

An aerial photograph of a residential and agricultural area, overlaid with a semi-transparent blue filter. The image shows a mix of green fields, dense trees, and residential developments with houses and streets. A road with multiple lanes runs diagonally across the left side. In the lower right, there is a circular pond or water feature surrounded by trees.

THE SOUTH-WEST PIARA WATERS STRUCTURE PLAN

PART ONE | IMPLEMENTATION REPORT

July 2023

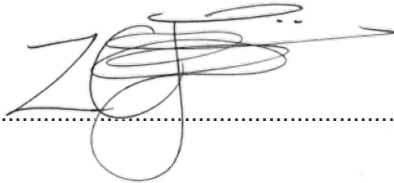
CLE Town Planning + Design

ENDORSEMENT PAGE

IT IS CERTIFIED THAT THE SOUTH-WEST PIARA WATERS STRUCTURE PLAN WAS APPROVED BY RESOLUTION OF THE WESTERN AUSTRALIAN PLANNING COMMISSION ON:


02 November 2023

Signed for and on behalf of the Western Australian Planning Commission:



.....

an officer of the Commission duly authorised by the Commission pursuant to section 24 of the Planning and Development Act 2005 for that purpose, in the presence of:

Witness:.....

Date: 06 November 2023

Date of Expiry: 06 November 2033

Title: The South-West Piara Waters Structure Plan
Part One - Implementation Section

Prepared for: Stockland Development Pty Ltd

CLE Reference: 3278Rep28D

Date: 13 July 2023

Status: For Submission (City of Armadale)

Review date: 13 July 2023

Prepared by: CLE Town Planning + Design

Project team: Town Planning + Design - CLE Town Planning + Design
Environmental - Strategen-JBS&G
Hydrology - JDA Consulting Hydrologists
Engineering - Cossill & Webley Consulting Engineers
Traffic - Transcore
Bushfire - Strategen-JBS&G
Acoustics - Lloyd George Acoustics

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EXECUTIVE SUMMARY

The South-West Piara Waters Structure Plan ('the Structure Plan') comprises approximately 48.9ha of land, being generally bound by Armadale Road, Warton Road, Interdominion View and Lot 9009 Warton Road, Piara Waters.

The Structure Plan area is zoned 'Urban' under the Metropolitan Region Scheme (MRS) with Amendment 118 currently underway to zone the land 'Urban Development' in the City of Armadale Town Planning Scheme No. 4 (TPS4). Consistent with Amendment 118 to TPS4, this Structure Plan is lodged in accordance with TPS4 provisions which requires a structure plan prior to development or subdivision for land zoned 'Urban Development'.

The Structure Plan realises the strategic planning for the area with Perth and Peel@3.5million and the South Metropolitan Peel Sub-regional Framework identifying the land as suitable for future residential development. The Structure Plan continues on with the logical expansion of the Piara Water community, with this residential neighbourhood continuing to respond to the surrounding land use context.

Through the inclusion of a permeable and legible local road network, the Structure Plan establishes an interconnected interface for both existing and future development of the surrounding land, as well as connecting into the higher order movement network, and with densities of R25 to R60, the Structure Plan is capable of delivering a residential target of 31.1 dwellings per residential site hectare, achieving State Government density targets.

The Structure Plan provides for a network of public open space area which will provide residents with a combination of passive and active space, whilst also serving a local drainage purpose. These public open spaces areas have also been designed to retain a number of mature trees already onsite as well as the retention and rehabilitation of a wetland, of which the core (of the wetland) has been defined by way of a comprehensive wetland assessment. The retention and rehabilitation of this identified wetland will improve the ecological values of the site. In conjunction with quality public open space areas, a street tree planting regime will deliver a high standard of landscaping and tree canopy coverage within the streetscape, further enhancing this residential estate.

All essential service infrastructure is located within proximity and is easily extended to the Structure Plan area.

The Structure Plan is supported by a number of technical reports which are provided as appendices and summarised in Part 2:

- Environmental Assessment Report.
- Bushfire Management Plan.
- Noise Assessment.
- Landscape Masterplan.
- Transport Impact Assessment.
- Local Water Management Strategy.
- Engineering Servicing Report.

These reports comprehensively address all of the relevant planning considerations, and demonstrate that the land is suitable for urban development in the form proposed.

Table 1 provides a land use summary of the Structure Plan.

Table 1: Land Use Summary

ITEM	DATA	SECTION NUMBER REFERENCE WITHIN PART TWO OF THE STRUCTURE
Total area covered by the structure plan	48.9 hectares	Section 1.2.2
Area of each land use proposed Zones (as per the Scheme)		
- Residential	23.9 hectares	Section 3.1
• Reserves (as per the Scheme and MRS)		
- Road Reserves	11.8 hectares	
- Parks and Recreation	12 hectares	
- Public Purposes (Water Authority of WA)	0.13 hectares	
Total estimated lots yield	755 - 765 lots	
Estimated number of dwellings	755 - 765 dwellings	
Estimated residential site density		
- <i>Dwellings per residential site hectare as per Liveable Neighbourhoods</i>	31.1 dwellings per residential site hectare	Section 3.2.1
Estimated population	2128 people @ 2.8 people per household	
Number of Primary Schools	None	Section 3.8
Number of Secondary Schools	None	
• Amount of Public Open Space	4.71 hectares (total) 2.23 hectares (unrestricted) 2.48 hectares (restricted)	Section 3.3

1.0 STRUCTURE PLAN AREA

This Structure Plan shall apply to the land contained within the inner edge of the line denoting the structure plan boundary on the Structure Plan Map.

The Structure Plan is identified as the South-West Piara Waters Structure Plan.

2.0 STRUCTURE PLAN CONTENT

This Structure Plan comprises:

- Part One – Implementation Section
- Part Two – Explanatory Report
- Appendices – Technical Reports

Part One of the Structure Plan comprises the structure plan map and planning provisions. Part Two of the Structure Plan is the planning report component which can be used to interpret and implement the requirements of Part One.

3.0 OPERATION

The South-West Piara Waters Structure Plan comes into effect on the date that it is endorsed by the Western Australian Planning Commission.

4.0 INTERPRETATION AND RELATIONSHIP WITH STATUTORY PLANNING FRAMEWORK

The South-West Piara Waters Structure Plan constitutes a Structure Plan pursuant to Part 4E of the City of Armadale Town Planning Scheme 4 and the *Planning and Development (Local Planning Schemes) Regulations 2015 Schedule 2 - Deemed provisions for local planning schemes*. The Structure Plan Map outlines future land use, zones and reserves applicable within the structure plan area.

Pursuant to the *Planning and Development (Local Planning Schemes) Regulations 2015 Schedule 2 - Deemed provisions for local planning schemes*, a decision maker of an application for development approval or subdivision approval is to have due regard to the provisions of this Structure Plan, including the Structure Plan Map, Implementation Report, Explanatory Report and Technical Appendices.

5.0 STAGING

Development staging will follow an orderly sequence and shall not exceed the extension of essential service infrastructure or constructed road access.

6.0 LAND USE

6.1 Land Use and Zones

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

Land use permissibility within the Structure Plan area shall be in accordance with the corresponding zone or reserve under City of Armadale Town Planning Scheme No. 4 and subject to 'Special Control Area – Public Drinking Water Protection – Priority P3*' as shown on the scheme map and in accordance with Section 5.3 of the Scheme.

6.2 Residential

6.2.1 Dwelling Target

Subdivision and development within the structure plan is to achieve a dwelling target of 22 dwellings per site hectare.

6.2.2 Density

- a. The Structure Plan map defines the broad residential density ranges that apply to specific areas within the Structure Plan. Lot specific residential densities, within the defined residential ranges, are to be subsequently assigned in accordance within a Density Plan approved by the WAPC at subdivision stage.
- b. A Density Plan is to be submitted at the time of subdivision to the WAPC and shall be consistent with the Structure Plan, and the Residential Density Ranges identified on Plan A and locational criteria contained in Clause 6.2.3.
- c. The Density Plan is to include a summary of the proposed dwelling yield of the subdivision.
- d. Approval of the Density Plan shall be undertaken at the time of determination of the subdivision application by the WAPC. The approved Residential Density Code Plan shall then form part of the Structure Plan and shall be used for the determination of future development applications.
- e. Variations to the Density Plan will require further approval of the WAPC, with a revised Density Plan submitted generally consistent with the approved plan of subdivision issued by the WAPC. The revised Density Plan shall be consistent with Residential Density ranges identified on the Structure Plan map and the locational criteria contained in Clause 6.2.3.
- f. A revised Density Plan, consistent with Clause 6.2.2 (e) will replace, wholly or partially, the previously approved Density Plan, and shall then form part of the Structure Plan as outlined in Clause 6.2.2 (d).
- g. Density Plans are not required if the WAPC considers that the subdivision is for one or more of the following:
 - (i) The amalgamation of lots;
 - (ii) Consolidation of land for 'superlot' purposes to facilitate land assembly for future development;
 - (iii) The purposes of facilitating the provision of access, services or infrastructure; or
 - (iv) Land which by virtue of its zoning or reservation under the Structure Plan cannot be developed for residential purposes.

6.2.3 Locational Criteria

The allocation of residential densities shall be in accordance with the following locational criteria:

- a. The R30 density code shall apply as the base code to all 'Residential' zoned lots, with the exception of those lots coded R25, R40 and R60 as set out in (b) and (c) below.
- b. The R25 density code shall apply to any single residential lot that measures between 350m² and 700m².
- c. The R40 density code may apply to all 'Residential' zoned lots where one or more of the following applies:
 - (i) The lot is located within a 400m walkable catchment of an area of public open space;
 - (ii) The lot is located within a 400m walkable catchment of a planned Local Centre; and
 - (iii) The lot is located within a 400m walkable catchment of a planned Primary or High School.

6.3 Public Open Space

The provision of public open space being provided generally in accordance with the Structure Plan Map.

7.0 SUBDIVISION AND DEVELOPMENT

7.1 Local Development Plans

The preparation of a Local Development Plan will be required by the Western Australian Planning Commission (WAPC), on the advice of the City of Armadale, as a condition of subdivision approval where deemed necessary for land comprising, but not limited to:

- (i) Lots abutting areas of Public Open Space.
- (ii) Lots subject to 'Quiet House Design' requirements as identified in the Noise Assessment.

7.2 Notifications on Title

In respect of applications for the subdivision of land the Council shall recommend to the Western Australian Planning Commission that a condition be imposed as part of a subdivision approval for a notification to be placed on the Certificate(s) of Title(s) to advise of the following: -

- (i) Land or lots deemed to be affected by road traffic noise as identified in the Noise Assessment contained within Appendix 3.
- (ii) Land or lots deemed situated within 300m of the Cockburn Fremantle Pistol Club as identified in the Noise Assessment, contained within Appendix 3.

7.3 Bushfire Management

This Structure Plan is supported by a Bushfire Management Plan (Appendix 2), which has been prepared to address requirements under Policy Measure 6.3 of State Planning Policy 3.7 Planning in Bushfire Prone Areas in accordance with Guidelines for Planning in Bushfire Prone Areas due to the designated bushfire prone status of the site.

The Bushfire Management Plan (BMP) assesses pre-development Bushfire Hazard Levels (BHLs), which when measured against proposed Structure Plan design, indicate a significant reduction in on-site BHL, with all proposed areas of habitable development capable of achieving a Low to Moderate BHL as per policy and guideline requirements. The BMP also provides an indicative BAL contour assessment based on post-development conditions and demonstrates that all proposed habitable development can achieve a rating of BAL-29 or lower, further reiterating bushfire compliance capability for the proposed Structure Plan. This will be confirmed through more detailed BAL contour mapping as part of a subdivision stage BMP as per policy requirements.

Compliant vehicular access and multiple access routes are readily available for the site through connections with Warton Road to the west and Interdominion View to the east, with potential future connections provided to the north to link with future development by others. Temporary compliant no-through roads and Emergency Access Ways will need to be adopted as required to ensure each development stage is provided at least two different and compliant access routes during rollout of individual stages, particularly the early stages of development. This will be confirmed through a more detailed analysis as part of a subdivision stage BMP. Reticulated water supply is also available for the site, with a network of street hydrants to be provided in accordance with Water Corporation design standards.

A more detailed BMP will be prepared at the time of subdivision to demonstrate how bushfire compliance will be achieved within the boundary of the subdivision area.

8.0 OTHER REQUIREMENTS

8.1 Conditions of Subdivision Approval

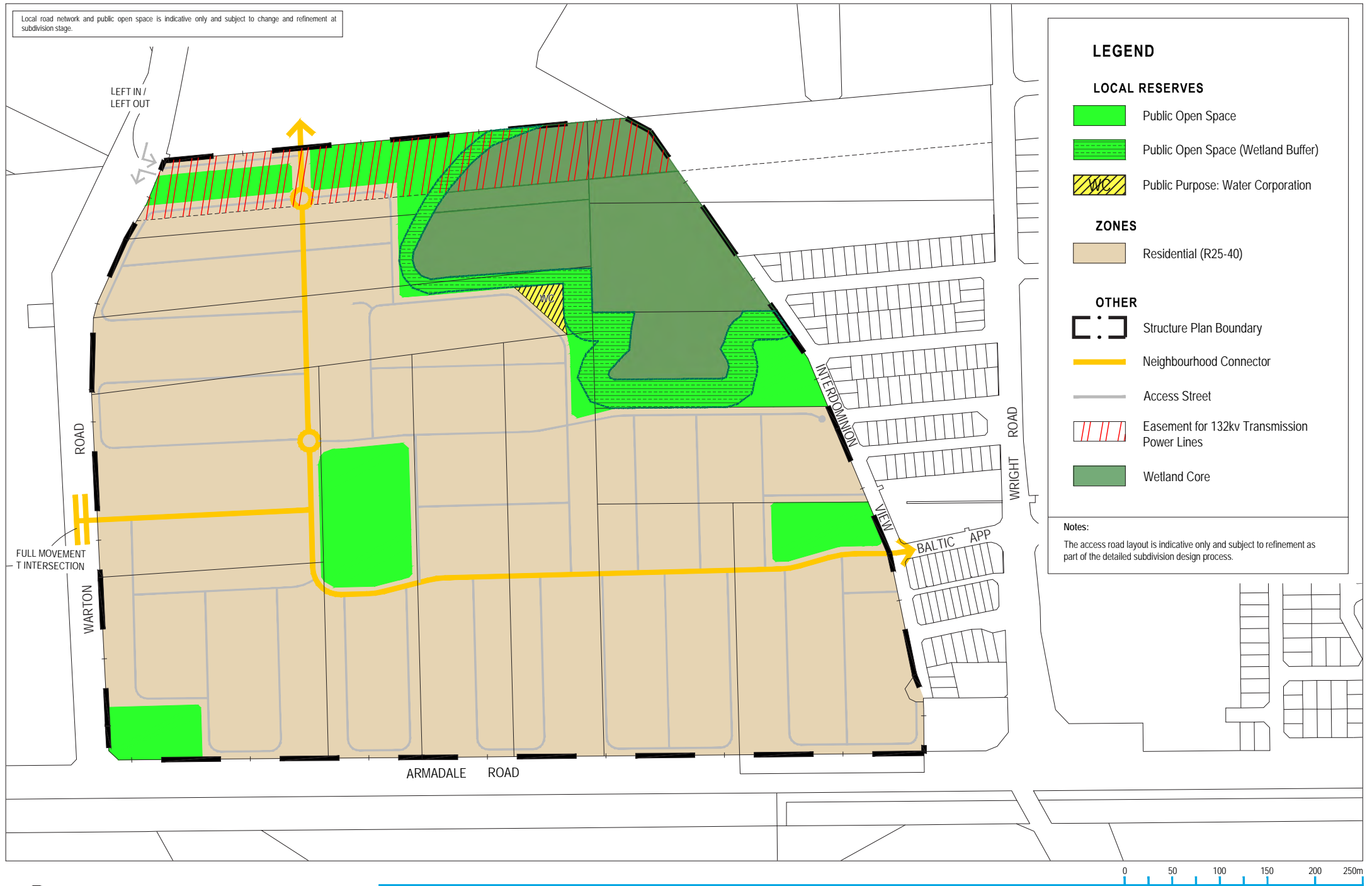
The following technical reports / strategies are to be prepared and submitted as a condition of subdivision approval (where applicable):

Additional Information	Approval Stage	Responsible Agency
Bushfire Management Plan	Subdivision application	City of Armadale
Urban Water Management Plan	Subdivision approval condition	City of Armadale
Fauna Management Plan	Subdivision approval condition	City of Armadale
Wetland and Buffer Management Plan	Subdivision approval condition	City of Armadale
Noise wall design	Subdivision approval condition	City of Armadale
Landscape Masterplan	Subdivision approval condition	City of Armadale
Mosquito Management Plan	Subdivision approval condition	City of Armadale
Acid Sulphate Soils Management Plan	Subdivision approval condition	Department of Water and Environmental Regulation

8.2 Development Contributions

The Local Structure Plan is subject to contribution to the costs of common infrastructure in accordance with a Development Contribution Plan and Cost Apportionment Schedule prepared pursuant to Part 5A and Schedule 9B Development Contribution Plans.

Local road network and public open space is indicative only and subject to change and refinement at subdivision stage.



LEGEND

- LOCAL RESERVES**
- Public Open Space
 - Public Open Space (Wetland Buffer)
 - Public Purpose: Water Corporation
- ZONES**
- Residential (R25-40)
- OTHER**
- Structure Plan Boundary
 - Neighbourhood Connector
 - Access Street
 - Easement for 132kv Transmission Power Lines
 - Wetland Core

Notes:
The access road layout is indicative only and subject to refinement as part of the detailed subdivision design process.





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An aerial photograph of a residential and agricultural area, overlaid with a semi-transparent blue filter. The image shows a mix of green fields, trees, and built-up areas with houses and roads. A road with a median runs diagonally from the bottom left towards the top left. In the bottom right, there is a residential development with many houses and a winding road. A small pond or lake is visible in the lower right quadrant.

THE SOUTH-WEST PIARA WATERS STRUCTURE PLAN

PART TWO | EXPLANATORY REPORT

October 2023

CLE Town Planning + Design

Title: The South-West Piara Waters Structure Plan
Part Two - Explanation Section

Prepared for: Stockland Development Pty Ltd

CLE Reference: 3278Rep29F

Date: 12 October 2023

Status: Final

Review date: 12 October 2023

Prepared by: CLE Town Planning + Design

Project team: Town Planning + Design - CLE Town Planning + Design
Environmental - Strategen-JBS&G
Hydrology - JDA Consulting Hydrologists
Engineering - Cossill & Webley Consulting Engineers
Traffic - Transcore
Bushfire - Strategen-JBS&G
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- Appendix 3 Noise Assessment (Lloyd George Acoustics)
- Appendix 4 Landscape Masterplan (Plan E Landscape Architects)
- Appendix 5 Transport Impact Assessment (Transcore Traffic Engineers)
- Appendix 6 Local Water Management Strategy (JDA Consulting Hydrologist)
- Appendix 7 Engineering Servicing Report (Cossill & Webley Consulting Engineers)

1.0 PLANNING BACKGROUND

1.1 Introduction and Purpose

The South-West Piara Waters Structure Plan ('the Structure Plan') has been prepared on behalf of Stockland Developments Pty Ltd and comprises approximately 48.9ha of land, being generally bound by Armadale Road (south), Warton Road (west), Interdominion View (east) and Lot 9009 Warton Road (north) in Piara Waters.

This Structure Plan is lodged in accordance with the City of Armadale Town Planning Scheme No. 4 which requires a structure plan for land zoned 'Urban Development'.

The purpose of the Structure Plan is to provide a planning framework to guide future subdivision and development of the site. It realises the intent of Perth and Peel@3.5million and the South Metropolitan Peel Sub-regional Framework and represents the next stage of planning following the recent zoning of the site for urban development in the Metropolitan Region Scheme.

The format of the Structure Plan follows that set out in the Western Australian Planning Commission's (WAPC) Structure Plan Framework, comprising three parts:

Part 1: Implementation Section: Contains the Structure Plan map and outlines the requirements that will be applied when assessing subdivision and development applications.

Part 2: Explanatory Section: Discusses the key outcomes and planning implications of the background and technical reports and describes the broad vision and more detailed planning framework being proposed. Part 2 is based on a detailed site specific analysis of opportunities and constraints and the following Technical Reports and strategies:

- Environmental Assessment Report (Strategen-JBS&G).
- Bushfire Management Plan (Strategen-JBS&G).
- Noise Assessment (Lloyd George Acoustics).
- Landscape Masterplan (Plan E Landscape Architects).
- Transport Impact Assessment (Transcore).
- Local Water Management Strategy (JDA Consulting Hydrologist).
- Engineering Servicing Report (Cossill & Webley Consulting Engineers).

Part 3: Technical Appendices: Includes the technical reports and supporting plans and maps as prepared by the technical consultants in support of the proposal.



Figure 1 - Location Plan
Source: Nearmap

1.2 Land Description

The following section provides a brief summary of the location, land use and ownership of the Structure Plan area.

1.2.1 Location

The Structure Plan is located in the City of Armadale, approximately 10km west of the Armadale Strategic Metropolitan Centre and 20km south of the Perth CBD. The Cockburn Central Strategic Metropolitan Centre is located approximately 5km to the west, which includes access to the Cockburn Train Station. (Figure 1: Location Plan).

The Structure Plan area is generally bound by:

- Armadale Road to the south;
- Warton Road to the west,
- Interdominion View to the east; and
- Lot 9009 Warton Road (an underdeveloped property) to the north.

The Structure Plan will see the expansion of the Piara Waters residential community within one of the fastest growing residential regions in Australia. With ready access to the Kwinana Freeway, Tonkin Highway (via Armadale Road) and the Cockburn Train Station, the Structure Plan area has excellent access to regional transport infrastructure.

Area and Land Use

The Structure Plan comprises 14 individual titles and measures 48.9ha in area.

The Structure Plan area is largely undeveloped and historically was cleared and used for agricultural purposes. All structures have been removed from the Structure plan area, with the noted exception of a dwelling and some ancillary structures on Lot 88, an uninhabited dwelling on Lot 9800 and a small shed on Lot 9005, with remnant vegetation generally located to the north-east corner (Figure 2: Site Plan).

A number of the properties within the Structure Plan area have been most recently used as rural lifestyle properties, along with some limited, low-scale agricultural uses. It is these past and current agricultural uses that have had a considerable impact on the natural environment of the site.

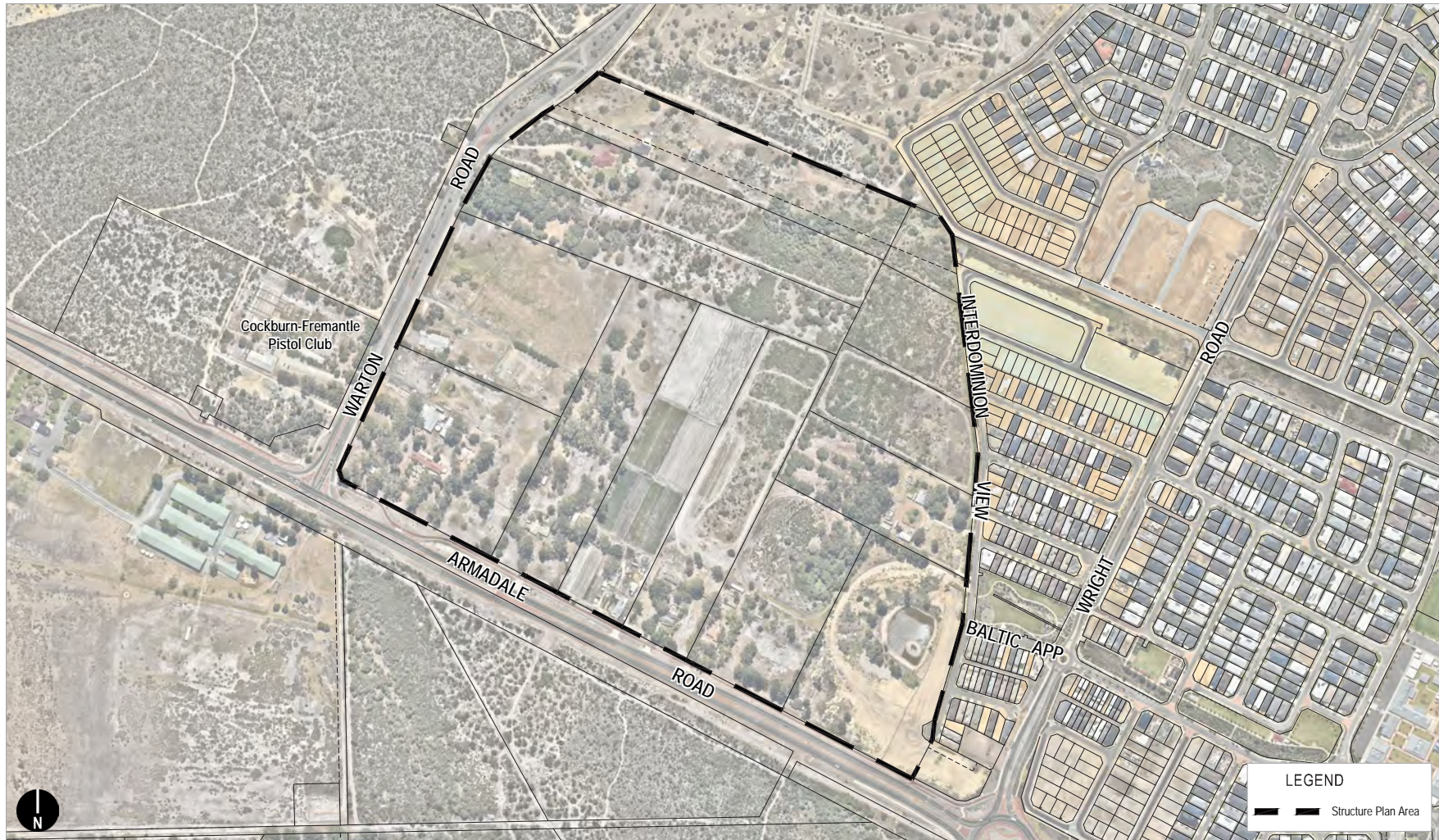


Figure 2 - Site Plan
Source: Nearmap



1.2.2 Ownership and Title Details

The Structure Plan consists of 14 separate titles, with the legal description of this land set out in Table 1.

Table 1: Land Description

Lot No.	Diagram/Plan	Volume - Folio	Folio
13	P008381	1300-500	Stockland Developments Pty Ltd
14	P008381	1997-663	Stockland Developments Pty Ltd
15	P008381	2082-853	Stockland Developments Pty Ltd
88	P065829	2734-200	Tienchai Pty Ltd
99	P064283	2725-394	Stockland Developments Pty Ltd
100	P063060	2722-905	Stockland Developments Pty Ltd
150	P063062	2717-1000	Stockland Developments Pty Ltd
151	P063061	2717-771	Stockland Developments Pty Ltd
603	P409764	2941-362	Stockland Developments Pty Ltd
9001	P407088	2927-354	Stockland Developments Pty Ltd
9005	P407088	2939-977	De Abreu, Antonio De Abreu, Maria Judite
9600	P407089	2939-979	Cricelli, Larry
9700	P419841	4000-214	Isparo Property Pty Ltd
9800	P407088	2927-358	No Tomorrows 1 Pty Ltd

Stockland Developments Pty Ltd has a controlling interest over 9 lots and as the major landowner has prepared the Structure Plan.

1.2.4 Surrounding Land Use and Context

The Structure Plan represents the next phase in the expansion of the West Piara community with the following a brief summary of the local context:

- Lot 9009 to the north consists of one private residence within a largely undeveloped landholding.
- Land to the eastern side of Interdominion View consists of existing residential estates.
- The southern edge of the Structure Plan area abuts Armadale Road, with no direct access proposed. Armadale Road is reserved as 'Primary Regional Roads' in the MRS.
- Land to the south of Armadale Road is made up of larger rural landholdings containing no urban development.
- Kwinana Freeway (reserved 'Primary Regional Roads') is located approximately 5km west of the Structure Plan area, with the Cockburn Central Train Station situated near the intersection of the Kwinana Freeway and Armadale Road. Collectively these provide the Structure Plan excellent accessibility to key regional transport infrastructure.
- Armadale Strategic Metropolitan Centre (10km east) and the Cockburn Central Secondary Centre (5km west) are both accessible from the Structure Plan area along Armadale Road, offering employment opportunities and access to retail, commercial and community services.



1.3 Planning Framework

[1.3.1 Metropolitan Region Scheme Zoning](#)

The Structure Plan area is zoned 'Urban' in the Metropolitan Region Scheme (Figure 3: MRS Zoning).

Armadale Road which runs along the southern boundary is reserved 'Primary Regional Road'.

[1.3.2 City of Armadale Town Planning Scheme No 4.](#)

The Structure Plan area is currently zoned 'General Rural' (Special Control Area – Public Drinking Water Protection – Priority 2) in the City of Armadale Town Planning Scheme No. 4 (TPS4).

On 19th April 2021, the City of Armadale Council initiated Amendment 118 to TPS4 rezoning the land 'Urban Development' on the scheme map, establishing a corresponding Development Area (Structure Plan), and inserting a number of applicable development requirements into Schedule 8 (West Piara Urban Precinct South) of TPS4 which must be undertaken at the time of subdivision and development. Amendment 118 also modified the Special Control Area Map 2 in TPS4 to remove the Structure Plan area from the 'Priority 2 Groundwater Protection Area', replacing this as a 'Priority P3* Groundwater Protection Area'. In accordance with this Special Control Area, with the exception of residential development, TPS 4 will require planning consent to ensure compatibility with the water resource protection.

Under an 'Urban Development' zone a structure plan is required prior to development.

For the purposes of TPS3, this Structure Plan satisfies the requirements of Schedule 8 which sets out a number of provisions that are to be provided as part of a local structure plan (if applicable), as summarised in Table 2.

Table 2: Schedule 8 (West Piara Urban Precinct South)

Provision No.	Applicable Provision(s)	Assessed within the Structure Plan
70.1	Structure Plan prior to subdivision and development	South West Piara Water Structure Plan satisfies Provision 70.1.
Prior to Structure Planning		
70.2	Environmental Assessment Report	Refer Appendix 1 (Environmental Assessment Report, Strategen-JBS&G) – advertised as part of Amendment 118 and used to guide this Structure Plan.
70.3(a)	Local Water Management Strategy	Refer Local Water Management Strategy, JDA Consulting Hydrologist and Sections 2.4 and 3.7 (Part 2) – water management consistent with approved West Piara Waters District Water Management Strategy.
Required to guide Structure Planning		
70.3(b)	Bushfire Management Plan	Refer Appendix 2 - Bushfire Management Plan (Strategen-JBS&J) and Section 3.4 (Part 2).
70.3(c)	Traffic Impact Assessment (incl analysis of Warton Road/Mason Road)	Refer Appendix 5 - Transport Impact Assessment (Transcore Traffic Engineers) and Section 3.5 (Part 2) – Mason Road falls under structure planning area to the north.
70.3(d)	Acoustic Assessment (road noise and pistol club)	Refer Appendix 3 - Noise Assessment (Lloyd George Acoustics) and Sections 2.7 and 3.6 (Part 2).
70.3(e)	Environmental Management Plan	Refer Appendix 1 (Environmental Assessment Report, Strategen-JBS&G) and Sections 2.2,2.3, 2.4.3 and 3.3 (Part 2).
70.3(f)	Wetland and Buffer Management Plan	Refer Appendix 1 (Environmental Assessment Report, Strategen-JBS&G) and Section 8.1 (Part 1) – requirement at time of subdivision and/or development.
70.4(a)	Warton Road intersection	Refer Appendix 5 - Transport Impact Assessment (Transcore Traffic Engineers) and Section 3.5.2 and 3.5.3 (Part 2).
70.4(b)	Mason Road widening	Not applicable – falls under structure planning area to the north.
70.4(c)	Mason Road/Southampton Road intersection	Not applicable – falls under structure planning area to the north.
70.4(d)	High pressure gas mains	Refer Section 1.3.6 (Draft Development Control Policy 4.3 – Planning for High Pressure Gas Pipelines) - no sensitive land uses within identified buffer.
70.4(e)	Visual impact of noise attenuation	Refer Section 8.1 of Part 1 and Sections 2.7 and 3.6 of the Part 2 report.
70.4(f)	Mosquito management	Not applicable – detail design phase (condition of subdivision).
70.4(g)	Government Primary School	Not applicable – falls under structure planning area to the north.
70.4(h)	Location of Multiple Purpose sporting oval and protection of flora, vegetation and environmental features	Sporting oval not applicable – falls under structure planning area to the north. Flora and vegetation – refer Appendix 1 (Environmental Assessment Report, Strategen-JBS&G) and Sections 2.2 and 3.3 (Part 2).

Regulatory Engagement on Amendment 118

A number of stakeholders were identified and consulted with during the preparation of Amendment 118, which also informed the wetland core which is now proposed within the Structure Plan. These included:

- Department of Water and Environmental Regulation (DWER) & the Environmental Protection Authority (EPA).
- Department of Biodiversity, Conservation and Attractions.
- City of Armadale.
- Department of Planning, Lands and Heritage (DPLH) & the Western Australian Planning Commission (WAPC).
- Local residents, whose land were affected by the proposed wetland.

This consultation had specific regard to the on-site environmental values, namely the proposed treatment of the wetland area which has informed the Structure Plan design, and which is discussed further in Section 2.4.3 (Wetland Evaluation) if this report.

A series of meeting and discussed were held with DBCA, DWER and the City of Armadale which culminated in an on-site meeting on the 13th August 2021, with key points discussed including:

- The DBCAs role in the assessment of the wetland area
- The treatment of the wetland area and buffer requirements
- The City's perspective on the use of the wetland buffer for drainage
- Opportunities for tree and canopy retention across the site, in the context of the City of Armadale's Urban Forest Strategy
- Broader environmental values across the site, including priority flora species, mature trees, and vegetation in good condition.

A subsequent series of wetland classification assessments undertaken by Strategen-JBS&G and the DBCA ultimately resulted in a wetland and buffer treatment considered satisfactory to the EPA, such that on the 20th of October 2021 the EPA determined that the Scheme Amendment did not warrant assessment under Part IV of Environmental Protection Act 1986. A concept plan detailing this treatment was provided and advertised with Amendment 118.

A comprehensive summary of all stakeholder engagements and meetings (including dates), as well as the concept plan advertised as part of Amendment 118, can be found in the Strategen-JBS&G Environmental Assessment Report, provided in its entirety as Appendix 1.

[1.3.3 Southern River/Forrestdale/Brookdale/Wungong District Structure Plan \(2001\)](#)

The Structure Plan area is located within the Southern River / Forrestdale / Brookdale / Wungong District Structure Plan (DSP).

This DSP was adopted by the Western Australian Planning Commission (WAPC) in 2001 and provides a broad framework for land use and development for a number of localities within the City of Armadale (including parts of West Piara).

As the district level planning framework for the locality, the DSP sets out a higher-level context for land use, major roads, commercial centres, community infrastructure and public open space (Figure 4: Southern River / Forrestdale / Brookdale / Wungong District Structure Plan).

The DSP shows the Structure Plan area as Rural and Semi-Rural Living which simply reflects the zoning of the land at that time on the basis that the DSP did not contemplate urban development over the Jandakot Groundwater Mound, considering it unsuitable for (urban) development; however the DSP predates Perth and Peel@3.5million, the South Metropolitan Peel Sub-regional Planning Framework and the rezoning of the land for urban development in the Metropolitan Region Scheme (Amendment 1369/57), all which have since confirmed that the land is suitable for urban development.

The dated nature of the DSP is best demonstrated by the land immediate east of the Structure Plan area (north of Armadale Road) which is also not shown for residential development but which has since been developed for this purpose (Holland Park and Aspiri Estates).

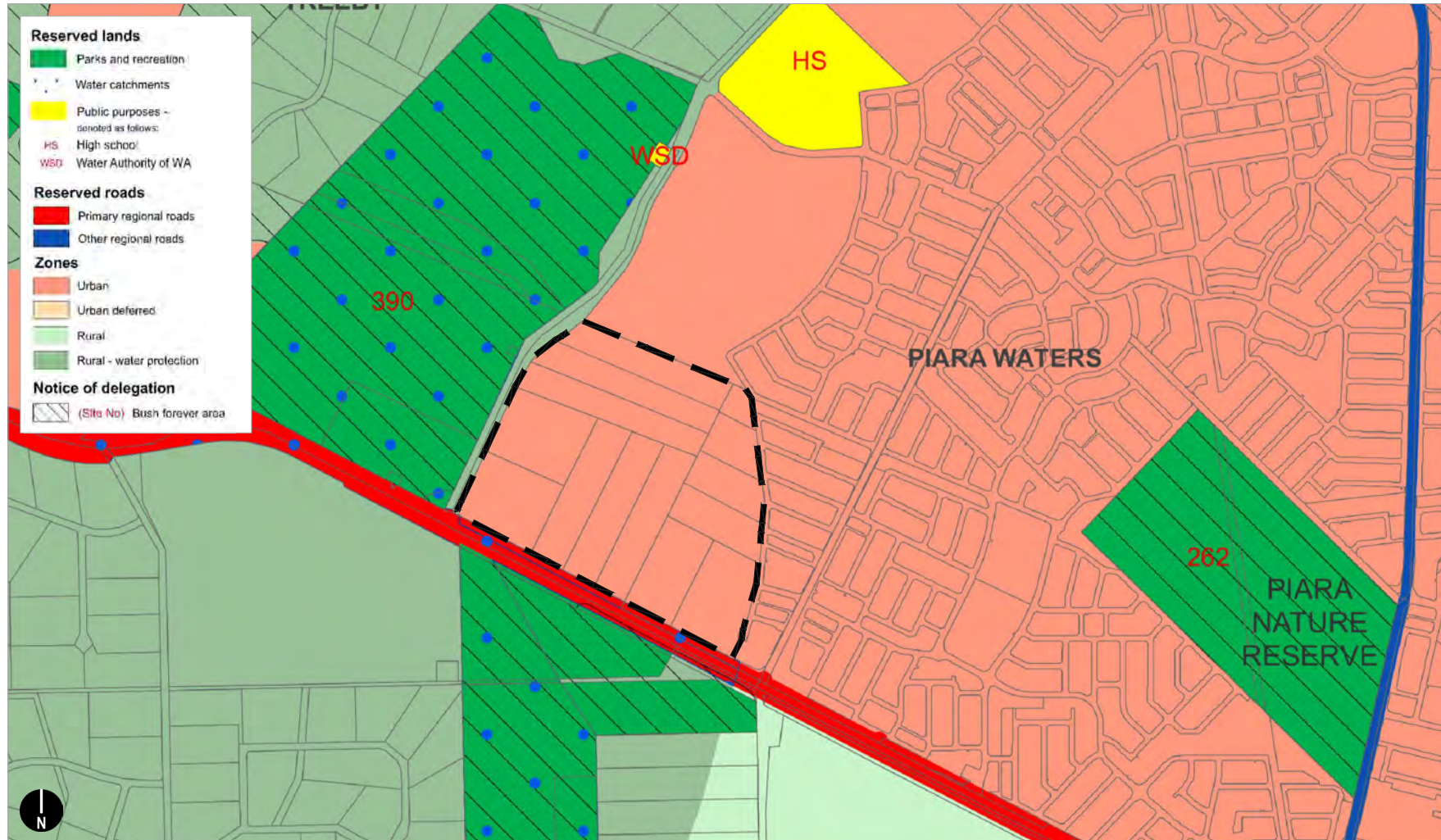


Figure 3 - MRS ZONE
Source: WAPC

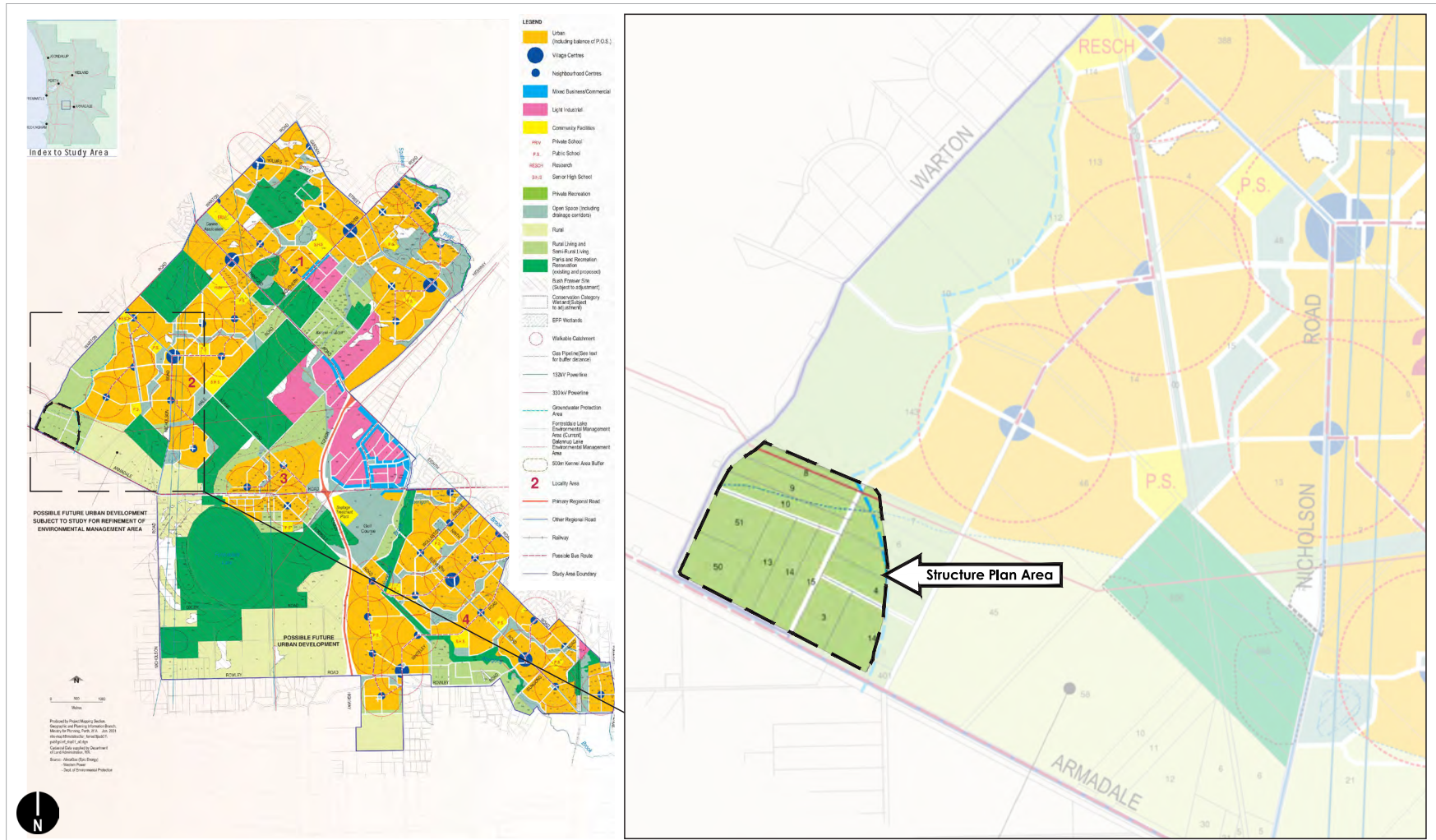


Figure 4 - Southern River / Forrestdale / Brookdale / Wungong District Structure Plan

Source: WAPC

[1.3.4 North Forrestdale Local Structure Planning Area](#)

The Structure Plan abuts 'Development Area No.35 North Forrestdale (Stage Three / South) Structure Plan', one of a number of individual (local) structure plans that have collectively guided subdivision and development throughout the broader Piara Waters/Harrisdale locality, noting that much of this land has since been 'normalised' into TPS4 (Figure 5: Composite North Forrestdale Structure Plan).

The Development Area No.35 North Forrestdale (Stage Three / South) Structure Plan is silent with regards to the Structure Plan area, which simply reflects the (then) rural zoning of the land in MRS and the fact that no structure plans have been approved for the site; however, in a similar fashion to the DSP (discussed above), this Structure Plan predates Perth and Peel@3.5million and the Sub-regional Planning Framework which now identifies the land as being suitable for urban development. This was confirmed by the zoning of the land 'Urban' in the MRS.

Nonetheless, the Development Area No.35 North Forrestdale (Stage Three / South) Structure Plan does provide context and guidance for the Structure Plan, suggesting that proposed residential development of the land will facilitate a logical expansion of the Piara Waters-Harrisdale locality.

The North Forrestdale Composite Local Structure Plan, being a composite of all local structure plans in the locality, can be updated to incorporate the South-West Piara Waters Structure Plan, once operative.

[1.3.5 Strategic Planning Framework](#)

The Structure Plan is consistent with, and supported by the relevant strategic planning framework, as detailed below.

Perth and Peel@3.5million (March 2018)

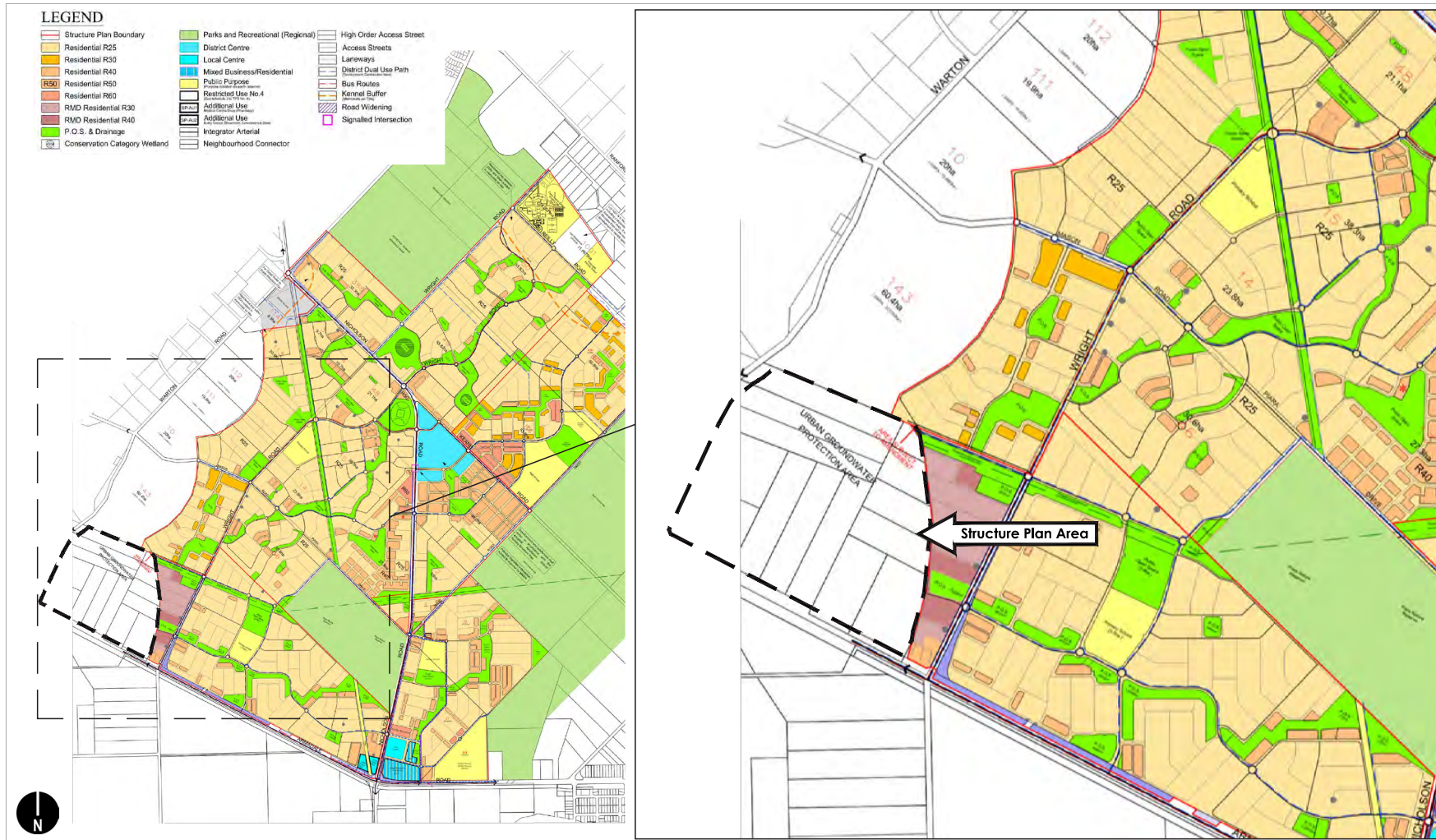
Perth and Peel@3.5million provides a high level 'spatial framework' and strategic plan that manages the growth of the metropolitan region and provides a framework to guide the planning and delivery of essential housing, infrastructure and services.

Perth and Peel@3.5million includes the Structure Plan area within the South Metropolitan Peel Sub-region, forecasting this sub-region to experience considerable economic and population growth, more than double from 523,400 people in 2011 to 1.26 million by 2050. This is discussed in more detail later in this report.

South Metropolitan Peel Sub-regional Planning Framework (March 2018)

The South Metropolitan Peel Sub-regional Framework (the Framework) supports Perth and Peel@3.5million by providing an additional level of detail at the sub regional level including more information about the level of expected population growth, servicing and infrastructure, housing demands, and importantly it highlights development opportunities throughout the sub region.

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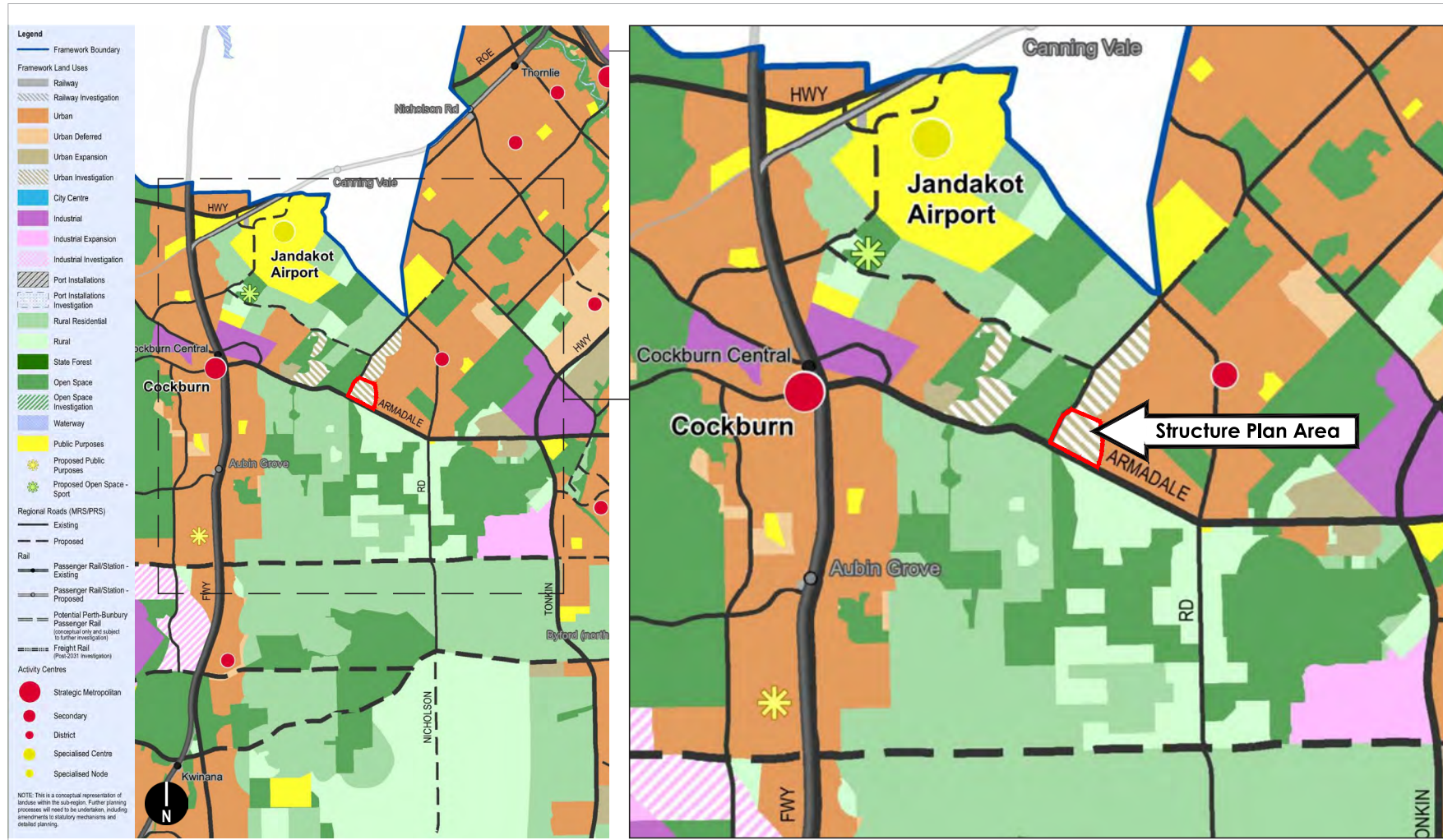


Figure 6 - South Metropolitan Peel Sub-regional Framework

Source: WAPC

The Structure Plan area is shown in the Framework as 'Urban Investigation', with the Framework clarifying that the 'Urban Investigation' category applies to land that is suitable for urban development, but further detailed planning is to be undertaken to support a rezoning in the MRS. In the case of the Structure Plan area, this related to addressing any impacts, risks and management of the Jandakot groundwater resource (existing Priority 2 Source Protection Area). The Framework then concluded that subject to addressing the Jandakot groundwater resource, urban development would consolidate and 'round off' existing Piara Waters/Harrisdale residential areas (Figure 6: South Metropolitan Peel Sub-regional Framework).

Informed by the Framework, the land has since been zoned for urban development in the MRS (Minor Amendment 1369/57), which was supported by a comprehensive District Water Management Strategy (approved by DWER 11 August 2020) detailing how urban development would not adversely impact the Jandakot groundwater resource. The Structure Plan will further realise the objectives of the Framework by continuing to expand upon the ground water protection measures established in the DWMS as urban planning and development progresses.

City of Armadale Local Planning Strategy (2016)

The City of Armadale Local Planning Strategy, which was endorsed in December 2016, sets out the objectives and recommended actions associated with future development.

The Strategy identifies the Structure Plan area as 'Rural – Drinking Water Protection', a reflection of the (then) zoning of the land; however, similar to the Southern River / Forrestdale / Brookdale / Wungong District Structure Plan, the City's Local Planning Strategy predates the outcomes of Perth and Peel@3.5million and the Sub-regional Planning Framework which subsequently saw the zoning of the land for urban purposes in the MRS. Informed by these more contemporary policies and supported by a comprehensive District Water Management Strategy (approved by DWER, 11 August 2020) that assured the ongoing protection of the Jandakot groundwater resource, the land was subsequently zoned for urban purposes in the MRS.

The Strategy recognises that development within Forrestdale (Harrisdale, Piara Waters) has accounted for the most significant growth for the City of Armadale in recent times.

1.3.6 Other Policies

The following section summarises other government policies relevant to the Structure Plan.

WAPC State Planning Policy 2.3: Jandakot Groundwater Protection

SPP 2.3 seeks to ensure that all development within the Jandakot Groundwater Protection Area is compatible with the long-term protection and management of this water resource. This is achieved through a three-tier classification system consisting of Priority 1, Priority 2 and Priority 3 (P1, P2 and P3) categories defined on the basis of hydrological factors and land tenure.

The Structure Plan area is currently classified as P2; however, with the zoning of the land 'Urban' in the MRS it is expected that a reclassification of the Amendment area to P3* will be undertaken. Amendment 118, as adopted by the City of Armadale Council and in recognition of the anticipated P3* reclassification is looking to modify the Special Control Area applicable for the site (Priority P3* Groundwater Protection Area) to exempt only residential development from the need to obtain planning consent prior to development.

The protection of the Jandakot Groundwater Area is discussed in further detail in Section 3 of this report and addressed in the associated Local Water Management Strategy prepared by JDA Consulting Hydrologists.

WAPC State Planning Policy 2.7: Public Drinking Water Source Policy and SPP 2.9: Water Resources

These two State Planning Policies provide high-level strategic guidance for policy-making and decision-making where water resources are a relevant consideration. The policy measures contained in these documents seek to manage outcomes for water resources of all types and outline the WAPC's expectations for the protection of drinking water sources.

The water resource that is relevant to the Structure Plan area is the Jandakot Groundwater Protection Area, which is managed under SPP 2.3 (discussed above). SPP 2.3 encapsulates the objectives of both SPP 2.7 and SPP 2.9, and as such, in complying with SPP 2.3, this Structure Plan is considered consistent with these policies.

WAPC State Planning Policy 3.0: Urban Growth and Settlement

SPP 3.0 sets out the principles and considerations that guide the location of new urban growth and settlements. It focuses on contiguous expansion of urban areas, consolidation in areas with good access to employment, services and transportation, minimised environmental impact and efficient use of suitable land and infrastructure.

The Structure Plan is consistent with SPP 3.0 as it realises planned urban expansion of the Piara Waters/Harrisdale locality. The Structure Plan has excellent access to existing (regional) transport infrastructure, educational facilities, employment nodes and activity centres, all in addition to there being no environmental constraints on the site. All essential service infrastructure can be readily and efficiently connected from immediate surrounding areas.

WAPC State Planning Policy 3.7: Planning in Bushfire Prone Areas

SPP 3.7 and its Guidelines set out a range of matters that need to be addressed through the planning process to provide an appropriate level of protection of life and property from bushfires.

The Structure Plan is located within a designated bushfire prone area. Consequently, and in accordance with SPP 3.7, Strategen-JBS&G have prepared a Bushfire Management Plan (BMP) in support of the Structure Plan. The BMP confirms that bushfire risk can be managed and is not an impediment to the development of the site.

This is discussed in detail in Section 2.6 and 3.4 below and the BMP is attached in full as Appendix 2.

WAPC State Planning Policy 5.4: Noise and Rail Noise

SPP 5.4 requires consideration of transport noise for sensitive land uses abutting major transport and strategic freight routes to avoid or mitigate land use conflict between the two.

The Structure Plan area abuts Armadale Road and Warton Road, both which are identified strategic freight routes.

In accordance with SPP 5.4, a Noise Assessment has been prepared by Lloyd George Acoustics in support of the Structure Plan. This Assessment has assessed road noise associated with these roads and sets out potential impacts upon future development.

The Assessment concludes that traffic noise reaching residential properties could be contained within the thresholds specified by SPP 5.4 through the use of interface treatments in accordance with Quiet House Design criteria, and notifications on title to inform future owners of the potential noise impact.

The Noise Assessment is discussed in further detail in Section 3.6 and attached in full as Appendix 3.

WAPC State Planning Policy 7.3: Residential Design Codes

The Residential Design Codes (R-Codes) form the basis for assessment of all single, grouped and multiple-dwelling developments in Western Australia. They are applicable to the structure plan area by virtue of the underlying 'Urban Development' zone in TPS4 and the proposed Residential zone via the Structure Plan. The R-Codes can be varied through use of (relevantly) Local Planning Policies and Local Development Plans.

Standard variations to the R-Codes will be available to the Structure Plan area through the reference to the City of Armadale Local Planning Policy: Residential Design Codes Variations & R-MD Codes PLN 3.10 (see Section 3.2.2 of this report), and other variations may become active in future through Local Development Plans.

Liveable Neighbourhoods

Liveable Neighbourhoods is the WAPC's 'operational policy' for greenfields development in Western Australia. Liveable Neighbourhoods sets out the key considerations for the planning of new communities including subdivision layout and movement networks, the location of open space, community facilities, schools and activity centres.

The Structure Plan has been prepared in accordance with Liveable Neighbourhoods and best practice urban design principles, creating a walkable neighbourhood supported by an interconnected network of local roads and pathways, and adopting an integrated approach to the design of public open space and urban water management. These aspects of the Structure Plan are described in more detail in Section 3.

Draft Development Control Policy 4.3 – Planning for High Pressure Gas Pipelines

Development Control Policy 4.3 (DC4.3) is a draft WAPC policy which controls development in the vicinity of high-pressure gas pipelines, ensuring that development nor the pipeline itself is exposed to unnecessary risk resulting from development.

The Structure Plan is in proximity to an ATCO high pressure gas main located in the western side of the Warton Road reserve, with ATCO advising that no sensitive or high-density residential land use (taken as being 50 dwellings/ha or above) are permitted within 42m of this pipeline. Approximately 11m of the western-most edge of the Structure Plan falls within this buffer. In response, the Structure Plan proposes no sensitive land uses within this affected land, or indeed the entire Structure Plan area, with only low density (single) residential lots proposed. This satisfies the advice received by ATCO.

City of Armadale Local Planning Policy PLN 2.4: Landscape Feature and Tree Preservation

The City of Armadale's Local Planning Policy PLN 2.4 sets out to achieve the preservation of significant trees as part of development proposals, including structure plans.

While not necessarily serving any environmental or conservation significance, a number of mature trees within the Structure Plan area have been identified as having a level of landscape significance (as defined by the policy) due to their context in, and contribution to the landscape.

As a consequence, the Structure Plan has been designed to encapsulate a considerable number of identified trees within areas of open space, ensuring their retention. The manner in which the Structure Plan responds to this aspect is discussed further in Section 3.

City of Armadale Local Planning Policy: Water Sensitive Design (PLN 2.6)

The City of Armadale's Local Planning Policy Water Sensitive Design (PLN 2.6) seeks to integrate quality urban development with the natural environment. The policy seeks to enhance the qualities and benefits of the natural environment by preventing contamination of stormwater, using the natural ability of watercourses and well managed water bodies to improve water quality and revegetating the City's stormwater drainage system with local species to enhance its values and visual appeal.

A key outcome of the Structure Plan is the retention of a multiple use and resource enhancement wetland within the site, being retained and landscaped into an area that will serve multiple functions of conservation, water quality management, habitat for wildlife and passive recreation opportunities wherever possible. The configuration of the wetland core was identified through a comprehensive evaluation process, undertaken by Stratagen-JBS&G and the Department of Biodiversity, Conservation and Attractions. Associated buffers to the core will be landscaped to maximise ecological enhancement, wildlife habitat and stormwater management through appropriate native planting. Consideration is being given to allow for careful positioning of passive recreational opportunities.

Biofiltration areas for water quality treatment of the first 15mm of stormwater runoff will be provided within areas of open space area, with some larger events overflowing into the wetland (post-treatment).

City of Armadale Local Planning Policy: Landscaping (PLN 2.9)

A comprehensive landscape strategy has been prepared in the context of the City's Local Planning Policy Landscaping (PLN 2.9).

The Structure plan is supported by a Landscape Masterplan that looks to deliver a readily useable, aesthetic and liveable environment for residents at the very beginning of development through creating a number of distinct areas of public open space. A key objective of this strategy is to being to retain a number of mature trees within these areas open space, in addition to rehabilitating the identified wetland core. Additionally, a comprehensive street tree planting regime will considerably increase the number of trees in the foreseeable future, meeting the key objectives of the City's Urban Forest Strategy.

City of Armadale Local Planning Policy: Residential Design Code Variations & R- MD Codes (PLN 3.10)

The City of Armadale's Local Planning Policy Residential Design Code Variations & R-MD Codes (PLN 3.10) applies medium density single house development standards (RMD Codes) in areas zoned Urban Development, including variations to: street and lot boundary setbacks, open space, garage widths and setbacks, front fences, parking, visual privacy and solar access. Future residential development within the Structure Plan area will be implemented byway of PLN 3.10, by virtue of the site being zoned 'Urban Development' in TPS4. PLN 3.10 will only be superseded where an approved Local Development Plan is in place, in which case the Local Development Plan will prevail.

City of Armadale Local Planning Policy: Designing Out Crime (PLN 3.14)

Development within the Structure Plan area will be implemented in accordance with Local Planning Policy: Designing Out Crime (PLN 3.14), to assist in reducing the likelihood of crime and anti-social behaviour in the City of Armadale, adopting the principles of Crime Prevention Through Environmental Design (CPTED).

The Structure Plan will satisfy the key CPTED principles of Surveillance, Access control, Territorial reinforcement and Management and maintenance through (amongst other aspects) urban design encourages surveillance of the street and public realm, landscaping that encourages the use and activation of public open space areas and the implementation of a safe and legible pedestrian movement network,

The remaining CPTED principle of Target hardening (security measures) is not considered relevant at this stage, being more relevant for subsequent detailed planning stages

Final assessment of future development will be undertaken at the time of subdivision and individual dwelling design, ensuring that CPTED are implemented within the Structure Plan area.

Other Considerations

On 19th April 2021 the City of Armadale Council initiated Amendment 115 to review and expand the North Forrestdale Development Contribution Plan (DCP) to cover all land recently zoned for urban development, including the Structure Plan area.

Once operative, this DCP will fund a number of key items within the locality including (but not limited to):

- Planned district playing field situated immediate north of the Structure Plan (Lot 9009).
- Acquire land associated with the rehabilitated wetland within the Structure Plan.
- Key (identified) district road upgrades and high order pedestrian path network.
- Ongoing (post-development) water monitoring for the broader Harrisdale/West Piara locality.

While subject to change until gazetted, the DCP will provide the funding for a number of infrastructure and community items, ensuring their delivery.

2.0 SITE CONDITIONS AND CONSTRAINTS

The Structure Plan area has a history of agricultural use, having been largely cleared circa early 1950s.

Strategen JBS&G Environmental has prepared a comprehensive Environmental Assessment Report (EAR) which sets out the site conditions and constraints of the Structure Plan area. The EAR demonstrates that the site is relatively unconstrained and that the environmental factors affecting the site, including groundwater, drainage and bushfire management can all be addressed adequately through the planning approval process and through the application of appropriate land use responses and management practices.

This section summarises the key findings of the EAR, with a complete copy provided as Appendix 1.

2.1 Topography, Geology and Soils

The Structure plan area is undulating, ranging in height from approximately 26m Australian Height Datum (AHD) to 36m AHD, with the high point being located in the north-western corner of the site.

Located within the Bassendean soil and landform system, the regional geology mapping indicates that the Structure Plan area comprises fine to medium grained Bassendean Sand (white to pale grey at the surface, yellow at depth) overlying sandy clay of the Guildford Formation. There are two isolated pockets of grey to black fine to medium grained slightly peaty sand, generally located along the western and eastern edges of the Structure Plan.

2.1.1 Acid Sulphate Soils

The Department of Environment and Regulation (DWER) acid sulphate soil (ASS) risk mapping shows the majority of the site as 'moderate to low risk' of ASS occurring within 3m of the natural soils surface. There are only two isolated 'high to moderate' risk areas mapped, being situated to the western and eastern edges respectively.

An ASS assessment will be prepared in the usual manner prior to earthworks, as part of the subdivision. Given the limited amount of cut and fill required for development, potential ASS impacts and associated management response are expected to be limited to areas connected to sewer construction.

2.1.2 Contamination

Lot 88 Warton Road in the Structure Plan area is the only property identified on the Department of Water and Environmental Regulation (DWER) Contaminated Sites Database as being contaminated, requiring remediation.

Strategen-JBS&G has undertaken a desktop and limited intrusive assessment, involving soil and groundwater sampling, as part of an Environmental Due Diligence (EDD) for Lot 88. The EDD concluded that Lot 88 has minor surficial contamination that has not appeared to impact groundwater and is manageable though standard mitigation measures such as landfill disposal or strategic re-burial. Further site investigations and remedial works are proposed at subsequent stages of the development, in accordance with DWER's Contaminated Sites Act and guidelines.

2.2 Vegetation and Flora

Most of the Structure Plan area is cleared of native vegetation, a result of past agricultural activity on the land, primarily cattle grazing, with only pockets of vegetation remaining.

Several flora and vegetation surveys have been carried out over the Structure Plan area, beginning with Bennett Environmental Consulting who undertook a Level 2 flora and vegetation survey in May 2011.

A series of further assessments were then undertaken by Focused Vision Consulting (2020) which including a targeted search for *Drakaea elastica* in July, a spring survey in September, and a subsequent follow-up survey of *Caladenia* in September. These assessments confirmed and built upon the Bennett Environmental Consulting work.

Subsequent vegetation assessments were then undertaken by Strategen-JBSG (September, October 2021) within Lots 9501, 9600 and 9001 to complement the work done by Focused Vision Consulting (2020) and provide an indication of the vegetation present within the gaps left by previous survey effort.

Collectively these surveys found:

- The vegetation condition within the Structure Plan area generally ranges from 'Completely Degraded' to 'Very Good to Excellent'.
- Only a small portion of bushland was deemed 'Very Good' and 'Very Good to Excellent', located within Lot 9005 of the Structure Plan. This bushland will be retained and incorporated within the rehabilitated wetland core, ensuring its ongoing protection and management.

- There were no Threatened or Priority ecological communities recorded within the Structure Plan area, with the vegetation condition found to be too poor.
- Three patches of potentially representative Banksia Woodlands were found; however, these were assessed and found to not meet the condition and size thresholds to be defined as a Threatened ecological community.
- Ten individuals of *Jacksonia gracillima* and one individual of *Jacksonia sericea* were recorded within the Structure Plan area.

2.3 Fauna and Habitat

A Level 1 fauna habitat survey was undertaken in 2018 which found that overall fauna occurrence within the Structure Plan area was severely compromised by the removal of substantial amount of remnant native vegetation and degradation of remaining patches. Fauna species observed within the Structure Plan area were comprised of common birds with fauna diversity well below levels prior to disturbance

An inspection of trees within the Structure Plan area with a diameter at breast height greater than 500mm found no black cockatoo breeding hollows.

The survey found some limited evidence of foraging habitat for the Forest Red-tailed Black Cockatoo but this habitat is predominantly in a 'degraded' state and any impact from development is not considered significant given large patches of suitable habitat found within nearby land managed by the Department of Biodiversity, Conservation and Attractions or designated as Bush Forever.

The north-eastern corner of the Structure Plan does contain a patch of good quality scrubby vegetation which is expected to provide potential habitat for Quenda but this vegetation is proposed to be retained within the rehabilitated wetland and/or public open space, ensuring its protection.

Only secondary evidence of kangaroos were noted (i.e. droppings) within the Structure Plan area; however, subject to confirming kangaroo numbers, during later stages of planning and development, appropriate kangaroo management measures shall be put in place.

2.4 Hydrology

The management of ground and surface water is comprehensively addressed within the Local Water Management Strategy (LWMS) prepared by JDA Consulting Hydrologists in support of the Structure Plan.

The LWMS clearly demonstrates that hydrology is not a constraint to urban development. The existing hydrological conditions of the Structure Plan are summarised below, while the key principles of the LWMS are discussed further in Section 3.6.

2.4.1 Ground Water

The DWER regional groundwater mapping shows that groundwater levels range between approximately 26m to 30m AHD, meaning a clearance from natural ground level of between 0m to 9m. The groundwater typically flows in an easterly direction.

A pre-development groundwater monitoring programme was undertaken JDA by way of five groundwater monitoring bores installed within the

wider locality, with level and quality results gathered between August 2018 and September 2020. A further five groundwater monitoring bores were subsequently installed within the Structure Plan area and monitored by Strategen JBS&G in February 2021, followed by additional groundwater level monitoring conducted by JDA in March 2021 and June to November 2021 (monthly).

These results confirmed but allowed for a refinement to the water levels previously mapped. This monitoring also found water quality to be improving through a reduction in Total Nitrogen within the groundwater with this likely to be a result of changing land use from previously agricultural (cattle grazing) activities.

2.4.2 Surface Water

The Structure Plan is located within the Southern River catchment of the Swan Avon Canning River system.

Surface water typically flows in an easterly direction with groundwater reaching natural surface along with seasonal ponding occurring along the eastern edge of the Structure Plan area over the peaty soils situated.

There are no external catchments flowing into the Structure Plan area, nor are there any permanent waterways onsite. The Structure Plan area is not within a 100 year average recurrence interval Floodplain Area.

2.4.3 Wetlands

The Department of Biodiversity, Conservation and Attractions (DBCA) geomorphic wetlands database shows that there are five wetlands found onsite. These comprise two Resource Enhancement Wetlands (UFI 13342 and UFI 15531) and two Multiple Use Wetlands (UFI 7176 and UFI 15531) located in the eastern portion of the Structure Plan area, with a third Multiple Use Wetland (UFI 6931) situated in the western portion.

Resource Enhancement Wetlands are wetlands have been modified but still retain substantial ecological attributes and functions. These wetlands can be restored to improve their function, structure, and biodiversity. Conversely Multiple Use Wetlands are low management category wetlands with little or no ecological value, making it suitable for urban development.

Wetland Evaluation

During the preceding amendment to the Metropolitan Region Scheme which zoned the land for urban purposes, two of the wetlands (UFI 7176 and UFI 13342) were highlighted as having the potential to have some conservation value, with the City of Armadale requesting that these wetlands be evaluated further to inform the identification of protection and management measures (for these wetlands).

JBS&G (previously Strategen-JBS&G) undertook a preliminary evaluation of these wetlands, finding that neither wetland could be considered as a Conservation Category Wetland, with a secondary assessment finding that UFI 7176 has values representative of a Resource Enhancement Wetland while UFI 13342 is representative as a Multiple Use Wetland.

A subsequent wetland reclassification assessment undertaken by the DBCA combining portions of the two wetlands into one wetland area, suggested that a significant portion of UFI 7176 and a small portion of UFI 13342 was consistent with a Conservation Category Wetland. JBS&G reviewed the DBCA wetland reclassification report and concluded that the wetland should be reclassified as a Resource Enhancement Wetland in line with its original classification assessment.

Regardless of this position, the Structure plan defines a wetland core that accommodates the higher quality native vegetation identified in the

assessments, along with associated buffers, to provide for rehabilitation and revegetation opportunities. Measuring approximately 5.5ha in total, this wetland core and buffer is expected to return an improved environmental outcome for the locality whilst being cognisant of a sustainable outcome that reduces ongoing management by the City of Armadale.

In addition to the above, the Environmental Protection Authority (EPA) considered Amendment 118 for the City of Armadale TPS4 and determined on the 26 October 2021 that the proposed scheme should not be assessed under Part IV Division 3 of the Environmental Protection Act 1986 (EP Act), however, provided advice and recommendations. The EPA's advice was based on the revised conservation area boundaries and considered wetland boundaries and classification assessments by both JBS&G on behalf of Stockland and DBCA for the wetlands on site (UFI-7176, UFI-13342 and UFI-15532 (dated 11 August 2021; Ref No. 2021/001070-1) (DWER ref DWERDT501168).

In accordance with the EPA's advice and scheme provision text Clause 70.2 an Environmental Assessment Report (EAR) has been prepared and lodged with the City of Armadale in consultation with DBCA and DWER, with consideration of DBCA's wetland reclassification assessment advice (Ref No. 2021/001070-1).

Additionally, as per the EPA's advice a Wetland Buffer Management Plan (WBMP) has been prepared in consultation with DBCA and the City of Armadale. The WBMP was initially prepared to support the Local Structure Plan, however, is now a condition of subdivision approval (WAPC 162781). The WBMP confirms the wetland core, function area and the suitability of the separation buffer to ensure the long-term functioning of the wetland in accordance with the Guideline for the Determination of Wetland Buffer Requirements (DPLH 2005; or

equivalent).

Overall, the EPA noted their support of the scheme amendment, with the supporting documents (i.e., EAR and WBMP) prepared and implemented in accordance with the proposed scheme provisions, Structure Plan and subdivision planning process which supports an improved environmental outcome to the wetland core and buffer.

2.5 Heritage

The Department of Planning, Lands and Heritage Aboriginal Heritage Enquiry System identifies no registered sites within or adjacent to the Structure Plan. The database does identify one 'Other Heritage Place' that intersects the Structure Plan area along the western edge (Site 3301 Banjup: Cassil); however, Site 3301 has been investigated and been found to not satisfy Section 5 of the *Aboriginal Heritage Act 1972*.

There are no listed European sites of heritage significance located within the subject site.

2.6 Bushfire Management

Strategen JBS&G has prepared a Bushfire Management Plan (BMP) in accordance with WAPC's State Planning Policy 3.7: Planning in Bushfire Prone Areas and its Guidelines.

The BMP demonstrates that bushfire risk can be managed through implementation of a range of mitigation measures including the use of asset protection zones, interface treatments and the construction of dwellings within 100m of bushfire prone vegetation in accordance with AS3959 Construction of buildings in bushfire prone areas.

The manner in which the Structure Plan addresses bushfire risk is discussed further in Section 3.4 of this report with a copy of the BMP included as Appendix 2.

2.7 Environmental Noise

A Noise Assessment has been prepared by Lloyd George Acoustics, assessing the impacts of traffic noises from Armadale Road and Warton Road which abut the southern and western boundaries of the Structure Plan respectively. This Assessment has been prepared in accordance with State Planning Policy 5.4 – Road and Rail Noise (SPP 5.4).

The Assessment identifies a number of dwellings where road noise will exceed the noise targets set out in SPP 5.4 but demonstrates that this impact can be addressed through the construction of a 2.1m noise wall along Armadale Road and Warton Road, as well as the implementation of Quiet House Design construction standards. Notification would also be lodged against titles of impacted properties to inform future owners of potential impacts and necessary construction standards. A preliminary design of the noise wall will be required at the time of subdivision, demonstrating that this wall will be both 'fit for purpose' and will not impose any untoward visual impact upon the locality (as seen from the public realm).

The Assessment also considers potential noise emissions from the Cockburn-Fremantle Pistol Club located on the western side of Warton Road, on Lot 886 Warton Road, with this component assessed against the Environmental Protection (Noise) Regulations 1997. It was found that road traffic noise was the dominant source of acoustic impact and the pistol club noise emissions were not intrusive.

A copy of the Noise Assessment is provided in Appendix 3.



Figure 7 - Development Concept Plan

Source: Nearmap

3.0 LAND USE AND SUBDIVISION REQUIREMENTS

3.1 Land Use

The Structure Plan establishes the planning framework for a robust and environmentally responsive residential development respecting the natural amenity of its surrounds, and forming an integrated community within Piara Waters

A Development Concept Plan has been prepared for the site to demonstrate how the development could occur based on the Structure Plan principles and requirements (Figure 7: Development Concept Plan). It is important to note that the Development Concept Plan represents only one way development could occur and the concept will be refined at the time of subdivision.

The key principles of the Development Concept Plan are to:

- Enable the creation of a diverse range of high-quality housing choices that will appeal to a wide market segment.
- As a result of being situated over the Jandakot reclassified from P2 to P3*, only residential development is anticipated in the Structure Plan area. This will be reflected in a modification to the underlying Special Control Area (Priority P3* Groundwater Protection Area), as proposed by Amendment 118.
- Provide an urban form that responds to the site's location and local context within the Piara Waters locality.
- Deliver a permeable, interconnected road and pedestrian network.
- Provide several accessible, attractive and multi-functional areas of public open space that provide for landscape significant tree retention, drainage requirements as well as offering a range of active and passive recreational and rehabilitation opportunities.

- Create the opportunity to rehabilitate a wetland that is currently assessed as having Resource Enhancement Wetland values, dramatically increasing its ecological and aesthetic value and ensuring its ongoing protection.
- Provide a strategy for a high quality tree planting regime within the public streetscapes, resulting in a considerable increase in the number of trees when compared with that currently found onsite.
- Extend the necessary services and infrastructure in a timely and coordinated manner to support the future development.

Based on these principles, the Structure Plan provides the framework for:

- Approximately 760 - 770 lots throughout the Structure Plan area, with residential densities of R25, R30 and R40. R30 will be provided as a base, with the lower R25 density coding allowing for larger, more traditional homesites to meet that market segment. The R40 density is in proximity to the rehabilitated wetland, the future primary school to the north, focused on key access roads, fronting public open and at the end of street blocks where good opportunities for integration exists.
- A well distributed network of public open space areas creates opportunities for passive and active recreation, allow for tree retention as well as provide an integrated drainage solution. The rehabilitation of the wetland will further provide resident amenity and improve the ecological value of the site.



Figure 8 - Local Concept Plan

Source: Nearmap



- A legible network of roads that are responsive to the existing road networks surrounding the structure plan area and encourage accessibility by cyclists, pedestrians and future public transport services.
- A landscape masterplan that guides the delivery of the public open space areas, including providing detail on how integrated drainage will be developed.
- Establish interface requirements to mitigate traffic noise and bushfire hazards, ensuring the safety and amenity of future residents and their property is protected.

A Local Context Plan has been prepared showing the Development Concept Plan in context with the adjacent (northern) land, which will be subject to future structure planning. This demonstrates how this adjacent land could be developed in a manner that responds to the known features onsite and provides future road connection to its surrounds. It is important to note Lot 9009 is subject to local structure planning, to be undertaken at a future date and is provided only for context (Figure 7: Local Context Plan).

3.2 Residential

The Structure Plan provides a framework to support delivery of a diverse range of housing. The density and style of housing across the Structure Plan area is responsive to the characteristics of different parts of the site and will be delivered with the objective of creating high quality-built form and streetscapes.

[3.2.1 Dwellings Yields and Density Targets](#)

The Structure Plan has the potential to create approximately 760 - 770 residential lots, set in a density range of R20 to R40 and based on the following planning principles:

- A base coding of R30 applies, providing opportunities to deliver a range of traditional (front loaded) lots typically ranging in size from 300m² to 450m²;
- Lower density R25 lots will allow for larger, more traditional homesites to meet that market segment, being applied to any single residential lot greater than 350m² in area, to avoid the circumstance of these lots being 'over-developed' through using the R30 provisions.
- R40 coding applies to areas in proximity to the rehabilitated wetland and other areas of public open space, the future primary school to the north (Lot 9009) as well as being focused on key access roads and at the end of street blocks where good opportunities for integration exists. Lot sizes will generally range from 250m² to 300m².

Table 3: Land Use Schedule (all areas in hectares)

Gross Site Area¹		48.94
Less		
Wetland Core (excludes easement, Lot 88)	4.41	
Transmission Line easement	3.22	
Sewer Pump Station	0.13	
Total	7.76	
Net Site Area		4.18
Deductions²		
Total drainage area up to the 1:1 year event	0.27	
Total	0.27	
Gross Subdivisible Area		40.91
Public Open Space @ 10%		4.09
Public Open Space Contribution		
Minimum 80% unrestricted POS	3.27	
Maximum 20% restricted POS able to be credited	0.82	
Unrestricted Open Space		
Corner Park (POS 1)	0.54	
Central Park (POS 2)	0.73	
Wetland Park (POS 3)	0.74	
Lot 9800 Park (POS 4)	0.14	
Total Restricted Open Space²	2.15	
Restricted Open Space		
Drainage area between 1:1 and 1:5 year events not exceeding 20% of total open space area ²	0.82	
Wetland Buffers (excludes portion on transmission line easement)	1.66	
Total Restricted Use Open Space	2.15	
Restricted Use Open Space Surplus	1.66	
Revised Gross Subdivisible Area		39.25
Revised Open Space @ 10%	3.93	
Summary of Public Open Space (Revised Gross Subdivisible Area)		
Unrestricted Open Space Provided	2.15	
Restricted Open Space Provided	0.82	
Total Unrestricted & Restricted Public Open Space Provision		2.97
Total Public Open Space Provisions as a % of Gross Subdivisible Area		7.3%

Notes:

1. The site area is the total area of the land contained within the inner edge of the line denoting the structure plan boundary on the Structure Plan Map.
2. In accordance with Liveable Neighbourhoods: the area subject to inundation more frequently than a one year average recurrence interval rainfall event is not included as restricted or unrestricted open space and is a deduction from the net site area (LN R33); areas for the detention of stormwater for a greater than one year average recurrence interval up to the five year recurrence interval is restricted open space up to 20%, the area greater than 20% is a deduction (not applicable in this case) (LN R26 & Table 11); areas for the detention of stormwater for a greater than five year average recurrence interval is within unrestricted open space (LN R25).
3. Buffer to the rehabilitated wetland has been taken as forming restricted use public open space, except when falling within transmission line easement, when it has been taken as a deduction. (See note 7 of Table 3)

Table 4: Public Open Space Drainage Area Schedule (all areas in sqm)

Local Open Space Area	Gross Area	Deductions ³		Restricted Use Open Space			Unrestricted Use Open Space	
		1:1 year Drainage Area ³	Gross Area less 1:1 year Drainage Area	1:5 year Drainage Area ³	1:1 - 1:5 year Drainage Area ⁵	Other Restricted Use Open Space	Total Restricted Use Open Space	Unrestricted Open Space ⁶
Corner Park (POS 1)	5,400	0	3,000	0	0	0	0	3,000
Central Park (POS 2)	13,800	1,700	13,200	6,500	4,800	0	4,800	8,400
Wetland Park (POS 3)	24,000 ⁶	0	24,000	0	0	16,600 ⁷	16,600	7,400
Lot 9800 Park (POS 4)	5,800	1,000	4,800	4,400	3,400	0	3,400	1,400
Total	49,000	2,700	47,100	10,900	8,200	16,600	24,800	22,300

Notes:

1. Drainage area have been sourced from the JDA Consulting Hydrologist modelling.
2. The one year average recurrence interval areas shown in the table are based on management of the first 15mm runoff in accordance with Department of Water and Environmental Regulations policy.
3. Areas subject to inundation more frequently than a one year average recurrence interval rainfall event are not included as restricted or unrestricted open space and are a deduction.
4. Areas for the detention of stormwater for a greater than on year average recurrence interval up to the five year recurrence interval up to the five year recurrence interval are treated as restricted open space.
5. Areas for the detention of stormwater for a greater than five year average recurrence interval are within unrestricted open space and receive a full open space credit.
6. Gross area of the Wetland Park (POS 3) excludes the wetland core.
7. Buffer to the rehabilitated wetland has been taken as restricted use open space, excluding the portion falling within lot 88 and subject to the transmission line easement which instead has been taken as a deduction.





Figure 9 - Landscape Masterplan
Source: Plan/E Landscape Architects

Perth and Peel@3.5million recommends a housing density target of 26 dwellings per residential site hectare with the aim of this target to encourage more efficient use of infrastructure and housing. The Structure Plan has the potential to achieve 31.1ha dwelling per site hectare, exceeding the target set out in Perth and Peel@3.5million. This figure exceeds the Liveable Neighbourhoods requirement for an average of 22 dwellings per residential site hectare.

3.2.2 Local Development Plans

Local Development Plans (LDPs) will be required where specific variations to the Residential Design Codes are needed to deliver a contemporary built form response. These LDPs will be required as a condition of subdivision approval and be approved by the City of Armadale.

The City of Armadale's Local Planning Policy PLN 3.10 'Residential Design Codes Variation & R-MD Codes' sets out acceptable variations to the deemed-to-comply provisions of the R-Codes for lots coded R25 to R60. The variations set out in PLN 3.10 will apply to the Structure Plan area and thereby constitute Acceptable Development. This will avoid the need for LDP's over most lots, improving efficiencies and minimising costs to the end user and to the local government.

LDP's will only be confined to following site specific considerations that may require detailed design responses:

- Lots abutting areas of public open space; and
- Lots affected by road traffic noise.

The following outlines the key provisions that will be addressed in these LDPs.

Lots abutting areas of Public Open Space

Typically, the interface to public open space at the time of subdivision will be via roads, however, in some instances direct lot frontage is an appropriate design response providing product diversity, amenity and increased surveillance of the public spaces.

Liveable Neighbourhoods supports residential lots directly abutting open space where the functionality of the POS is not compromised, and where the dwelling addresses the open space provides adequate visual surveillance.

To ensure these public open spaces are not compromised, subsequent subdivision design and engineering detail will ensure that visitor parking is provided along adjacent streets, and the adjacent residential lots are elevated a minimum of 500mm above the POS ground level to create a visible separation between the private and public realm.

Where lots interface with open space LDPs will need to be prepared to control built form. These LDPs will address:

- minimum setbacks to the public open space.
- major openings (other than bedrooms) to address the open space.
- permeable fencing to promote surveillance.

Lots subject to noise impost (Quiet House Design)

LDP's will be prepared for lots deemed to be affected by road traffic noise from Armadale Roads and Warton Road, as identified in the Lloyd George Noise Assessment (Appendix 3). The Structure Plan will mandate relevant 'Packages' and applicable construction standards that will apply.

The Noise Assessment is discussed in further detailed in Section 3.6.

3.3 Public Open Space

The Structure Plan establishes the framework for a number of public open space areas that will serve a range of functions, balancing active and passive recreational pursuits as well as delivering key drainage and conservation objectives.

The Structure Plan provides for approximately 5ha of local open space which (once Liveable Neighbourhoods credits are applied) represents around 7.3% POS as shown in Table 3 (Land Use Schedule), Table 4 (Public Open Space and Drainage Schedule) and Figure 9: Landscape Masterplan.

The following is a summary of the key aspects of the open space provision based on Liveable Neighbourhoods requirements. A more detailed description of the public open space is provided in Section 3.3.1.

- 5ha (gross) of open space (excludes wetland core and transmission line easement) is distributed throughout the Structure Plan area, accommodating both active and passive uses and performing a drainage function.
- Approximately 0.3ha of the open space will receive drainage from the first 15mm storm events (for calculation purposes this is treated as the 1 year storm event and taken as a deduction from the Net Site Area, as set out in Liveable Neighbourhoods). This stormwater will be infiltrated within bio-retention areas.
- Majority of drainage from flows over and above the first 15mm event from the wider Structure Plan area will be directed via a piped road drainage system to the bio-retention basins and flood storage area within areas of public open space for infiltration.
- 0.8ha (approx.) of the public open space is made up of restricted use open space due to receiving stormwater flows over and above the first 15mm event, as defined by Liveable Neighbourhoods.
- Wetland setback (1.7ha approx.) is credited as being restricted use open space in accordance with Liveable Neighbourhoods.
- The overhead transmission powerline easement is not credited as public open space (i.e. neither restricted or unrestricted) notwithstanding that this space will be accessible to and usable by the public.

Liveable Neighbourhoods recommending that no more than 20% of all public open space should be made up of 'restricted use' open space, with the aim being to ensure open space areas provide a balance between offering a diversity of recreational options while also incorporating water sensitive design principles and nature spaces that protect areas of environmental significance. While the Structure Plan seemingly overprovides in terms of 'restricted' use public open space, it is important that this be considered in the context of the local site which in this instance is highly relevant.

- Approximately 14% (6.4ha) of the Structure Plan area already being set aside as usable 'green' space (excluding the wetland core + 15mm drainage), far exceeding the typical 10% provision.
- A senior playing field (with a total area of approximately 5ha, co-located with a primary school) is to be located immediately north of the Structure Plan area, providing a space for organised sports and active amenity. This will mean an over allocation of 'unrestricted' use public open space immediately north. The acquisition and delivery of this senior playing field to be funded by a Development Contributions Scheme which has been initiated by Council via Amendment 115.
- The buffer to the wetland which will be rehabilitated and retained at the request of Council, reflects a heavy bias towards restricted use open space, with the core being simply deducted altogether.
- The drainage strategy responds to City of Armadale concerns that James Drain is at capacity, with all storm events being contained to the Structure Plan area so as to not accentuate this capacity concern.

This is shown on the associated Development Context Plan, showing just how much 'open space' will be accessible, if not all being considered creditable or 'unrestricted' in accordance with Liveable Neighbourhoods (Figure 7: Development Context Plan).

It is in this context that the public open space strategy is appropriate.

[3.3.1 Description of Public Open Space](#)

The Structure Plan creates a number of distinct areas of open space which are described in the Landscape Masterplan prepared by Plan E (Figure 9: Landscape Masterplan) and provided as Appendix 4.

The Structure Plan has been designed so as to retain a number of mature trees within these areas of public open space, with an arboriculture assessment having been undertaken to further inform a tree retention strategy based on tree health, viability with the proposed development, and any remedial works required.

The landscape strategy behind the public open space development is to provide a readily useable, aesthetic and liveable environment to future residents from day one. Landscape works shall contain and maximise both aesthetic and functional uses where possible.

It is important to note the landscaping designs shown are conceptual and will be refined as part of the subsequent phases in consultation with the City of Armadale.

The following briefly summarises each of these areas of open space.

Corner Park (POS 1)

- Total area of approximately 0.5ha.
- Designed to retain a number of mature trees currently onsite as well as create an opportunity for additional tree planting to act as a buffer to Armadale Road.
- Small open turfed area will provide play space for resident amenity, with seating.
- Pathways to connect to the surrounding pedestrian network, along with a wayfinding sculpture.
- Open space help alleviate the visual impact on the required noise wall, providing for a break in its construction.
- No drainage is proposed within this space.

Central Park (POS 2)

- Total area of approximately 1.3ha.
- Open space has been designed and configured to retain a number of remnant (mature) trees, wherever practicable, to create an immediate entry statement to the residential estate.
- Iconic playground with a tower element situated to act as a key entry statement, themed to reflect the natural theme of the estate.
- Pathways and seating that connects the public open space with the remainder of the estate
- Open turfed area will provide an informal play and a kick-about space.
- Allows for the provision of shade structures and picnic facilities, conveniently accessible from pedestrian connections, all nestled under retained (mature) trees, maximising the available shaded areas.
- Facilitates drainage for the small events (first 15mm) in the form of a landscaped basin that is to be vegetated with native species that will add to the overall character and diversity of the space.

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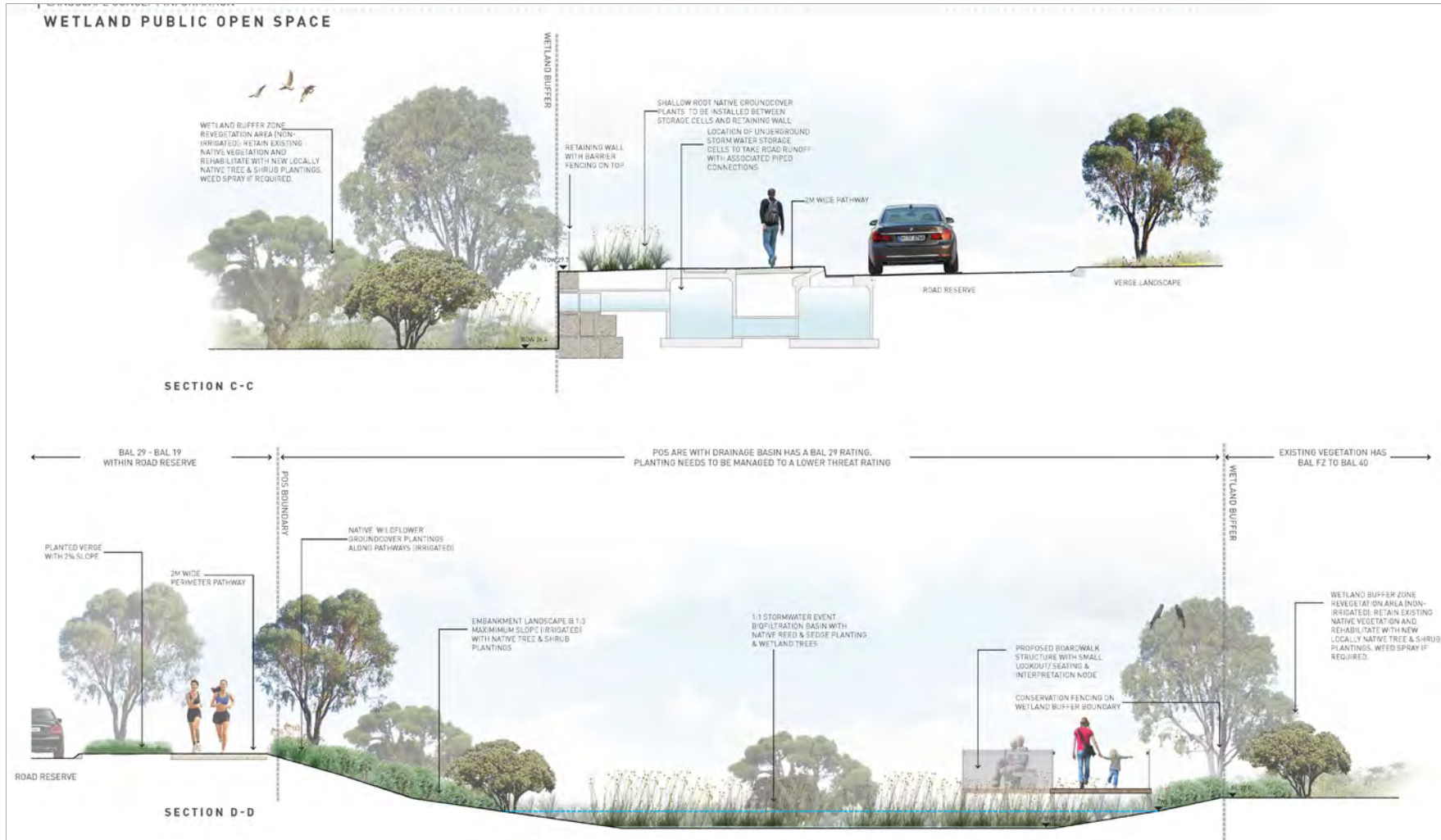


Figure 10 - Wetland Public Open Space Interface

Source: Plan/E Landscape Architects



Figure 11 - Street Tree Masterplan
Source: Plan/E Landscape Architects

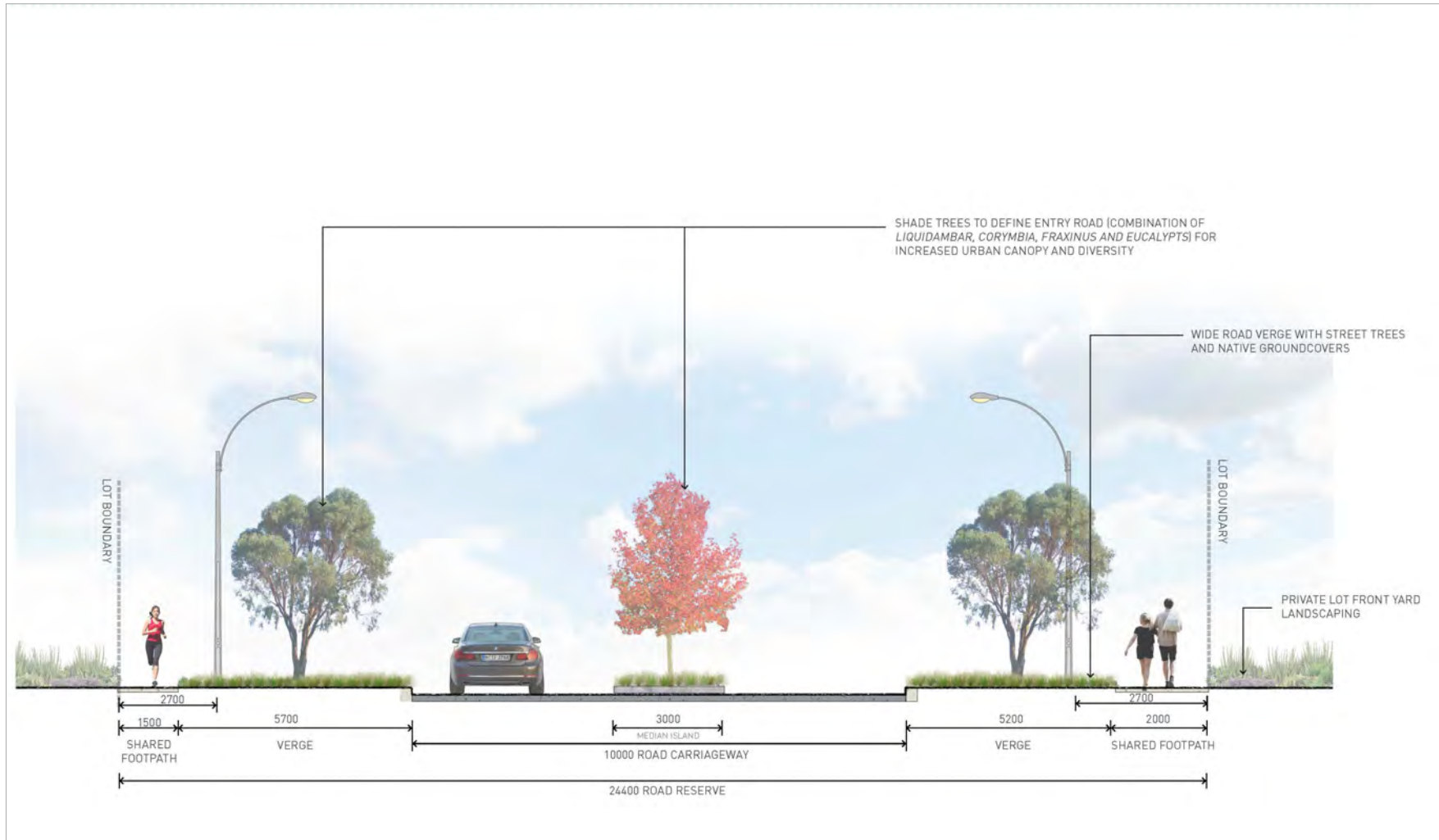


Figure 12 - Street Tree Sections 1

Source: Plan/E Landscape Architects



Figure 13 - Street Tree Sections 2

Source: Plan/E Landscape Architects

Wetland Park (POS 3)

- Total area of approximately 9.3ha, including the wetland core.
- Setback surrounding the wetland core to consist of a 30m general buffer (refer Figure 10: Wetland Public Open Space Interface).
- Buffer to be the subject of native plant species being reintroduced beneath existing mature trees that are to be retained, also comprising native groundcover planting to ensure a low bushfire fuel interface with surrounding residential area.
- Pockets of public open space situated outside the 30m wetland setback to create opportunities for additional local amenity, including seating nodes and interpretive signage to showcase local flora and fauna.
- Integrated pedestrian pathway incorporating environmental educational initiatives.
- Drainage will be accommodated within wetland setback (via a bio-retention basin landscaped with native reed and sedge planting located within the adjacent road reserve to treat the first 15mm).

Lot 9800 Park (POS 4)

- Total area of approximately 0.58ha.
- Serves a drainage function with the first 15mm rainfall to be accommodated within a bio-retention basin landscaped with native reed and sedge planting, located within the eastern portion of the site.

3.3.2 Street Tree Masterplan

A Street Tree Masterplan has been prepared as part of the Landscape Masterplan, to deliver a higher standard of landscaping within the streetscape, along with providing a considerable increase in the number of onsite trees in the foreseeable future (Figure 11: Street Tree Masterplan).

Street trees have been carefully selected to deliver quality streetscapes which will provide a sense of place and distinct theme to this new residential area. Through careful consideration of the growth rates of the selected tree species, maturity should be reached in a relative short period of time (10-15 years), reaching full age by 30 years.

Street trees have been selected with regard to the width of reserves and the role particular roads will serve (Figure 11: Street Tree Sections).

The key east-west Neighbourhood Connector road has been provided with a more dramatic tree species (Liquideamber) to heighten the entry experience to the estate while the more 'key' Access Street will similarly be differentiated from other 'lower order' Access Street through tree species to introduce character favours throughout the estate.

An indicative post-development canopy cover estimate has been calculated for the Structure plan area, in accordance with the City of Armadale Urban Forest Strategy (2014), taking into account:

- Trees to be retained within areas of public open space.
- Areas that are to be revegetated.
- Street tree planting as set out in the Street Tree Masterplan.
- Street tree planting provided as part of purchaser fencing and landscaping packages, typically equating to one tree pre residential lot.

This found that a canopy cover of 31% (approx.) can be expected post-development with a high level of landscaping within the public realm.

The detailed engineering and landscaping schedule of the streets will be determined in consultation with the City at subdivision stage.

3.3.3 Transmission Corridor

Presently a 132kV high voltage overhead transmission line runs through the northern portion of the Structure Plan area, over Lot 88.

In accordance with the principles of Liveable Neighbourhoods, this transmission line corridor has not been considered as creditable public open space, nor is it accommodating any stormwater drainage, notwithstanding that this space will be available for public use.

This corridor is expected to be landscaped to a minimal standard (respecting the restrictions associated with the overhead transmission lines), which may include low lying, low maintenance native vegetation, with the eastern portion acting as a buffer to the future district playing field located to the north on Lot 9008. Vehicle parking associated with the district playing field may be delivered by the City of Armadale, should the need arise.

A potential road connection is shown on the Structure Plan Map, providing a further connection to the north-east. This road may be provided by the City of Armadale, should it consider it desirable.

3.4 Bushfire Management

In accordance with the WAPC's 'State Planning Policy 3.7: Planning in Bushfire Prone Areas' and 'Planning for Bush Fire Protection Guidelines' a Bushfire Management Plan (BMP) has been prepared by Strategen-JBS&G as part of the Structure Plan. The BMP confirms that the Structure Plan provides a design response and the planning framework that satisfactorily addresses risk from bushfire.

The BMP includes a detailed Bushfire Hazard Level Assessment showing that bushfire prone vegetation (post-development) will be generally restricted to:

- Woodland classified vegetation within the rural lots located to the southern side of Armadale Road.
- Woodland, Forest and Grassland (unmanaged) classified vegetation within the Bush Forever reserve and Cockburn Pistol Club site on the western side of Warton Road.
- Scrub and Grassland (unmanaged) contained within Lot 88, being the land affected by the overhead transmission power lines.
- Woodland classified vegetation situated within the rehabilitated wetland and its associated buffer.

The BMP goes on to set out the necessary separation distances from these identified bushfire risks, in order to meet a Bushfire Attack Level (BAL) of BAL-29 or less.

The Structure Plan provides a design response to provide this required separation between future development and the identified bushfire risk through the use of public streets and mandatory building setbacks, where required.

The implementation of low threat staging buffers which may entail the temporary quarantining of lots and the clearing of vegetation about individual development stages will ensure a BAL rating of BAL-29 or lower is achieved. Where lots are deemed as having a Bushfire Attack Level (BAL) of BAL-12.5 or higher, the construction standards set out in AS3959 'Construction of buildings within bushfire prone areas will apply, with notifications on title to inform future residents of this requirement.

This all demonstrates that bushfire risk can be satisfactorily and is not an obstacle to the development for the site.

3.5 Transport Network

Transcore traffic engineers have prepared a comprehensive Transport Impact Assessment which forecasts traffic volumes and sets out a recommended road network hierarchy for the Structure Plan that will accommodate expected traffic flows.

The following section discusses the key elements of the Transport Impact Assessment, including existing and planned movement network, road hierarchy classification and an overview of the cyclist and pedestrian network.

The Transport Impact Assessment prepared by Transcore can be found in its entirety as Appendix 5.

3.5.1 Existing Transport Network

The Structure Plan is supported by a regional road network that allows for convenient access to local, district and regional destinations. Key aspects of this existing road network surrounding the Structure Plan are:

- **Armadale Road** abuts the southern edge of the Structure Plan and is reserved as a Primary Regional Road in the MRS and is classified in the network as a Primary Distributor, under the control of Main Roads WA. It is the main district and regional road connection for the site and is currently constructed as a single carriageway two-lane rural road with a posted speed limit of 80km/h. Armadale Road is an identified primary freight route.
- **Warton Road** abuts the western edge of the Structure Plan and is identified as a District Distributor A Road by Main Roads and classified an Integrator Road A. It is constructed as a dual carriageway, (two lanes each way) with a posted speed limit of 80km/h. Warton Road is also an identified primary freight route.
- **Interdominion View** abuts the eastern edge of the Structure Plan and constructed as a single carriageway, (6m pavement) with a default speed limit of 50km/h
- **Mason Road** runs in an east-west direction and is classified as a Local Distributor by Main Roads WA. Constructed as a single carriageway (rural standard) between Warton Road and Southampton Drive/Lockeville Boulevard, Mason Road has been upgraded as a Neighbourhood Connector A to the east of Southampton Drive (comprising one lane each way with on road cycle lanes). A default speed limit of 50km/h applies.
- **Jandakot Road** runs in an east-west direction to the west of Mason Road (within the City of Cockburn), currently constructed as a single carriageway with a posted speed limit of 80km/h. Jandakot Road is classified as a Regional Distributor by Main Roads WA.

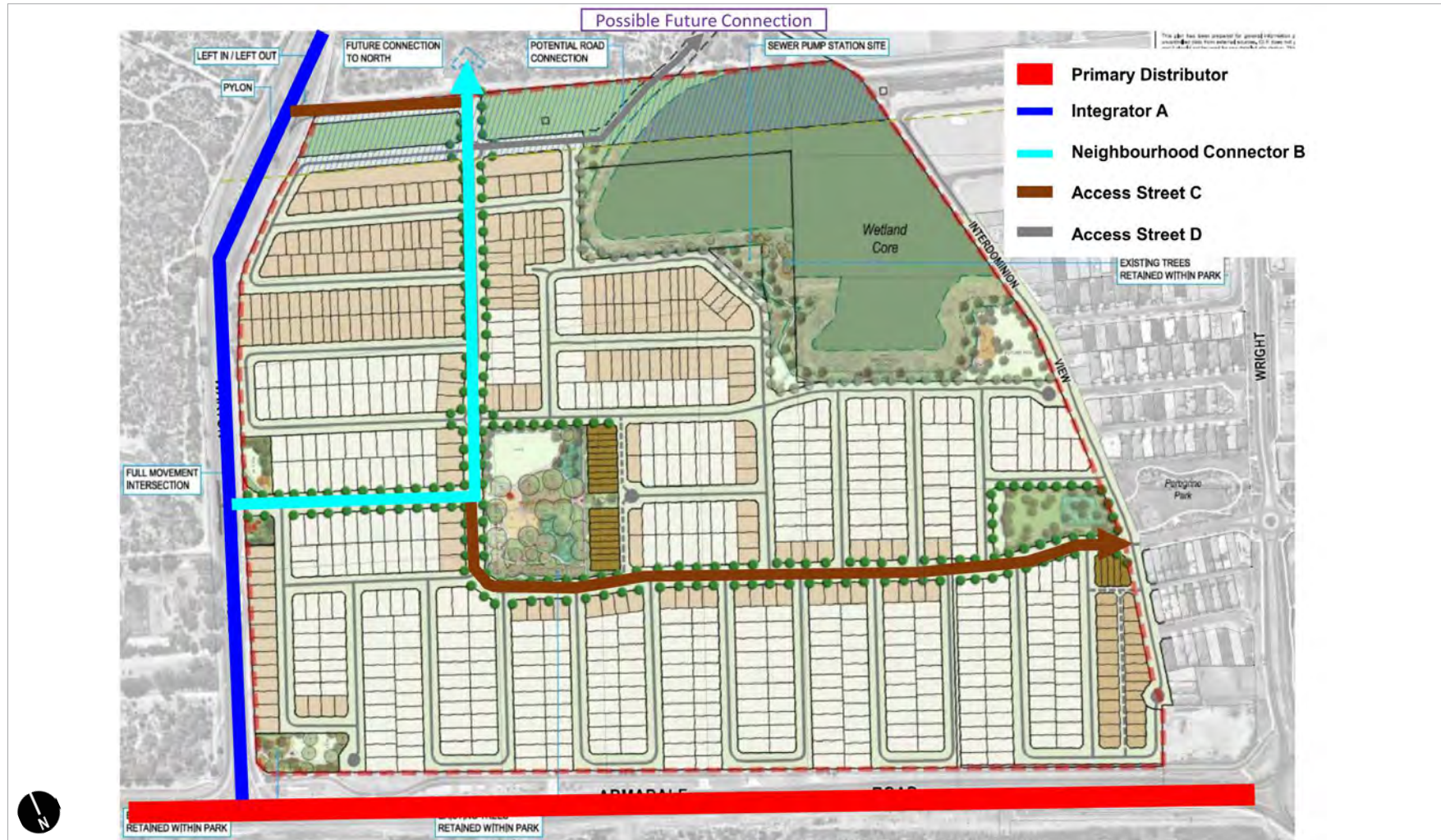


Figure 14 - Road Hierarchy Plan
Source: Transcore

- **Wright Road** is located approximately 450m east of the Structure Plan area. Classified by Main Roads WA as a Local Distributor, Wright Road is generally constructed as a Neighbourhood Connector A, comprising one lane each way with on road cycle lanes and a 2m central median.

Armadale Road, Warton Road and Jandakot Road are currently part of the Restricted Access Vehicles (RAV) Network 4, accommodating heavy vehicle combinations up to 27.5m in length, with appropriate RAV permits issued by Main Roads WA.

A four-arm roundabout, comprising four through lanes in the north-south direction, with two through lanes in the east-west direction is constructed at the Warton Road / Mason Road / Jandakot Road intersection to the south of the Structure Plan.

Public bus service 518 connects to Murdoch to Cockburn Train Station, running along Armadale Road from Cockburn Central to Wright Road, providing an hourly service Monday to Friday with more frequent services in the peak AM and PM periods.

[3.5.2 Proposed Transport Network](#)

The Transport Impact Assessment prepared by Transcore comprehensively addresses traffic movement considerations within the Structure Plan area.

Road Network

The planned road network shown on the Development Concept Plan provides a robust and permeable layout throughout the Structure Plan area, with strong, direct linkages in both an east-west direction, and in

a north-south direction, along with providing excellent (direct) access to the future primary school and district open space to the north. The road network reflects the principles and standards of Liveable Neighbourhoods.

The Road Hierarchy Plan shows the hierarchy of the movement network planned for the area and the external connections to the existing network (Figure 13: Road Hierarchy Plan). The road network has been planned and modelled on known and forecast traffic volumes and will be refined further at the time of subdivision to relevant City of Armadale standards.

It is important to note that the planned road network, as shown on the Development Concept Plan (Figure 8), includes a Neighbourhood Connector accessing Lot 9009 to the north. This land falls outside the Structure Plan area and will be developed by others, however, it was considered important to recognise the eventual development of this land, especially in light of the planned primary school and district open space to be provided on this land.

The key aspects of the planned road network are as follows:

- **Armadale Road** – to remain as a Primary Distributor, under the control of Main Roads. No direct access to Armadale Road is proposed.
- **Warton Road** - to remain as currently classified, as an Integrator A Road.
- **Interdominion View** - similarly to remain as an Access Street with traffic movements forecast to be less than 3,000vpd.
- **Neighbourhood Connector B** – shown generally with a width of 20m, running in an east-west direction into the Structure Plan area from Warton Road and then turning northwards as a planned connection to Lot 9009 to the north.

- **Access Streets** – proposed to contain a pavement width of 6m with a reserve width ranging from 15 to 16m, to be reduced by 1m when adjacent to public open space.
- **Laneways** - shall be a minimum width of 6m to accommodate two-way movements and rubbish collection, increased to a width of 9m where these provide the only public road frontage.

The Structure Plan will connect to the surrounding road network (both existing and planned) by way of the following:

- **Warton Road / Neighbourhood Connector**, to be constructed as full movement T intersection to accommodate traffic movements associated with future development of the overall West Piara locality.
- **Warton Road / Access Street**, to be constructed as a left in / left out intersection only, to provide improved vehicle circulation to and from the Structure Plan area.
- **Interdominion View / Baltic Approach / Access Street**, to be constructed as a 4-way four way (full movement) intersection, given the low volumes expected and to ensure the most efficient vehicle access to and from the Structure Plan area possible.
- **North-South Neighbourhood Connector**, comprising a 20m wide road reserve to provide for a future connection to Lot 9009.

Pedestrian & Cyclist Facilities

The Structure Plan will deliver a safe and legible pedestrian and cycle movement network for future residents, expanding upon connections currently found in the surrounding areas, which in turn can be further expanded upon as other developments proceed within the locality.

A 4m Principal Shared Path already runs on the northern side of Armadale Road, constructed as part of recent Armadale Road Upgrade Works.

The key principles for the planned pedestrian and cycling facilities within the Structure Plan are:

- A shared path will be provided to the Neighbourhood Connector (2-2.5m in width) as well as along the only Access Street C road, connecting through to Interdominion Way.
- Footpaths on at least one side of all other access roads within the Structure Plan area.

These key principles and the final location of footpaths and shared paths will be determined in consultation with the City of Armadale as part of the detailed engineering stage following subdivision approval.

Public Transport

Development of the Structure Plan will in part provide the catalyst for a future public transport service. Presently bus route 518 runs along Armadale Road and Wright Road from the Cockburn Train Station. It is anticipated that this bus route will continue to service the Structure Plan area, with plans by the Department of Transport indicating that Armadale Road may be upgraded as a high priority transit corridor to further improve public transport in the area.

3.5.3 Analysis of the Transport Network

Transcore have undertaken comprehensive traffic modelling for the movement network proposed by the Structure Plan. It demonstrates that the proposed network and associated reserve widths have the capacity to accommodate expected traffic volumes. Traffic modelling undertaken has incorporated forecast volumes up to the year 2031, which is the year that full development of the wider West Piara Waters locality is assumed to be complete which ensure a transparent and robust model.

All vehicle movements fall within the acceptable limits outlined by Liveable Neighbourhoods for the respective road categories proposed by the Structure Plan, with future development only generating approximately 6,120vpd. Therefore, except for the Neighbourhood Connector, all roads within the Structure Plan are categorised as Access Streets, highlighting the limited impact the Structure Plan will have on the wider network.

Importantly, none of the roads within the Structure Plan will exceed 5,000vpd meaning that there will be no restriction on (direct) vehicular access to any of these roads. The Structure Plan proposes no direct access to Armadale Road.

Warton Road Intersection

A capability assessment (SIDRA software) was carried by Transcore on the proposed Warton Road / Neighbourhood Connector intersection (full movement T- intersection).

This analysis found that the intersection will operate satisfactorily during both AM and PM peak hour period at ultimate development (to the year 2031). The intersection will have significant spare capacity, minimal queues and delays as the existing large median provides for right turn movements to be undertaken in two stages.

Internal Intersections

In addition to the Warton Road Intersection, the Structure Plan proposes three 4-way intersections.

A roundabout is proposed where the two (internal) Neighbourhood Connectors intersect, to ensure maximum efficiency for traffic circulation and to assist with speed management. A second roundabout is also proposed where the north-south Neighbourhood Connector intersect with an east-west Access Street acknowledging that this is an 'entry' to the future primary school and district open space 'precinct', with the purpose of the roundabout twofold - to ensure maximum efficiency for traffic circulation and to act as traffic calming.

For the remaining two 4-way intersections, given very low forecast traffic volumes, these are to be constructed as priority-controlled intersections with 'Give Way' controls on the minor road approaches, in accordance with *Liveable Neighbourhoods*. Entry treatment will be provided on the side (lower order) roads to help to alert drivers to the presence of the intersections and that traffic on the major road has priority.

The precise nature and function of all internal intersections will be determined once the location and alignment of access streets has been finalised as part of the subdivision approval. All intersection spacing and treatments will be designed to accord with *Liveable Neighbourhoods* standards.

The SIDRA capability analysis carried out for the site confirms that uninterrupted traffic flows can be expected at all internal intersections during typical operating conditions.

3.6 Road and Environment Noise

A Noise Assessment has been prepared by Lloyd George Acoustics in support of the Structure Plan, prepared in accordance with State Planning Policy 5.4 – Road and Rail Noise ('SPP 5.4').

The assessment considered the impact of traffic noise made by vehicle movements along Armadale Road and Warton Road.

The assessment concludes that noise received at future residences located adjacent to Armadale Road and Warton Road would exceed acceptable noise limit targets, as outlined in SPP 5.4. Notwithstanding this, the assessment outlined that this impact can be mitigated through the construction of a 2.1m noise wall along these two roads as well as the implementation of Quiet House Design construction standards. Two wall breaks with overlapping internal walls are provided along Armadale Road providing pedestrian permeability and access to the Principal Shared Path (PSP) network and bus stop along Armadale Road, in addition to the break in the southwest corner at the public open space. Notification would also be lodged against titles of impacted properties to inform future owners of potential impacts and necessary construction standards.

It is worth noting that the Assessment also considered potential noise emissions from the Cockburn-Fremantle Pistol Club located on the western side of Warton Road (Lot 886 Warton Road), with this component assessed against the *Environmental Protection (Noise) Regulations 1997*. The assessment has found that road traffic noise from Armadale Road and Warton Road is the dominant source of acoustic impact and that the pistol club noise emissions are not intrusive. A preliminary design of the noise wall will be required at the time of

subdivision, demonstrating that this wall will be both 'fit for purpose' and will not impose any untoward visual impact upon the locality (as see from the public realm).

The Lloyd George Noise Assessment is provided as Appendix 3.

3.7 Water Management

The Structure Plan has been designed to accommodate the principles of best practice urban water management principles by integrating stormwater detention and infiltration within areas of public open and the wetland for larger storm events.

A Local Water Management Strategy (LWMS) has been prepared by JDA Consulting Hydrologists in support of the Structure Plan, in accordance with the principles and objectives of WAPC's Better Urban Water Management Guidelines and the approved Piara Water West District Water Management Strategy (JDA Hydrologists, 2019), prepared in support of the rezoning of the land in the Metropolitan Region Scheme. A key focus of the DWMS was to show how future urban development was compatible with the long-term protection and management of the Jandakot groundwater Area.

The JDA LWMS is provided in its entirety as Appendix 6.

Establishing key principles for the management of stormwater runoff and groundwater quality, implementation of the LWMS will be through the development of subsequent Urban Water Management Plans (UWMP) which will be prepared at the time of subdivision.

3.7.1 Stormwater Management

Stormwater management will be based around current water sensitive design principles and best management practices to effectively manage water quality and quantity from all storm events. The LWMS refines the stormwater strategy established in the approved Piara Water West DWMS, demonstrating that development will not be detrimental to the Jandakot Groundwater Protection Area.

The key aims of the DWMS were to:

- Define land area requirement for stormwater and to protect future urban development from peak flood events.
- Set out a drainage system that is appropriate for local conditions that incorporate best practice water sensitive urban design measures, along with an associated implementation framework for the drainage design objectives.
- Prescribe the design criteria for both water quantity and quality.
- Recommend an ongoing monitoring program for water quantity and quality (both pre- and post-development) to ensure the drainage strategy is robust.

The LWMS refines the stormwater strategy set out in the DWMS as follows:

Small Event Management

For stormwater from the first 15mm of rainfall (generally equating to the 1 year ARI event or small event):

- Stormwater generated from within residential lots will be retained and infiltrated onsite via soakwells or other underground storage devices.
- Runoff from roads will be discharged within bio-retention areas, in areas of open space and the wetland buffer.
- Bio-retention areas will be underlain with amended soils and planted with suitable species, providing for water quality treatment

Minor Drainage

For stormwater over and above the first 15mm event (minor events) up to and including the 0.2 EY event (generally equating to the 5 year ARI):

- Stormwater flows will primarily be piped through a road drainage system to basins.
- Runoff generated from within residential lots in excess of onsite soakwells or other underground storage devices capacity will flow overland into the road drainage pit and pipe network.
- Flood storage areas located at catchment low points will provide for stormwater runoff retention.

Major Drainage

For stormwater over and above the 0.2 EY up to the 1% AEP event (100 year ARI):

- Stormwater from the major event will infiltrate into the in-situ soils and additional sand fill.
- Once the capacity of the road drainage network is reached, stormwater will be conveyed safely overland via road reserves to the basin storage areas located at catchment lows.
- Habitable building floor areas will be at least 0.5m above the central drainage basin and 0.3m above the eastern drainage basin

3.7.2 Groundwater Management

Adequate separation between finished surface levels and groundwater will be achieved through the use of clean, free draining fill (where required).

An earthworks strategy has been prepared by Cossill & Webley Engineers for the Structure Plan area which shows adequate separation to groundwater of approximately 2.5m to 5m. As there is adequate separation, widespread use of subsoil drainage to control groundwater levels is not required.

Subsoil drainage is proposed beneath drainage basins to ensure adequate drainage of public open space areas and to act as a contingency measure should groundwater levels rise further than predicted.

Finished levels and fill requirements, as a detailed design issue, will be addressed as part of the engineering design and Urban Water Management Plan stage.

3.7.3 Implementation and Monitoring

The LWMS sets the overall water monitoring program that will assess hydrological impact post-development of the Structure Plan.

Post-development monitoring of groundwater levels and quality will be carried out quarterly, over a 3 year period. All water quality testing will be undertaken by a NATA accredited laboratory in accordance with Australian Standards.

3.8 Education

There are no educational facilities planned or required within the Structure Plan, with the area well serviced by a number of existing and planned educational facilities.

The Department of Education own Lot 9010, immediately north of Mason Road, with this land reserved in the MRS as 'Public Purpose – High School'. On 8 December 2020 the Premier, the Hon Mark McGowan, and the Minister for Education, the Hon Sue Ellery, announced the funding of the \$60 million West Piara Waters Secondary College on Lot 9010, accommodating student years 7 to 12. Construction of this Secondary College has commenced and is expected to open in 2023.

In addition to the West Piara Waters Secondary College, a primary school has been identified, co-located with an area of district open space on Lot 9009, immediately to the north of the Structure Plan area.

These two schools will offer residents access to government education facilities within a walkable catchment.

Further, the Structure Plan is also in close proximity to a number of other existing educational facilities, including:

- Harrisdale Senior High School, located approximately 2km east.
- Aspiri Primary School, located approximately 800m east, Piara Waters Primary School, located approximately 1.5km north-east and Riva Primary School, located approximately 2km east.
- Carey Baptist College (Harrisdale Campus), located on Wright Road approximately 2.5km north-east while its Forrestdale Campus is located 2.5km south-east, located along Nicholson Road.
- St John Bosco College, located on Armadale Road approximately 3km south-east.

Collectively these schools offer Kindergarten to Year 12 and provide both government and non-government school options for future residents.

3.9 Servicing and Staging

The following section summarises the engineering considerations in the Engineering Servicing Report prepared by Cossill & Webley Consulting Engineers. A copy of the Engineering Servicing Report is provided as Appendix 7.

[3.9.1 Earthworks Strategy](#)

The earthworks strategy for the Structure plan area will set out to provide for fully earthworked level lots, terraced with retaining walls (where required), which will in turn enable lots to step up natural slopes while keeping building costs to a minimum. The strategy will also be designed about vegetation that is to be retained within areas of open space.

As a consequence, the earthworks strategy will be framed about the following objectives:

- Provide adequate separation to groundwater with consideration of expected post-development groundwater rise, noting that groundwater rise is not anticipated.
- Provide minimum levels required for gravity-reliant drainage and sewer serviceability.
- Achieve a Class A site classification, which may result in the removal of some peat-rich soils in some part of the site.
- Allow roads and earthworks levels to follow the existing topography and reflect the natural landscape wherever possible.
- Match into the ground levels at the periphery of the Structure Plan area.

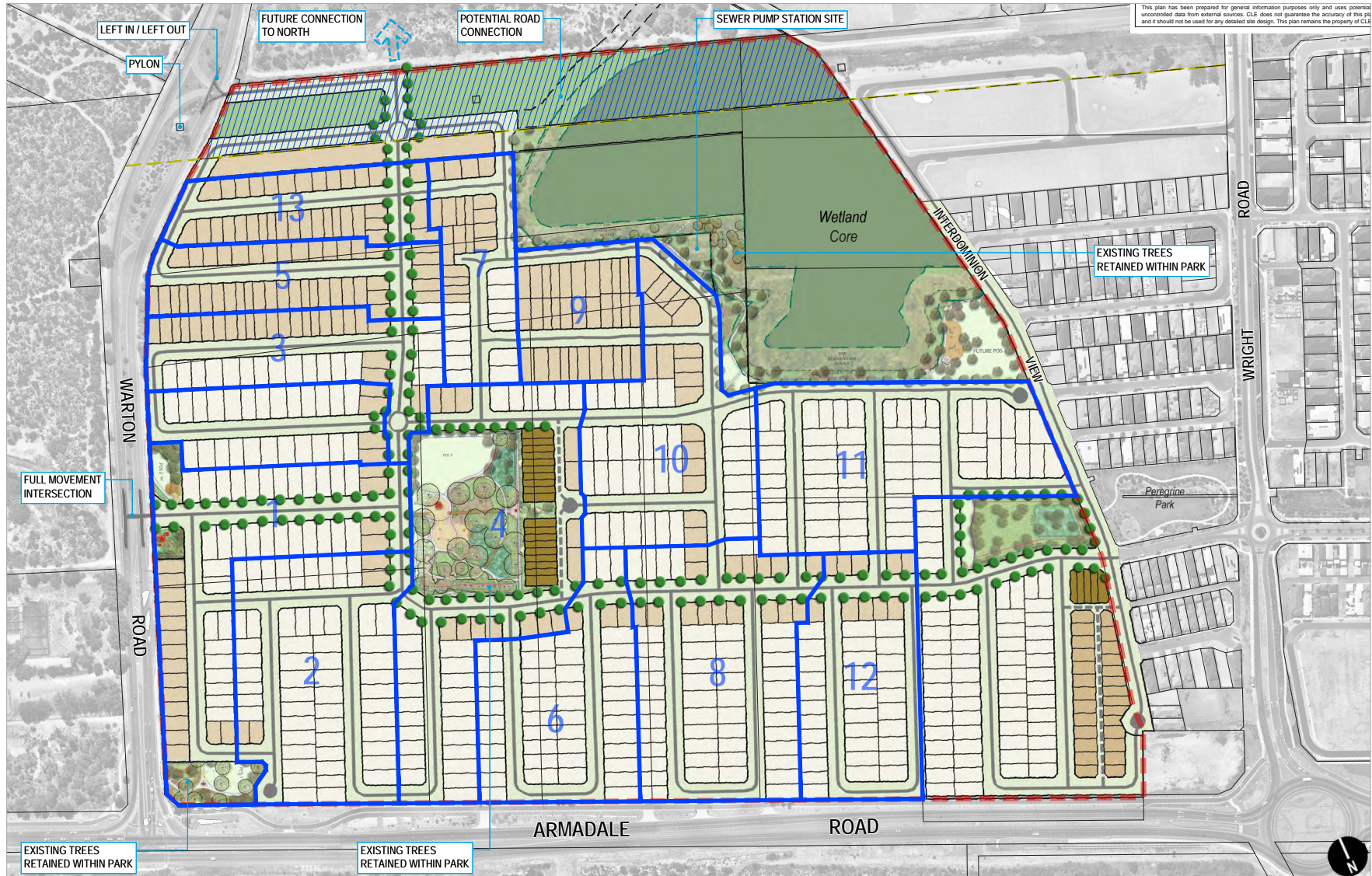


Figure 15 - Development Concept Plan - Indicative Staging

Source: Nearmap



[3.9.2 Sewer](#)

Sewer from the Structure plan will be gravity fed to a sewer pump station that is to be located in the north-eastern corner of the Structure plan area. This pump station will then discharge to a pressure main that will be situated within the Armadale Road reserve, in turn flowing to the existing Clementine Boulevard Pump Station located approximately 4km west.

[3.9.3 Water Reticulation](#)

The Structure Plan will be provided with reticulated water through extensions to the water distribution network found immediately east of the site.

[3.9.4 Power Supply](#)

The Structure Plan can be connected to power via existing Wester Power infrastructure located within Armadale Road (22kV overhead distribution main) and Warton Road (22kV underground distribution main), which has the capacity to service future development, with no major infrastructure upgrade required.

All power infrastructure within the Structure Plan will be underground and fed from transformers strategically located within the site.

A 330kV overhead transmission line that runs through the northern part of the Structure Plan area is protected by a 60m easement. The Structure Plan responds to this infrastructure by only proposing development of this land for the purpose of public open space or local roads.

[3.9.5 Gas Supply](#)

High pressure gas mains are located within both Armadale Road and Warton Road reserves which can be extended to the Structure Plan area. These mains have adequate capacity to service future development requirements, with no major upgrades works necessary.

[3.9.6 Telecommunications](#)

Current Federal Government telecommunication policy identifies the National Broadband Network Company (NBN Co) as becoming the wholesale telecommunications provider. The design and installation of a standard pit and pipe network will be undertaken as development of the site progresses, with the installation of wholesale fibre to the residents to be provided by the NBN Co.

[3.9.7 Staging and Timing](#)

It is anticipated that the Structure Plan will be implemented to match market demand. Initially development will be focused about Armadale Road to facilitate the construction of the estate entry point off this key (high exposure) road. Development will then typically proceed in an easterly fashion, providing for a progressive and logical extension to the estate. An indicative staging plan is shown as Figure 14.

This should be taken as indicative only and may be subject to change depending on market demand and other variables.

3.10 Developer Contributions

The Local Structure Plan is subject to contribution to the costs of common infrastructure in accordance with a Development Contribution Plan and Cost Apportionment Schedule prepared pursuant to Part 6B and Schedule 13B Development Contribution Plans.



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