configured to account for existing powerline infrastructure and ensure there is no permanent waterbody residing in the basin.

Stormwater modelling and calculations including basin sizes and volumes has been undertaken. The LWMS, located in **Appendix J**, includes the results of the stormwater modelling. The Engineering Strategy details basin locations and indicative sizes. At the time of development it would be possible to amend drainage locations or employ temporary drainage basins at extents of development to suit staging of development. However, these changes may require updating the LWMS. Further, additional drainage has been provided for the Western Power zone substation, however should this basin be surplus to drainage requirements, this land could form part of Long Swamp KNA.

9.4 Water

The nearest water service to the Structure Plan area is the recently installed reticulation mains within the Flinders Precinct industrial development. The Water Corporation has advised these mains will provide initial servicing for the Structure Plan area. However, once the full development of the Flinders Precinct occurs and the mains reach capacity, upgrades may be necessary prior to further development. These upgrades include construction of the McLaren Avenue Water Distribution Main.

It is proposed that ultimate servicing of the Structure Plan area will be via the delivery of headworks mains under the Water Corporation's Capital Works Program (CWP), specifically the DN600 extension through the Flinders Precinct from Lee Road to Abercrombie Road, the DN1400 (or equivalent service) along the NSDDR running north, and continuing through the north east portion of the Structure Plan area in accordance with the appended Water Concept (19325-PER-C-ISS/WC, Appendix 2 of the Engineering Strategy). The Water Concept indicates the timing by which the mains would be required to be delivered based on the staging assumptions of the development in three relatively independent cells. These larger mains would adequately feed reticulation mains to be constructed as the three cells are developed.

Timing of the mains will depend on the location and timing of the development front and would be confirmed at subdivision stage to align the CWP. Current Water Corporation advice indicates that any CWP amendments (if required) are triggered and assessed with the submission of a Structure Plan for approval.

9.5 Sewer

There is no existing sewer infrastructure within the Structure Plan area. The nearest sewer service to the Structure Plan area is the reticulation network within the Flinders Precinct, however there is not yet any conveyance infrastructure installed to carry sewer to suitable treatment locations.

The Engineering Strategy details the WWPS's required to service the Structure Plan area and adjacent Development Areas. A proposed pump station site is located on the north – western side of Long Swamp referred to as WWPS X.

Negotiations have recently been finalised with regards to the ultimate discharge location and Type for the transfer WWPS X. WWPS X is situated within the ultimate catchment area of the future East Rockingham Waste Water Treatment Plant (ERWWTP), which will be constructed approximately 8km south of the Structure Plan area. The pump station is planned to be a Type 180 pump station with a 600 diameter inflow gravity sewer which takes both local catchment flows as well as pumped flows from other nearby sewer catchments and their pump stations.

Six hours emergency storage would be provided for the gravity sewer flows in to the pump station and overflows in extreme events would be directed to an adjacent major drainage swale which will prevent any direct discharge to Long Swamp.

Previous arrangements negotiated for the Flinders Precinct included a temporary transfer WWPS and pressure main to discharge to Woodman Point WWTP located 8km to the north, however as the ERWWTP has now progressed with greater certainty this option will no longer proceed. The revised strategy for ultimate discharge of WWPS X is the Kwinana Waste Water Treatment Plant, located approximately 3.5km south - east of the Structure Plan area. This is the preferred option due to its proximity to the Structure Plan area and greater certainty than the ERWWTP option. It is also preferred due to the intermediate pumping infrastructure required for the ERWWTP option that is not currently programmed for construction.

As well as WWPS X located north - west of Long Swamp, there is an expected requirement for a further 2 WWPS's (WWPS W and WWPS Z) of various sizes to service isolated gravity catchments that do not gravitate directly to WWPS X, and therefore require pumping. The and the Supplementary Report include further details regarding this infrastructure.

9.6 Power

Western Power has advised there is insufficient capacity in the existing High Voltage (HV) network currently servicing the Flinders Precinct to serve the entire Structure Plan area. However, the Flinders Precinct network may have capacity to provide power service to the initial stages of development, assuming this occurs in the southern or central portion of the Structure Plan area.

Once capacity is reached, Western Power will require a site for construction of a zone substation to feed the local HV networks from 132kV transmission lines in the area. The Structure Plan identifies a suitable site adjacent to the western boundary of Long Swamp. HV feeders from the proposed zone substation to service lots, as outlined in the Engineering Strategy, are assumed to be funded by the individual developers requiring the connection rather than through the DCP.

9.7 Communications

There are existing Telstra and other communications provider assets within the Structure Plan area. Major fibre optic cables run through the Structure Plan area adjacent to the gas alignment in the north of the Structure Plan area and along the western boundary of the Flinders Precinct. Stage 2 of the Flinders Precinct is to be serviced by National Broadband Network (NBN) Co-fibre Communications Network, with pit and pipe infrastructure already installed. Due to the uncertain future of the NBN Fibre Footprint the Structure Plan does not include the design or approval of NBN infrastructure.

9.8 Gas

The nearest gas reticulation assets to the Structure Plan area are located in the Flinders Precinct. These assets provide gas services to existing lots within the subdivision via an extension of distribution assets from high pressure mains further west in Rockingham Road.

High and medium pressure mains also exist to the north-west of the Structure Plan area, in Development Area 2 and further north along Russell Road. No existing lots within the Structure Plan area are currently serviced with reticulated gas. Atco Gas Australia has advised that gas to the Structure Plan area could be supplied via a 160mm medium pressure extension of the Flinders reticulation network.

Depending on the uptake of gas in the development, Atco will review funding arrangements for any headworks extensions to the estate. Such funding arrangements will be subject to negotiation between developers and Atco at the time of subdivision. Atco has previously funded gas extensions to the Flinders Precinct based on customer demand within the Estate.

9.9 Staging

For staging, the Structure Plan area has been nominally split into logical 'Service Catchments' or development cells denoted as:

- **Development Area 3 North:** east of the NSDDR and south of Rowley Road;
- **Development Area 3 Central:** north of Long Swamp, west of NSDDR; and
- **Development Area 3 South:** south of Long Swamp and Hope Valley Road.

Several assumptions are made in developing the servicing strategies. Servicing strategies have assumed that the development front will move west to east over the next 3 to 5 years. It is assumed that:

- Development will commence in Development Area 3 Central, adjacent to the existing Flinders Precinct, where existing services and access are located;

- Will move into Development Area 3 South, with access from existing Abercrombie Road. Earthworks and servicing for Development Area 3 South is relatively independent from the other development cells. Development Area 3 South can develop concurrently with or prior to proposed Development Area 3 Central; and
- Will move lastly into Development Area 3 North as significant earthworks and resource extraction is required over the next 5 to 10 years. Isolated lots within Development Area 3 North may develop subject to negotiations for temporary servicing and access with Local Government and service authorities.

These staging assumptions are based where possible, around landowner development intentions determined through consultation. It is for guidance purposes only. The Engineering Strategy discusses a scenario for non-frontal development, if the staging strategy is not followed. Non-frontal development, particularly in Development Area 3 North, is likely to lead to temporary infrastructure requirements, the costs of which will be borne by the landowner or developer without reimbursement via the DCP.

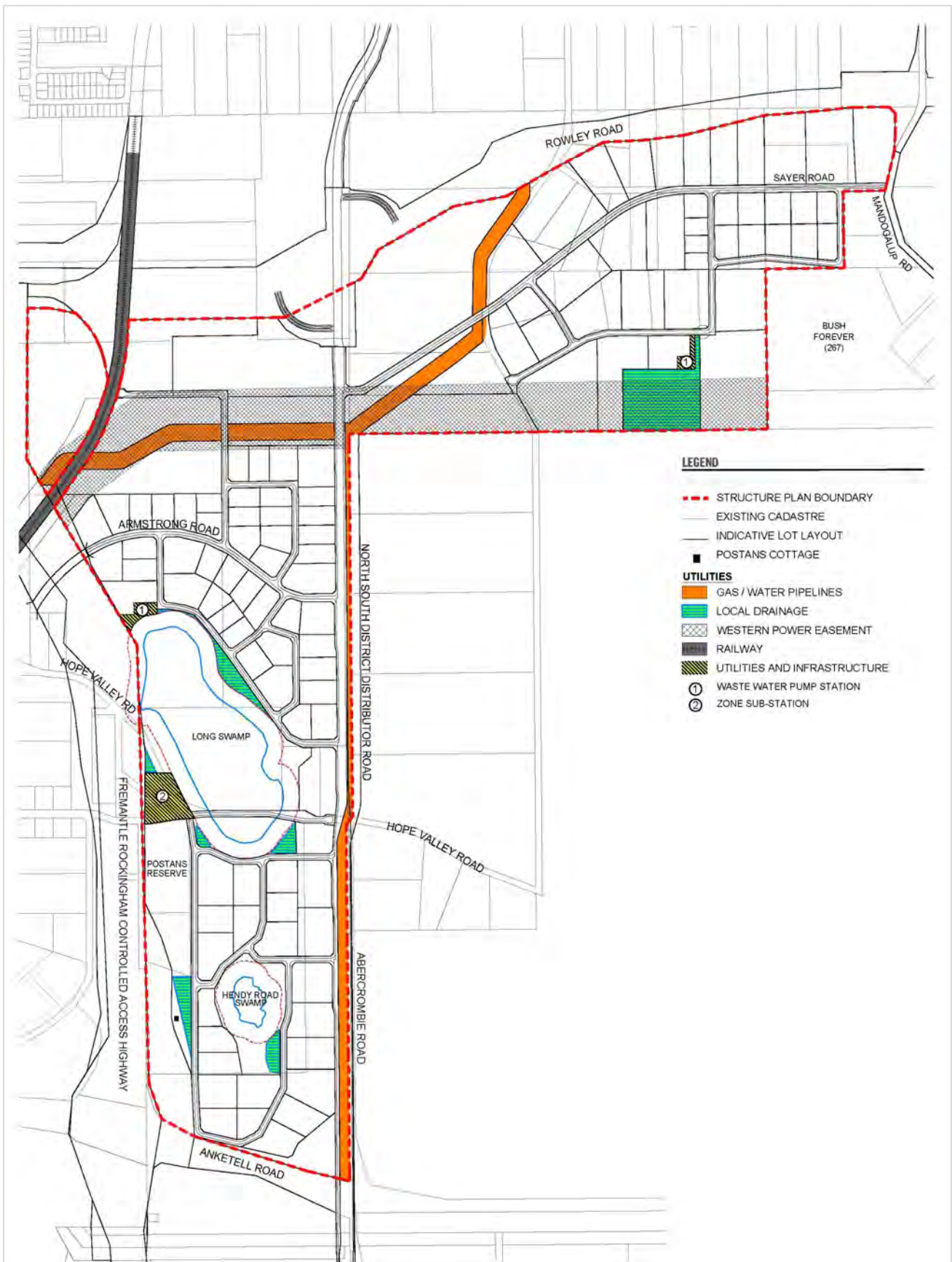


Figure 26 Infrastructure and Servicing Plan

10 Landscape Master Plan

A Landscape Master Plan has been prepared for the Structure Plan area (refer to the Landscape Design Report, **Appendix K**), setting out landscape requirements for a number of key locations.

Given the majority of the Structure Plan area will be substantially altered as a result of resource extraction, other earthworks, and the nature of development intended, there will be little opportunity for retention of vegetation within road reserves and private lots. The focus therefore, is on retention and enhancement of vegetation within conservation areas and replanting of road reserves.

Within Long Swamp and Hendy Road Swamp East, retained vegetation and the provision of ecological linkages, where possible, will protect and enhance habitat. Landscape treatments within these areas will focus on:

- Planting of local and non-invasive species which are hardy, low fuel and which tolerate harsh, dry conditions;
- Minimisation of maintenance, and use of sustainable and durable materials;
- Use of recycled and locally sourced materials, including for European and indigenous interpretation purposes;
- Protection of conservation areas with fencing and controlled access; and
- Identification of amenity opportunities such as walking tracks, seating and interpretive and educational opportunities, having regard to CPTED (Crime Prevention through Environmental Design) principles.

The Landscape Master Plan sets out guidelines for streetscape planting along road corridors within the Structure Plan area which are identified as follows:

- NSDDR;
- LDRs; and
- Local Roads.

Planting along road corridors is designed to increase biodiversity and provide avian ecological links through the Structure Plan area; design for sight lines and other driver and pedestrian safety considerations; and planting of hardy and low water use species, with particular species identified for each corridor to reinforce character and create streetscape unity.

11 Implementation

11.1 Roles and Responsibilities

The implementation of the Structure Plan requires inputs from all key stakeholders to ensure that development is activated in accordance with the provisions of the Structure Plan. *Table 12* outlines the roles and responsibilities of the Commission, DevelopmentWA, City of Kwinana and landowners in progressing development within the Structure Plan area.

Table 12 Roles and Responsibilities

	COMMISSION	DEVELOPMENTWA	CITY OF KWINANA	LANDOWNER
Structure Plan including all technical appendices	Approve or refuse Structure Plan.	<ul style="list-style-type: none"> – Prepare Structure Plan. – Advertise Structure Plan. – Forward Structure Plan to the Commission for Approval. 	Consulted authority as part of public comment (advertising).	<ul style="list-style-type: none"> – Provision of comments during advertising. – Preparation of applications in accordance with the Structure Plan.
Design Guidelines	Referral authority if Design Guidelines initiated by DevelopmentWA.	<ul style="list-style-type: none"> – Prepare Design Guidelines. – Adopt Design Guidelines. 	Provision of comments during advertising.	<ul style="list-style-type: none"> – Provision of comments during advertising. – Undertakes to design the proposed development in accordance with the design guidelines.
Subdivision	Determining authority for subdivision applications.	Referral agency for subdivision applications.	Referral authority for subdivision applications.	Prepares subdivision applications in accordance with the Structure Plan and submits to the Commission.
Development Approval	Determining authority for development applications (currently delegated to City of Kwinana in line with Delegation Schedule).	Referral agency for development applications.	Determining authority (as delegated) for development applications unless referred by the City to the Commission in line with Delegation Schedule.	Undertakes to prepare a development application in accordance with the Master Plan, the Structure Plan and Design Guidelines.
Amendment No.9 and Amendment No.10	<ul style="list-style-type: none"> – Grant Consent to Advertise. – Assessing Authority for recommendation to the Minister on Master Plan Amendment. 	<ul style="list-style-type: none"> – Prepare and advertise. – Consider comments following the public comment (advertising) period. 	<ul style="list-style-type: none"> – Consulted authority prior to amendment being forwarded to the Commission for consent to advertise. – Referral authority during advertising. 	Provision of comments during advertising.
Road Realignments	Responsible Authority	Prepare application for realignment or land exchange where impact on	Referral authority for review and comment.	Provision of comments during advertising.

		DevelopmentWA landholding.		
Interpretation Strategy	Consulted authority during preparation of the Interpretation Plan.	<ul style="list-style-type: none"> - Prepare Interpretation Plan. - Implement interpretation strategy via the interpretation plan where nodes are located on DevelopmentWA or Crown land. 	Consulted authority during preparation of the Interpretation Plan.	Implement interpretation strategy via the interpretation plan where nodes are located on privately owned land.

11.2 Staging

The staging of subdivision and/or development within the Structure Plan area will be determined primarily by the individual landowners and their desire and capacity to undertake the next stage of works.

As noted within Section 9 Infrastructure and Servicing, for the purposes of staging, the Structure Plan area has been nominally split into logical development cells denoted as:

- **Development Area 3 North:** east of the NSDDR and south of Rowley Road;
- **Development Area 3 Central:** north of Long Swamp, west of NSDDR; and
- **Development Area 3 South:** south of Long Swamp and Hope Valley Road.

The Engineering Strategy is based on the assumption that proposed Development Area 3 Central will be the first area developed due to the existing links to infrastructure within the Flinders Precinct.

It is highlighted that the sufficient access and an ability to undertake temporary development may result in the staging occurring in a different manner. The Structure Plan has inherent flexibility to enable alternative staging proposals.

11.3 Road Alignment

There are a number of existing roads that traverse the Structure Plan area that will require realignment to facilitate the construction of the proposed road network. These include Postans Road, Sayer Road, and Ashley Road.

Procedures will be undertaken in accordance with the requirements of the Commission and the Department of Planning Lands and Heritage to facilitate the realignments at an appropriate time in the future to accord with the timing of the proposed development. A summary of the process is set out in *Table 13* below.

Table 13 Road Realignment Process

	RESPONSIBILITY	AGENCY	REQUIREMENTS
Road Realignment Request	DevelopmentWA	Department of Planning Lands and Heritage	Letter requesting realignment of roads inclusive of: <ul style="list-style-type: none"> – Plans of proposed road realignment; – Description of existing and proposed land tenure; – Evidence of consultation with landowners; and – Evidence of consultation with utility service providers and agreement on proposed realignment.
Amalgamation Applications	DevelopmentWA	Commission	<ul style="list-style-type: none"> – Form 1A and associated application fee; – Plan of Subdivision (amalgamation); – Letter outlining proposed amalgamations; and – Evidence of undertaking road realignment process with Department of Planning Lands and Heritage.

Prior to commencing the process, discussions should be held with the Department of Planning Lands and Heritage and the Commission to ensure the currency of the process identified in Table 13 above.

11.4 Development Contribution Arrangements

All landowners within the Structure Plan area are liable to contribute to various enabling infrastructure items including:

- Local items for the Structure Plan area; and
- Items of a district nature for the whole of Latitude 32.

Proposed Amendment No.10 includes the DCP for the Structure Plan area. A draft of the DCP items is included as **Appendix I** and is subject to change based on the finalisation of Amendment No.10.

The cost items are included in Schedule 12 and Appendix 3 of the Master Plan. In accordance with the Master Plan, the cost apportionment schedule shall be distributed to all owners within the Development Contribution Area within 90 days of gazettal of the DCP. At this point, all land area and infrastructure items will be accounted for in order that an accurate cost apportionment schedule can be formulated.

11.5 Additional Requirements

Prior to the subdivision or development within the Structure Plan area the tasks and documents, as outlined within *Table 14* are required to be completed (where applicable):

Table 14 Additional Requirements Prior to Subdivision and/or Development

TASK/DOCUMENT	APPLICABILITY	STATUS	RESPONSIBILITY
Design Guidelines	All lots.	Approved.	DevelopmentWA on behalf of landowners
Fire Management Plan Review	Lots located within bushfire prone areas.	Bushfire Attack Levels to be reviewed prior to development in the context of vegetation condition and proposed built form and fire attenuation measure.	Landowners / developers
Groundwater monitoring programme	DoW requirement.	Ongoing	DevelopmentWA on behalf of landowners
Wetland Management Plan	Long Swamp and Hendy Road East Swamp.	To be prepared	DevelopmentWA on behalf of landowners
Heritage Interpretation Plan	A requirement of the Heritage Interpretation Strategy.	Ongoing	DevelopmentWA on behalf of landowners
Biodiversity Strategy Review	Review every 5 years in accordance with the Ministerial Conditions.	Review completed 2015	DevelopmentWA on behalf of landowners
Ethnographic Study	All lots.	Ongoing.	DevelopmentWA on behalf of landowners
Significant Impact Assessment and Commonwealth Referral	Those lots identified with significant vegetation.	To be prepared.	Landowners / developers
Bushland Management Plan	Public open space / Those lots identified with significant vegetation.	To be prepared.	Landowners / developers
Notifications on Title	Lots within Western Power easement.	To be prepared at the time of subdivision.	Landowners / developers

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Appendix A: Part One Structure Plan

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Appendix B: Environmental Assessment Report

The logo features the text 'latitude32' in a bold, lowercase sans-serif font, with 'INDUSTRY ZONE' in a smaller, uppercase sans-serif font directly below it. The background consists of a large red triangle on the left and a white triangle on the right, meeting at a diagonal line.

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Appendix B1: Supplementary Environmental
Advice - Amendment 1

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Appendix C: Bushfire Management Plan

The logo for Latitude 32 Industry Zone. It features the word "latitude" in a lowercase, sans-serif font, followed by "32" in a larger, bold, sans-serif font. Below this, the words "INDUSTRY ZONE" are written in a smaller, uppercase, sans-serif font, with wide letter spacing.

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Appendix D: Heritage Strategy

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Appendix E: Aboriginal Archaeological Survey



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Appendix F: Heritage Interpretation Strategy



Appendix G: Pipeline Quantitative Risk
Assessment

The logo for Latitude 32 Industry Zone features the word "latitude" in a lowercase, bold, sans-serif font, followed by "32" in a larger, bold, sans-serif font. Below this, the words "INDUSTRY ZONE" are written in a smaller, uppercase, sans-serif font with wide letter spacing. The logo is centered in the white triangular area of the cover.

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Appendix H: Transport Assessment

The logo for Latitude 32 Industry Zone features the word "latitude" in a lowercase, sans-serif font, followed by "32" in a larger, bold, sans-serif font. Below this, the words "INDUSTRY ZONE" are written in a smaller, uppercase, sans-serif font. The background is a white triangle pointing upwards, set against a red background that is split diagonally from the top-left to the bottom-right.

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Appendix H1: Traffic and Transport Letter

The logo features the word "latitude" in a bold, lowercase sans-serif font, followed by "32" in a larger, bold, uppercase sans-serif font. Below this, the words "INDUSTRY ZONE" are written in a smaller, all-caps, spaced-out sans-serif font. The background is a white triangle pointing upwards, set against a red background that is split diagonally from the top-left to the bottom-right.

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Appendix I: Draft DCP Items



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Appendix J: Local Water Management Strategy

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Appendix J1: LWMS Addendum



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Appendix K: Landscape Design Report

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Appendix L: Earthworks and Infrastructure
Servicing Strategy

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Appendix L1: Earthworks and Servicing Strategy
Supplementary Report