

WEST PIARA URBAN PRECINCT SOUTH

LOT 9009 STRUCTURE PLAN

Part One - Implementation Section

SEPTEMBER 2024

CLE Town Planning + Design



Title	West Piara Urban Precinct South Lot 9009 Structure Plan Part One - Implementation Section
Prepared for	Satterley Property Group
CLE Reference	3297Rep14F
Date	13 September 2024
Status	Final
Prepared by	CLE Town Planning + Design

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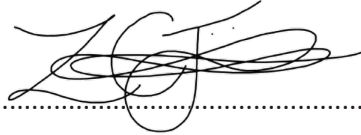
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IT IS CERTIFIED THAT THIS STRUCTURE PLAN WAS APPROVED BY RESOLUTION OF THE WESTERN AUSTRALIAN PLANNING COMMISSION ON:


15 November 2024

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

19 November 2024

Date

19 November 2034

Date of Expiry

Table of Amendments

Amendment No.	Summary of the Amendment	Amendment Type	Date Approved by WAPC

EXECUTIVE SUMMARY

The West Piara Urban Precinct South – Lot 9009 Structure Plan ('the Structure Plan') comprises approximately 31ha of land, being generally bound by Mason Road, Warton Road, Lockeville Boulevard and the Lot 88 Warton Road landholding.

The Structure Plan area is zoned 'Urban' under the Metropolitan Region Scheme (MRS) and 'Urban Development' in the City of Armadale Town Planning Scheme No. 4 (TPS4). This Structure Plan is lodged pursuant to the TPS4 provisions, which requires a structure plan prior to development or subdivision for land zoned 'Urban Development'.

The Structure Plan supports the creation of a residential neighbourhood of between 400 and 430 dwellings that responds to the existing and emerging land use context and realises the strategic planning for the area. Specifically, Perth and Peel@3.5million and the South Metropolitan Peel Sub-regional Framework identifies the land as suitable for residential development.

Residential density allocation generally supports a range of between R25 to R40 and the Structure Plan is capable of delivering 26 dwellings per residential site hectare, satisfying State Government density targets. The Structure Plan reflects the logical expansion of the Piara Waters community, with the planning framework of this future residential neighbourhood having regard to, and carefully considering, the surrounding land use context.

The Structure Plan facilitates an interconnected and appropriate interface to both the existing and future road network, and wider connection to the higher order movement network. Importantly, these connections will provide legible and safe pedestrian and vehicle access to and from the proposed future primary school, the future high school to the north and areas of open space located both within and along side the structure plan area.

Carefully sited areas of open space, including a playing field supporting 'district level' facilities will provide residents and the surrounding community with a combination of passive and active spaces. Open space areas have been located with regard to accessibility, drainage requirements and also, in some cases, a view to retain existing mature trees (where possible) to provide immediate amenity in these areas.

The site can be readily serviced, with essential infrastructure located within proximity and conveniently extended to the Structure Plan area.

To support and inform the Structure Plan the following technical reports have been prepared, and are summarised in the Part 2 – Explanatory Report, with complete copies included as technical appendices:

- Environmental Assessment Report (Strategen-JBS&G).
- Bushfire Management Plan (Strategen-JBS&G).
- Noise Assessment (Lloyd George).
- Landscape Masterplan (Plan E).
- Transport Impact Assessment (Transcore).
- Local Water Management Strategy (JDA).
- Engineering Servicing Report (Cossill & Webley).
- Wetland Management Plan (Strategen-JBS&G).
- Flora and Vegetation Survey (Strategen-JBS&G).

The above mentioned technical reports comprehensively address all of the relevant planning and technical 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
Total area covered by the structure plan	31.35 hectares	Section 1.2.2
Area of each land use proposed Zones (as per the Scheme)		
<i>Residential</i>	15.71 hectares	
Reserves (as per the Scheme and MRS)		
<i>Road Reserves (including widenings)</i>	6.85 hectares	Section 3.0
<i>Parks and Recreation</i>	5.29 hectares	
<i>Public Purposes (Primary School)</i>	3.50 hectares	
Total estimated lots yield	400 – 430 lots	
Estimated number of dwellings	400 – 430 dwellings	
Estimated residential site density		Section 3.2.1
<i>Dwellings per residential site hectare as per Perth & Peel@3.5 million and Liveable Neighbourhoods</i>	26 dwellings per residential site hectare	
Estimated population	1176 people @ 2.8 people per household	
Number of Primary Schools	1	Section 3.8
Number of Secondary Schools	None	
Amount of Public Open Space	4.95 hectares (total) 4.50 hectares (unrestricted) 0.44 hectares (restricted)	Section 3.3

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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 West Piara Urban Precinct South – Lot 9009 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 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 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 26 dwellings per residential site hectare.

6.2.2 Density

Residential densities applicable to the Structure Plan shall be those residential densities shown on the Structure Plan map.

This structure plan uses density code ranges of R25 - R40, with specific residential density codes will be applied at the subdivision stage through an R-Code Plan assessed and approved by the WAPC. The R-Code Plan:

- a. Is required to be submitted with each subdivision application/s and shall be consistent with the density ranges and locational criteria in this structure plan.
- b. Is to include a summary of the proposed lot yield of the subdivision application to which it relates.
- c. Forms part of this structure plan once it has been approved by the WAPC (as part of its determination of the subdivision application).
- d. May be varied subject to the further approval of the WAPC. A varied R-Code Plan will replace (entirely or partially) the previously approved R-Code Plan.
- e. May not be required if the WAPC considers that the subdivision application is for one or more of the following:
 - (i) Amalgamation of lots, including for land assembly;
 - (ii) Provision of access, services or infrastructure;
 - (iii) Non-residential use, with reference to the zone or reserve indicated on this structure plan; or
 - (iv) In accordance with an already-approved R-Code Plan.

6.2.3 Locational Criteria

On land coded R25-R40, the allocation of residential densities shall be in accordance with the following criteria:

- a. A base residential density coding of R30 across the structure plan area.
- b. An R25 coding shall apply to any single residential lot 600m² or greater.
- c. An R40 coding may be applied for lots that are:
 - (i) Located at the end of a street block; and
 - (ii) Within a 200m walkable catchment to POS and/or the Primary School reserve; or
 - (iii) Has primary frontage to a Neighbourhood Connector road.

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 may 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 to address: built form orientation, visually permeable fencing and window openings from habitable rooms to overlook POS and provide for passive surveillance.
- (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 City of Armadale 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 6.

7.3 Bushfire Management

This Structure Plan is supported by a Bushfire Management Plan (Appendix 3). Regardless of whether the land has been formally designated as bushfire prone, any development on land identified as falling within 100m of a bushfire hazard is designated as bushfire prone and shall comply with the requirements of *State Planning Policy 3.7: Planning in Bushfire Prone areas*.

7.4 Earthworks

An application for subdivision approval to create lots within 100m of the Lot 88 Warton Road boundary (Lot 88) shall be supported by an earthworks concept to demonstrate management of ground level differences and gradients between the Structure Plan area and Lot 88.

8.0 OTHER REQUIREMENTS

8.1 Conditions of Subdivision Approval

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

- Urban Water Management Plan.
- Bushfire Management Plan.
- Acid Sulphate Soils Management Plan.
- Fauna Management Plan.
- Noise Wall Design.
- Wetland and Buffer Management Plan.
- Mosquito Management Plan.
- Landscape Masterplan.

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, possible road widening and public open space is indicative only and subject to change and refinement at subdivision stage.



LEGEND

- | | | | | | |
|---|-------------------|---|----------------------|---|-------------------------|
| LOCAL RESERVES | | ZONES | | OTHER | |
|  | Public Open Space |  | Residential (R25-40) |  | Structure Plan Boundary |
|  | Primary School | | |  | Possible Road Widening |
| | | | |  | Neighbourhood Connector |



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WEST PIARA URBAN PRECINCT SOUTH

LOT 9009 STRUCTURE PLAN

Part Two - Explanatory Section

SEPTEMBER 2024

CLE Town Planning + Design



Title	West Piara Urban Precinct South Lot 9009 Structure Plan Part Two - Explanatory Section
Prepared for	Satterley Property Group
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Appendix 7	Local Water Management Strategy (JDA Consulting Hydrologist)
Appendix 8	Engineering Servicing Report (Cossill & Webley Consulting Engineers)
Appendix 9	Wetland Management Plan (Strategen-JBS&G)
Appendix 10	Flora and Vegetation Survey (Strategen-JBS&G)

1.0 PLANNING BACKGROUND

1.1 Introduction and Purpose

The West Piara Urban Precinct South – Lot 9009 Structure Plan ('the Structure Plan') has been prepared on behalf of Satterley Property Group. The Structure Plan comprises approximately 31ha of land, generally bound by Lot 88 Warton Road (south), Warton Road (west), Lockeville Boulevard (east) and Mason 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' prior to subdivision or development of land.

The purpose of the Structure Plan is to provide a planning framework to guide the 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 logical progression of planning following the 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).
- Landscape Masterplan (Plan E).
- Transport Impact Assessment (Transcore).
- Local Water Management Strategy (JDA).
- Engineering Servicing Report (Cossill & Webley).
- Wetland Management Plan (Strategen-JBS&G).
- Flora and Vegetation Survey (Strategen-JBS&G).

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

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:

- Mason Road to the north;
- Warton Road to the west;
- Lockeville Boulevard to the east; and
- Lot 88 Warton Road to the south.

The Structure Plan will see the expansion of the Piara Waters community within one of the fastest growing residential regions in Australia. Within immediate access and proximity to the Kwinana Freeway and Tonkin Highway via Armadale Road as well as the Cockburn Train Station, the development of the Structure Plan optimises existing regional transport infrastructure.

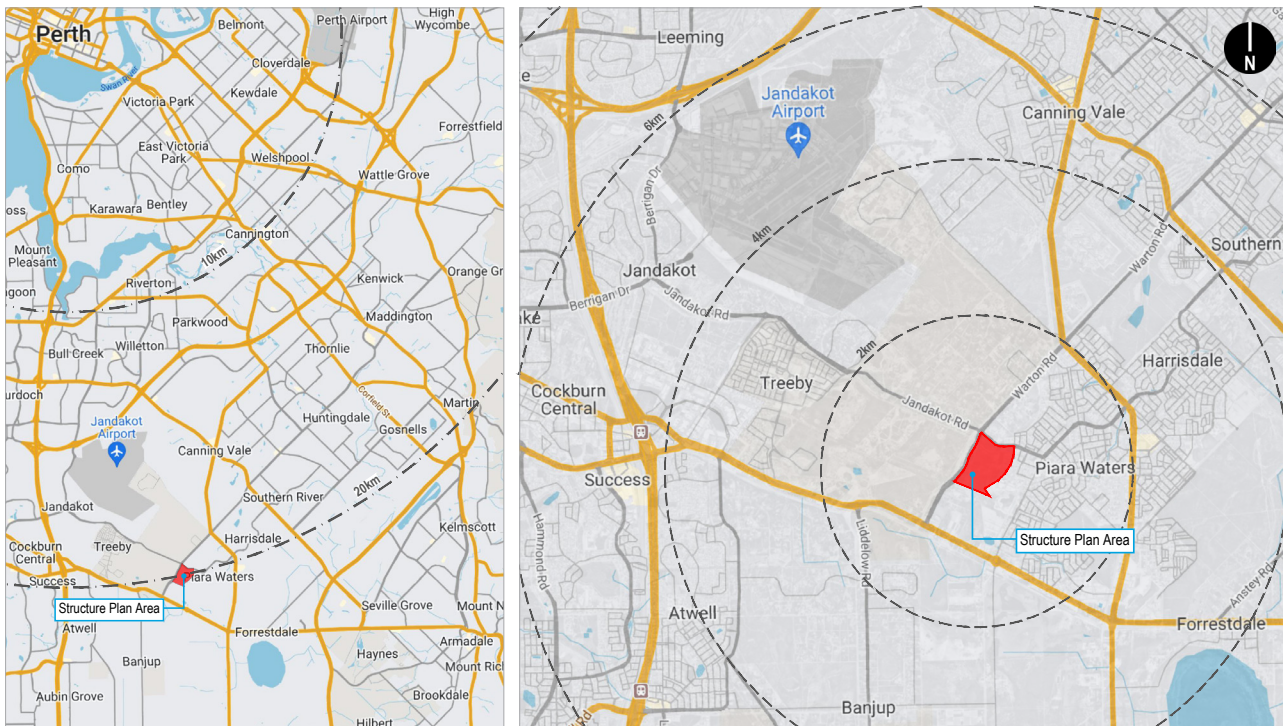


Figure 1 - Location Plan

1.2.2 Area and Land Use

The Structure Plan applies to a 31.36ha vacant landholding ('the site') bound by Warton Road, Mason Road, Lockeville Boulevard and Lot 88 to the south. (Refer Figure 2: Site Plan). The site was historically cleared and used for agricultural purposes.

Land to the east of the site has been subject to previous structure planning and subdivision with residential development substantially completed. The land to the south is subject to future residential development with structure planning for the land well progressed.



Figure 2 - Site Plan

Source: Nearmap

1.2.3 Ownership and Title Details

The site is defined on Certificate of Title as Lot 9009 and is owned by Satterley Property Group (refer Appendix 1).

1.2.4 Surrounding Land Use and Context

The Structure Plan area sits within the context of the expanding West Piara locality and comprises the next phase of urban development within Perth' Southern Corridor. The site is surrounded by a mix of established residential estates within the Piara Waters locality and large undeveloped vacant landholdings.

The northern edge of the Structure Plan area abuts Mason Road, with one access point proposed. As noted above, the land on the eastern side of Lockeville Boulevard consists of existing residential estates. The land to the south of the Structure Plan area is made up of large undeveloped landholdings which are subject to future residential subdivision and development.

Kwinana Freeway (reserved 'Primary Regional Roads') is located approximately 5km west of the Structure Plan, 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.

A public purpose reserve accommodating a future high school is located immediately north of the Structure Plan boundary. Construction of the high school building has commenced.

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.

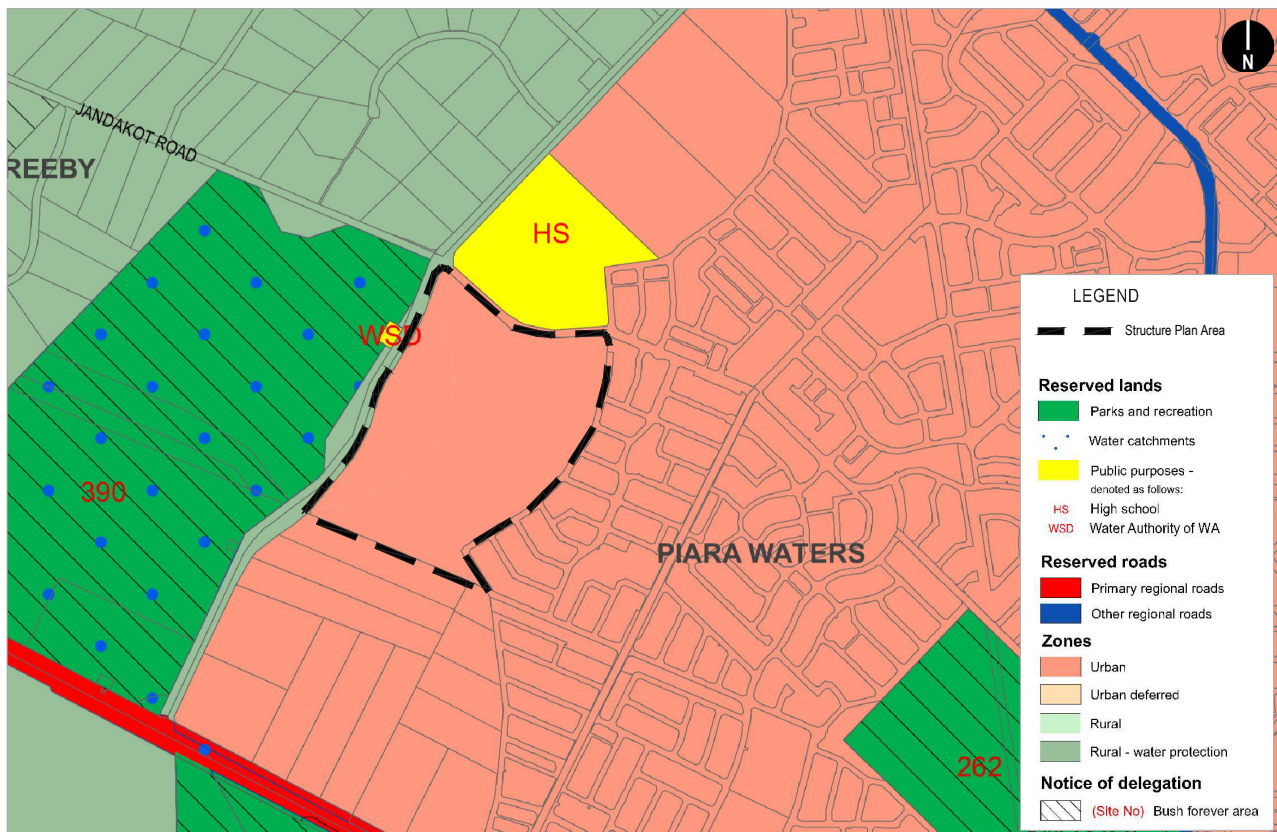


Figure 3 - Metropolitan Region Scheme Zoning

Source: Department of Planning, Lands and Heritage

1.3 Planning Framework

1.3.1 Metropolitan Region Scheme Zoning

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

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).

In April 2021, the City of Armadale Council initiated Amendment 118 (Amdt 118) to TPS4. Broadly, Amdt 118 involves the rezoning of land contained with Structure Plan area to 'Urban Development' on the scheme map and establishing a corresponding Development Area with applicable development requirements incorporated into Schedule 8 (West Piara Precinct South) of TPS4. The development requirements contained within Schedule 8 are required to be undertaken at the time of subdivision and development,

Amdt 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.

In February 2022 the City of Armadale Council adopted Amdt 118 with modifications. Amdt 118 was presented to the WAPC Statutory Planning Committee in July 2022, with final endorsement now received.

Amdt 118 was recently gazetted on 2 December 2022, with its requirements as set out in Schedule 8 (TPS 4), having been considered in preparation of this Structure Plan. For assessment purposes, the requirements of Schedule 8 (DA 70 – West Piara Urban Precinct South), have been summarised (if applicable) in Table 1 below.

Table 1: Schedule 8 (West Piara Urban Precinct South)

Provision No.	Applicable Provisions (s)	Incorporated within the Structure Plan
70.1	Structure Plan prior to subdivision and development	The West Piara Urban Precinct South – Lot 9009 Structure Plan satisfies Provision 70.1.
Prior to Structure Planning		
70.2	Environmental Assessment Report	Refer Appendix 2 – Environmental Assessment Report (Strategen-JBS&G). Refer Appendix 9 - Wetland Management Plan (Strategen-JBS&G). Refer Appendix 10 - Flora and Vegetation Survey (Strategen-JBS&G).

Provision No.	Applicable Provisions (s)	Incorporated within the Structure Plan
Required to guide Structure Planning		
70.3 (a)	Local Water Management Strategy	Refer Appendix 7 – Local Water Management Strategy (JDA Consulting Hydrologist). Refer Sections 2.3 and 3.4 (Part 2) – water management consistent with approved West Piara Waters District Water Management Strategy.
70.3 (b)	Bushfire Management Plan	Refer Appendix 3 - Bushfire Management Plan (Strategen-JBS&G). Refer Sections 2.4 and 3.7 (Part 2).
70.3 (c)	Traffic Impact Assessment (incl analysis of Warton Road/Mason Road)	Refer Appendix 6 - Transport Impact Assessment (Transcore Traffic Engineers) and Section 3.5 (Part 2) – analysis of Mason Road intersection addressed.
70.3 (d)	Acoustic Assessment (road noise and pistol club)	Refer Appendix 4 - Noise Assessment (Lloyd George Acoustics) and Sections 2.2 and 3.6 (Part 2).
70.3 (e)	Environmental Management Plan	Refer Appendix 2 – Environmental Assessment Report (Strategen-JBS&G) and Sections 2.1, 2.2, 2.5 and 3.3 (Part 2).
70.3 (f)	Wetland and Buffer Management Plan	Refer Appendix 2 – Environmental Assessment Report (Strategen-JBS&G) and Section 8.1 (Part 1) – requirement at time of subdivision and/or development. Refer Appendix 9 - Wetland Management Plan (Strategen-JBS&G).
70.4 (a)	Warton Road intersection	Refer Appendix 6 – Transport Impact Assessment (Transcore Traffic Engineers) and Sections 3.5.2 and 3.5.3 (Part 2).
70.4 (b)	Mason Road widening	Refer Appendix 6 – Transport Impact Assessment (Transcore Traffic Engineers) and Sections 3.5.2 and 3.5.3 (Part 2).
70.4 (c)	Mason Road/Southampton Road intersection	Refer Appendix 6 – Transport Impact Assessment (Transcore Traffic Engineers) and Sections 3.5.2 and 3.5.3 (Part 2).
70.4 (d)	High Pressure Gas Mains	Refer Section 1.5 (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 2.6 and 3.6 of the Part 2 report.
70.4 (f)	Mosquito management	N/A – detail design phase (condition of subdivision).
70.4 (g)	Location of primary school	Refer Section 3.8 – 3.5ha primary school site included as part of structure plan.
70.4 (h)	Location of a senior multiple purpose sporting oval; and protection of significant flora, vegetation and environmental features	Refer Section 3.3.1 – neighbourhood active public open space to be co-located with primary school. Refer Sections 2.2, 2.3.3, 2.4 and 3.3 (Part 2) Refer Appendix 2 – Environmental Assessment Report (Strategen-JBS&G) and Appendix 4 - Landscape Masterplan (Plan E) – identified flora, vegetation and environmental features retained within public open space. Refer Appendix 10 - Flora and Vegetation Survey (Strategen-JBS&G).

[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 Structure Plan area is shown as Rural and Semi-Rural Living in the DSP 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. Importantly, 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.

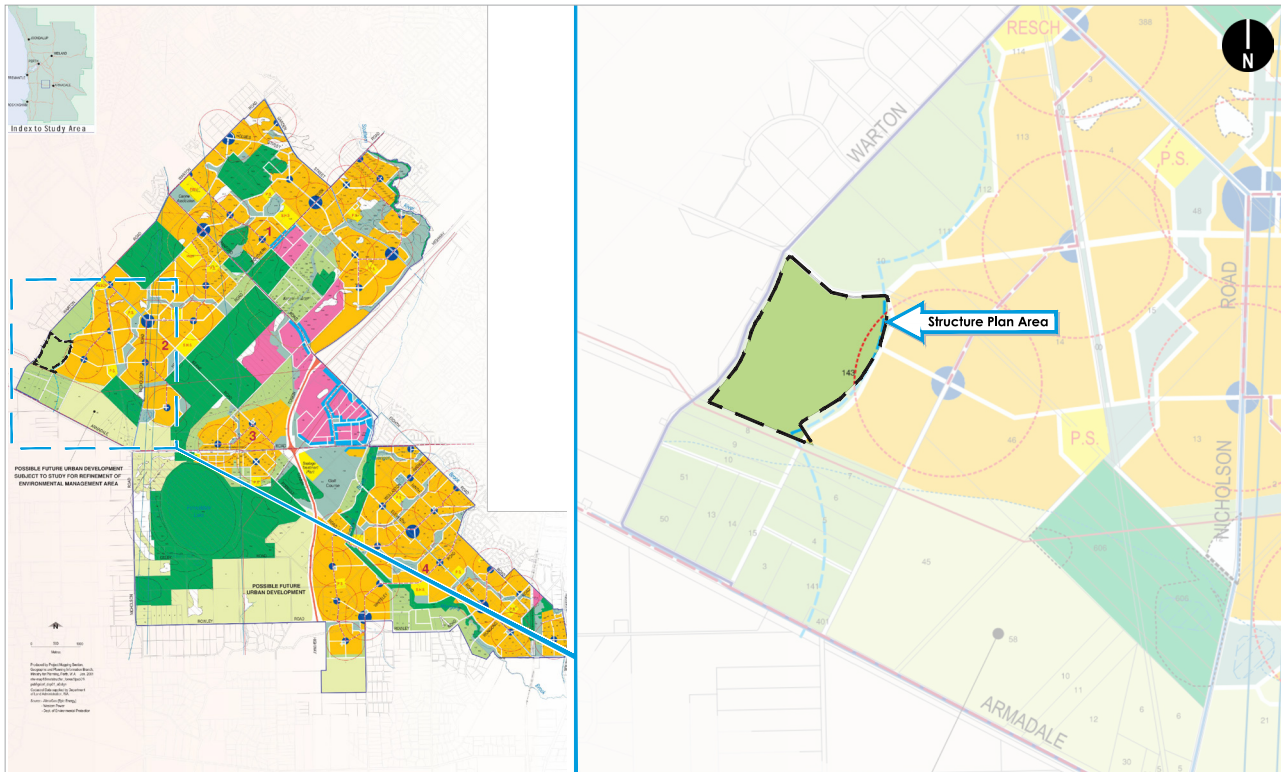


Figure 4 - Southern River / Forrestdale / Brookdale / Wungong District Structure Plan

Source: Western Australian Planning Commission

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 Structure Plan area is not covered by the Development Area No.35 North Forrestdale (Stage Three / South) Structure Plan given that this document reflected the (then) rural zoning of the land in MRS and the absence of any structure plans for the site. However, similarly to the DSP (discussed above), this document predates Perth and Peel@3.5million and the Sub-regional Planning Framework which now identifies the land as being suitable for urban development consistent with the ‘Urban’ zoning in the MRS.

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.

It would be appropriate for the North Forrestdale Composite Local Structure Plan, which is a composite of all local structure plans in the locality, to be updated to incorporate the West Piara Urban Precinct South – Lot 9009 Structure Plan, once operative.

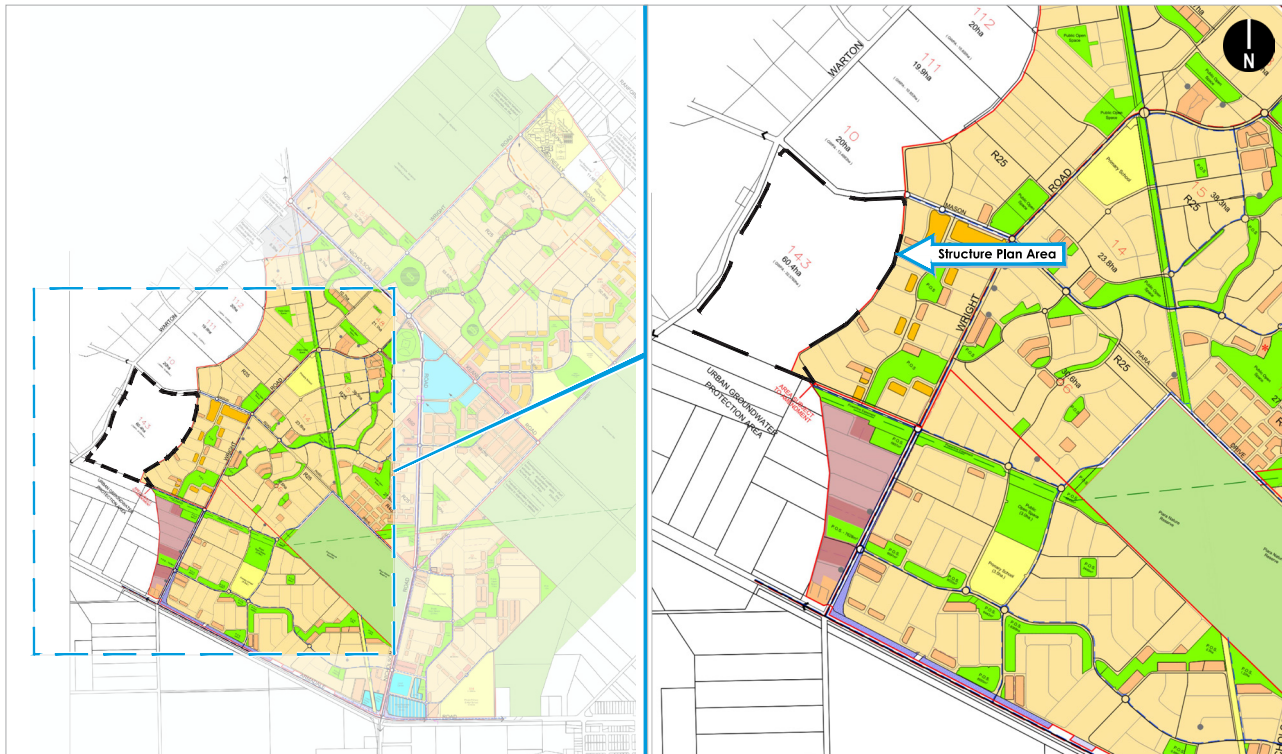


Figure 5 - Composite North Forrestdale Structure Plan

Source: City of Armadale

1.4 Strategic Planning Framework

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

1.4.1 Perth and Peel @ 3.5 Million (March 2018)

The *Perth and Peel @ 3.5 million* (March 2018) suite of policies forms the spatial framework and strategic plan for Perth and Peel. Its purpose is to establish a blueprint for supporting a population of 3.5 million by 2050 through the finalisation of four sub-regional planning frameworks.

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.

1.4.2 South Metropolitan Peel Sub-regional Framework

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.

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).

Consistent with the Framework, an MRS Urban zoning now applies to the Structure Plan area. A comprehensive District Water Management Strategy informed the sites progression to the Urban zone, detailing how urban development would not adversely impact the Jandakot groundwater resource. The Structure Plan will satisfy the objectives of the Framework by facilitating ground water protection measures established in the overarching DWMS as urban planning and development progresses.

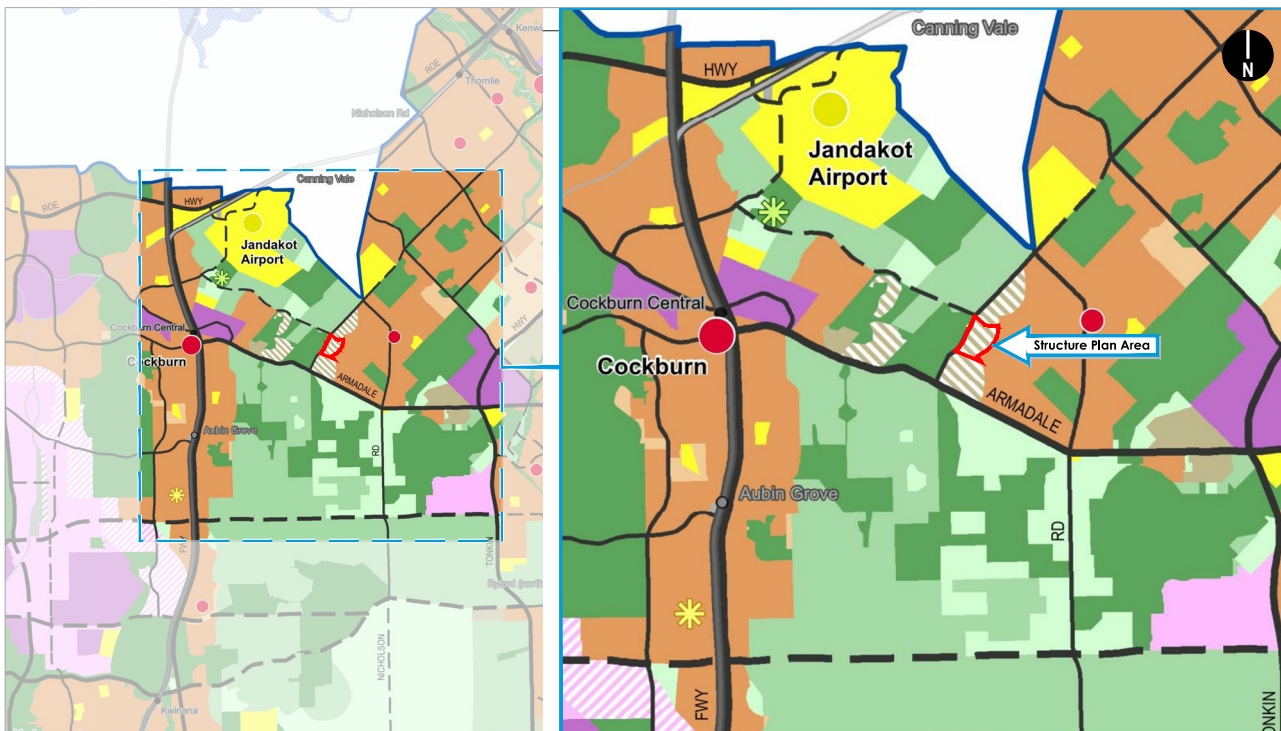


Figure 6 - South Metropolitan Peel Sub-regional Framework

Source: Western Australian Planning Commission

[1.4.3 City of Armadale Local Planning Strategy \(2016\)](#)

The *City of Armadale Local Planning Strategy* (the Strategy) (December 2016) sets out the objectives and recommended actions associated with future development within the City of Armadale.

The Structure Plan area is identified as 'Rural – Drinking Water Protection', reflecting the previous zoning of the land. It is noted again that, similar to other key overarching planning documents applicable to the site, the Strategy predates the outcomes of Perth and Peel@3.5million and the Sub-regional Planning Framework which identified the land for urban purposes in the MRS.

Importantly, and of relevance, 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 making the progression of the site for urban development appropriate and timely.

1.5 Other Planning Policies

The following section summarises the policies and strategies relevant to the Structure Plan as urbanisation proceeds.

[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, given the MRS 'Urban' zoning of the site it is anticipated that a reclassification of the Amendment area to P3 will be undertaken.

[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 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). The objectives of SPP 2.3 are consistent with 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 entirely consistent with this policy as it facilitates 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 fundamental environmental constraints on the site. All essential service infrastructure can be readily and efficiently connected from the 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 has 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 2.4 and 3.7 below and the BMP is attached in full as Appendix 3.

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 Warton Road, which is identified as a strategic freight routes.

A Noise Assessment has been prepared by Lloyd George Acoustics, consistent with SPP 5.4, in support of the Structure Plan. The Noise Assessment determines road noise associated with Warton Road and sets out any potential impact upon future development.

The Noise 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 4.

WAPC State Planning Policy 7.3: Residential Design Codes

The *Residential Design Codes* (R-Codes) form the basis for the assessment of all single, grouped and multiple-dwelling developments in Western Australia. They are applicable to the structure plan area by virtue of the proposed Residential zone.

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 given its underlying 'Urban Development' zoning and via the City's Local Planning Policy PLN3.10 Residential Design Codes Variations and R-MD Codes in Part 1 of the structure plan which may provide for other variations through future Local Development Plans.

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. In response, the Structure Plan proposes no sensitive land uses within this affected land, with only low density (single) residential lots proposed, thereby satisfying the advice received by ATCO.

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.

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

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.

In consultation with the City of Armadale during the preparation of the structure plan and allocation of open space, a number of mature trees have been identified as having a high level of landscape significance (as defined by the policy).

In response, the open space allocation has had regard to the retention of some of these trees with further information provided as part of the Landscape Strategy. The manner in which the Structure Plan responds to this aspect is discussed further in Section 3.

City of Armadale Local Planning Policy PLN 2.6: Water Sensitive Design (PLN2.6)

The *City of Armadale's Local Planning Policy PLN 2.6* sets out to integrate quality urban development with the natural environment via the implementation of water sensitive design principles during the planning process, including structure plans.

PLN 2.6 provides guidance on best management practice to protect watercourses and ensure that stormwater is maintained appropriately. Informed by the overarching District Water Management Strategy, the Local Water Management Strategy prepared by JDA Consulting Hydrologists as part of this Structure Plan incorporates water sensitive design principles in accordance with PLN2.6.

City of Armadale Local Planning Policy PLN 3.10: Residential Design Codes Variations and R-MD Codes (PLN3.10)

In April 2016, the WAPC released Planning Bulletin 112, which contains a set of standard variations (known as R-MD Codes) to the deemed-to-comply provisions of the R-Codes for single house in the 'Development' zones where a coding of R25 to R60 applies.

To enable these to be implemented on an estate-wide basis through reference in a structure plan, the City of Armadale's PLN 3.10 was revised to reference the R-MD codes for land zoned 'Urban Development'. These include variations to street and lot boundary setbacks, open space, garage widths and setbacks, front fences, parking, visual privacy and solar access.

This is referenced in Part 1 of this structure plan, making the R-MD Codes applicable within the Structure Plan. These apply unless a Local Development Plan containing additional variations has been approved in accordance with the Planning and Development (Local Planning Schemes) Regulations 2015.

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

The City’s *Local Planning Policy: Designing Out Crime* (PLN 3.14) aims to reduce 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 principles of PLN3.14 by addressing the 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.

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, and to establish the layout of the future neighbourhood active POS. Additionally, a comprehensive street tree planting regime has also been prepared which will considerably increase the number of trees in the locality as development progresses, meeting the key objectives of the City’s Urban Forest Strategy.

The following specific provisions of PLN 2.9 apply:

Table 2: Structure Plan Response to PLN 2.9

Provision No.	Provision Text	Structure Plan Response
4.3.6	<p>Landscaping Master Plan & Management Strategy & Street Tree Conditions</p> <p>For subdivisions containing public open space and/or larger subdivisions (greater than 10 lots) the City will request that the Western Australian Planning Commission (WAPC) apply a subdivision condition requiring that a Landscaping Master Plan & Management Strategy be prepared and implemented. For smaller subdivisions (10 or less lots) the City will request that the WAPC apply a subdivision condition requiring the provision of street trees.</p>	<p>A Landscape Master Plan has been prepared for the LSP (refer Appendix 5). A subdivision condition requiring its implementation is expected as part of subsequent approvals.</p>

Provision No.	Provision Text	Structure Plan Response
4.3.7	<p>Local Development Plan (LDP) Required for Narrow Lots</p> <p>The City requires that a Local Development Plan (LDP) be prepared for lots with a street frontage of less than 12m. The LDP should identify street tree locations in the verge in front of those lots, in order to preserve the street tree locations from potential conflicts with the house and crossover design.</p>	<p>The road network and the associated infrastructure located within reserves (footpaths, street trees etc.) has yet to be established, the requirement for an LDP is not appropriate when there is unlikely to be any future conflict between house and crossover design and street trees.</p> <p>As noted in Section 3.2.2 Streetscapes, in most instances, it is likely that residential development will proceed street tree planting, meaning house and crossovers will already be established prior to street trees being planted. The requirement for an LDP is therefore unnecessary when street tree locations are ultimately going to be dictated by house and crossover design.</p>
4.3.8	<p>Road Widths and Cross-sections - Structure Plan and Subdivision</p> <p>At both the structure plan and subdivision stage of development the City will require application of the following variations to cross-sections and reservations from Liveable Neighbourhoods 2015, in order to provide a less constrained 'corridor' for the planting of street trees, especially where on-street parking and dual use paths are required to be accommodated:</p>	<p>The 4.5m verge widths provided for in Liveable Neighbourhoods which are reflected in this LSP are more than adequate in providing the necessary space for future street tree planting.</p> <p>As outlined in PLN2.9, the requirement for 5.3m verge widths is particularly relevant where on-street parking and dual use paths are proposed along Access Streets. In this instance, no on-street parking are proposed along any of the Access Streets C and D, with dual paths only located along Access Street B's, Neighbourhood Connectors and Integrators – meaning there is adequate space in the proposed 4.5m verges along Access Street C and D's for street tree planting. For these reasons, no further widening is considered necessary.</p>
4.3.9	<p>Corner Lots – Design and Development of Long Verge</p> <p>The following requirements are applicable to corner lots at subdivision:</p> <ul style="list-style-type: none"> - Corner lots that don't front a rear laneway should have a frontage to depth ratio of between 1:1.5 and 1:2 (as recommended in Liveable Neighbourhoods 2015) as that places a reasonable limit upon the length of the corner lot, and therefore, the amount of landscaping required to be installed and maintained on the long verge; and - Parallel car parking bays should be installed wherever possible within the long verge abutting a corner lot, without compromising the requirement for two (2) street trees per side lot as standard practice. 	<p>Corner lot designs will be refined as part of future subdivision in accordance with clause 4.3.9.</p>

Amendment 115 to Town Planning Scheme No. 4

In December 2022, Amendment 115 to the City's TPS4 was gazetted to expand the North Forrestdale Development Contribution Plan (DCP) to cover all land recently zoned for urban development, including the Structure Plan area.

This DCP will fund a number of key items within the locality including (but not limited to):

- Planned district playing field situated within the south-east portion of the Structure Plan.
- Contribution to the development of sporting facilities at Department of Education's high school site north of the Structure Plan area.
- Acquire land associated with the rehabilitated wetland south of 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.

The DCP provides the funding for a number of infrastructure and community items, ensuring their delivery.

2.0 SITE CONDITIONS

The Structure Plan area has largely been cleared since 1974 as a result of previous land use activities that included sand quarrying activities, with remaining vegetation now generally in a degraded state. Some vegetation regrowth has occurred from 2000 onwards when the quarry became non-operational. Strategen-JBS&G Environmental has prepared a comprehensive Environmental Assessment Report (EAR) which sets out the site conditions and constraints within 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 via the appropriate stages of the planning process through appropriate land use allocation and suitable management practices.

This section summarises the key findings of the EAR, with a copy provided as Appendix 2.

2.1 Topography, Landform and Soils

The topography, landform and soils are suitable for urban development and are characterised by:

- A relatively flat site with elevation ranging between 32m and 36m Australian Height Datum (AHD). The levels along each of the boundaries are higher, with the most significant being the ridgeline along the south-west boundary; and
- Soil types dominated by Bassendean Sand (white to pale grey at the surface, yellow at depth) overlaying sandy clay of the Guildford Formation.

2.1.1 Acid Sulphate Soils

The Department of Environment and Regulation (DWER) acid sulphate soil (ASS) risk mapping shows the entirety 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 along 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

The Structure Plan area is not located within any Department of Water and Environmental Regulation (DWER) listed contaminated sites, with the past and present use of the site not generating a high risk of contamination.

2.2 Biodiversity and Natural Assets

2.2.1 Flora and Vegetation

The Structure Plan area is largely free of any native vegetation, as a result of the past quarrying activities on the land, with only small areas of regrowth across the site.

The flora and vegetation survey undertaken as part of the Environmental Assessment Report prepared by Strategen-JBS&G provides an overview of the previous and current vegetation composition. A preliminary survey was undertaken in January 2022 to assess flora, vegetation and black cockatoo habitat, and a detailed spring survey was undertaken in October and November 2022 to confirm the mapped vegetation types and condition, confirm wetland values present and to undertake a targeted flora survey during the peak flowering period for the Threatened orchid *Caladenia huegelii*.

The survey found that:

- The vegetation condition within the Structure Plan area generally ranges from 'Completely Degraded' to 'Good to Degraded' to 'Degraded'.
- The total area of remnant/regrowth vegetation within the Structure Plan area is 2.8ha , primarily along the southern and western boundaries of the site and a small portion along Mason Road.
- One small area of potentially representative Banksia Woodlands was found; however, was assessed and found to not meet the condition and size thresholds to be defined as a Threatened ecological community – which has since been impacted by firebreak clearing and aggressive weed regrowth.
- A small amount of wetland fringing vegetation was identified along the fence line in the southeast corner of the Structure Plan area during the survey of January 2022. However, no wetland vegetation was identified within the Structure Plan area during the spring survey of 2022.
- Two vegetation units were recorded within the Structure Plan area, with 90% being Parkland Cleared areas and the remainder being Banksia woodland.
- The portion of the Structure Plan area mapped as Geomorphic Wetland did not contain wetland vegetation.
- Most (90%) of the vegetation within the proposal area was classified as 'Completely Degraded', likely due to clearing associated with historical sand quarry operations.
- No threatened flora species were recorded within the Structure Plan area.
- No conservation significant vascular flora taxa were identified within the Structure Plan area
- No Bush Forever sites are within the Structure Plan area.

[2.2.2 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.

The preliminary survey of January 2022 found that there was limited evidence of foraging activities of Forest Red-tailed Black Cockatoos, with the only areas identified in northern sections of the structure plan area.

An inspection of trees within the Structure Plan area with a diameter at breast height greater than 500mm found no potential significant trees and therefore no black cockatoo breeding hollows. The spring survey of 2022 found Black Cockatoo forage habitat quality to be poor.

2.3 Hydrology

Regional groundwater level mapping by DWER generally shows groundwater flow direction west to east across the Structure Plan area from the top of the Jandakot Mound west of the site. Groundwater flow direction is locally significantly influenced by groundwater abstraction for public water supply from Water Corporation's production bores along Warton Road.

Pre-development groundwater monitoring was undertaken by JDA for the District Water Management Strategy between August 2018 and September 2020. Five additional groundwater monitoring bores were installed within the Structure Plan area in February 2022 and are being monitored for groundwater level and quality by JDA until end of 2022.

Depth to average winter water table over the majority of the site is generally 2m, with greater depth in elevated areas along the northern and southern boundaries. Maximum groundwater levels range up to approximately 0.8 m higher.

[2.3.1 Surface Water](#)

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

There are no existing water courses or surface features that drain 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.

The site forms part of the upper catchment of the City of Armadale's James Drain system.

[2.3.2 Wetlands](#)

The Department of Biodiversity, Conservation and Attractions (DBCA) geomorphic wetlands database shows that there are two wetlands found onsite, with one classified as Resource Enhancement Wetland (UFI 13342) and one as a Multiple Use Wetland (UFI 7176) located in the south-east portion of the Structure Plan area.

Resource Enhancement Wetlands are wetlands that 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.

The majority of the wetlands exists outside of the Structure Plan area with only 0.3 ha (1%) of total wetland area, occurring in the southeast corner of the site.

Wetland Evaluation

During the preceding amendment to the Metropolitan Region Scheme which zoned the land for urban purposes, these 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.

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

Importantly, 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 considered wetland boundaries and classification assessments for the subject wetlands (UFI-7176, UFI-13342).

In accordance with the EPA's advice and scheme provision text Clause 70.2, an Environmental Assessment Report (EAR) has been prepared and included as Appendix 2.

Overall, the EPA noted its 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.

2.4 Bushfire Management

The Structure Plan area has been assessed in accordance with the provisions of against State Planning Policy 3.7 Planning in Bushfire Prone Areas (SPP3.7) given the site is identified within a designated bushfire prone area according to the DFES State Map of Bush Fire Prone Areas.

Accordingly, a Bushfire Management Plan (BMP), refer Appendix 3, has been prepared in accordance with SPP3.7 and the Guidelines for Planning in Bushfire Prone Areas (the Guidelines). The BMP considers the site's vegetation, effective slope, low threat exclusions and pre and post-development Bushfire Hazard Levels (BHLs).

The assessment concludes that the bushfire hazard within and adjacent to site and the associated bushfire risks are readily manageable through standard acceptable solution management responses outlined in the Guidelines.

More specifically, it notes that:

- The site currently contains or is adjacent to Class A Forest, Class B woodland, Class D scrub and Class G Grassland vegetation, which currently impact the site with a combination of Moderate and Extreme BHLs.
- Since the current on-site vegetation extent will be modified through the establishment of an urban community, the site will be modified to a low threat state, including throughout all proposed POS areas, which will reduce on-site BHLs to Moderate and Low.
- Residual vegetation retained adjacent to the site will be separated from future areas of habitable development by existing and proposed perimeter roads.

2.5 Cultural 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 Environmental Noise

A Noise Assessment as been prepared by Lloyd George and assesses both the impacts of the Cockburn-Fremantle Pistol Club and Warton Road, refer Appendix 4. The assessment has been prepared in accordance with *State Planning Policy 5.4 – Road and Rail Noise* (SPP 5.4).

Noise monitoring has been undertaken on Warton Road to quantify existing noise levels and allow the noise model to be calibrated. The future noise impacts are then considered using the noise modelling software SoundPLAN v8.2.

Generally, the report concludes that:

- Given the separation distance to the Pistol Club, there is unlikely to be any noise impacts and therefore no mitigation recommendations are provided.
- To manage road, noise, a combination of noise wall, notifications and architectural packages are recommended. These options will be discussed further in Section 3.6.



Figure 7 - Development Concept Plan

Source: Nearmap

3.0 LAND USE AND SUBDIVISION REQUIREMENTS

3.1 Land Use

The Structure Plan provides the framework for the progression of urban development that responds to the needs of the emerging Piara Waters community.

A Concept Plan, refer Figure 7, has been prepared to demonstrate how residential development could occur based on the Structure Plan principles and requirements, noting that this represents only one development outcome. The design and lot layout will be refined at the time of subdivision.

The key principles of the Concept Plan are to:

- Allow for the creation of a diverse range of high-quality housing choices that appeal to a wide market segment.
- Support the provision of significant and much needed community facilities such as the open space supporting the 'district level' playing fields and a primary school site to meet the current and future needs of the Piara Waters community.
- Deliver high quality, accessible open space areas and streetscapes that provide for a range of passive and active recreational activities.
- Increase the urban tree canopy via a dedicated tree planting regime throughout the public realm.
- Deliver a permeable, interconnected road and pedestrian network that provide logical connections to the established movement network.
- Provide an urban form that responds to the local context of Piara Waters.

Based on these key principles, the Structure Plan (refer Figure 8) provides a framework for the creation of:

- A total of approximately 400 to 430 dwellings with residential densities ranging from R25 to R40. More compact residential densities are focused around key areas of open space, while the balance of the Structure Plan area shall comprise more traditional single house lot product.
- A permeable movement network that connects into existing road networks and provides for pedestrian and cycling infrastructure, and future public transport services.
- A future 3.5ha primary school facility to support the educational needs of the emerging Piara Waters community.
- A co-located neighbourhood park open space that provides for a range of community and recreational facilities for the existing and future residents.
- Approximately 4.95ha of public open space in four locations ensuring opportunities for passive recreation delivering key drainage objectives and in doing so meeting the minimum 10% public open space requirement outlined in *Liveable Neighbourhoods*.
- A landscape masterplan that guides the delivery of the public open space areas, including providing detail on how integrated drainage will be developed.
- A managed interface to nearby higher order roads to mitigate traffic noise to ensure the safety and amenity of future residents.

A Local Context Plan has been prepared showing the Development Concept Plan in context with the adjacent (southern) land, which is currently subject to structure planning. The plan demonstrates how the structure plan is able to be developed in a manner that responds to the adjoining land to the south, including suitable road connections and interfaces to the 330kv power easement.

A Land Use Summary is included as Table 3, and should be read in conjunction with the Public Open Space Schedule shown as Table.

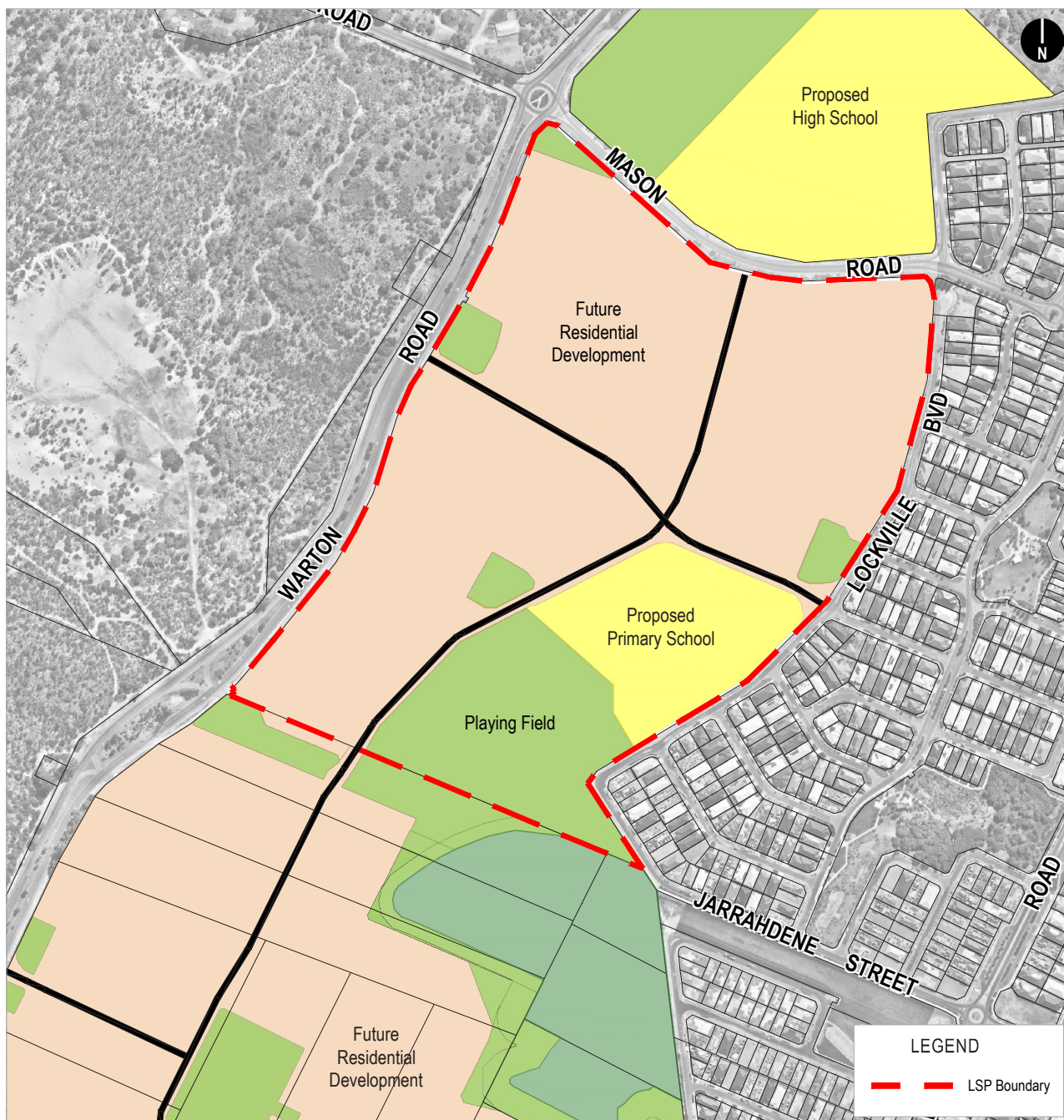


Figure 8 - Local Concept Plan

Source: Nearmap



3.2 Residential

The Structure Plan provides for the delivery of a range of lot types, housing products and lifestyle options in a manner that generally satisfies the targets set out in *Perth and Peel @ 3.5 million*.

The delivery of quality housing is a key objective of the Structure Plan. Critical to this is the delivery of housing that addresses and interfaces appropriately with public spaces, incorporates solar passive design principles for private outdoor living areas and ensure garages / carports are appropriately located.

Table 3: Land Use Summary

Item	Data	Section Number
Total area covered by the structure plan	31.35 hectares	Section 1.2.2
Area of each land use proposed Zones (as per the Scheme)		
<i>Residential</i>	15.71 hectares	
Reserves (as per the Scheme and MRS)		
<i>Road Reserves (including widenings)</i>	6.85 hectares	Section 3.1
<i>Parks and Recreation</i>	5.29 hectares	
<i>Public Purposes (Primary School)</i>	3.50 hectares	
Total estimated lots yield	400 – 430 lots	
Estimated number of dwellings	400 – 430 dwellings	
Estimated residential site density		Section 3.2.1
<i>Dwellings per residential site hectare as per Perth & Peel@3.5 million and Liveable Neighbourhoods</i>	26 dwellings per residential site hectare	
Estimated population	1176 people @ 2.8 people per household	
Number of Primary Schools	1	Section 3.8
Number of Secondary Schools	None	
Amount of Public Open Space	4.95 hectares (total) 4.50 hectares (unrestricted) 0.44 hectares (restricted)	Section 3.3

3.2.1 Dwelling Yields and Density Targets

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 26 dwelling per site hectare, exceeding the target set out in *Perth and Peel@3.5million*.

The Structure Plan provides the framework to deliver a range of housing types and tenures to facilitate residential yields commensurate with the strategic and statutory planning framework, as well as the site's location within the broader Piara Waters locality. The Structure Plan has the potential to yield around 400 to 430 dwellings accommodating approximately 1176 people (at 2.8 people per household).

Densities range from R25 to R40, based on the following principles:

- A base coding of R30 applies across the structure plan to provide opportunities for traditional lot sizes to satisfy the prevailing market demand for this product, which will apply to lots typically ranging in size from 300m² to 450m².
- R25 provides for larger single residential lots with an area of 600m² or greater to avoid potential over development or resubdivision through use of the R30 provisions..
- Medium density R40 areas are typically located in close proximity to public open space, the primary school and along the estate entrance neighbourhood connector (where a higher level of amenity exists), ranging in size between 180m² to 300m². This density coding provides the opportunity to deliver cottage style housing (single or double storey, front loaded) or for contemporary 'compact' lots that typically book end street blocks.

The allocation of a density range from R25 to R40 applied to the Structure Plan provides flexibility for density allocation at subdivision with a clear set of criteria to ensure densities are sited appropriately. Allocating specific densities across the plan could result in unnecessary and time-consuming structure plan modifications to simply make minor modifications to an R-Code boundary.

[3.2.2 R-Code Variations](#)

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.

Lot abutting areas of Public Open Space

Liveable Neighbourhoods supports residential lots directly abutting open space under particular circumstances and where the functionality of the POS is not compromised, and where dwellings address the open space providing adequate visual surveillance.

Typically, the interface to public open space will be via roads, however, in some instances direct lot frontage is an appropriate design response to provide greater product diversity, address amenity and increase surveillance of the public spaces. To ensure these public open spaces are not compromised by such a design initiative subsequent subdivision design and engineering detail will ensure that visitor parking is provided along adjacent streets, and the adjacent residential lots are elevated where possible above the POS ground level to create a visible separation between the private and public realm.

Where lots interface with open space, LDP's will need to be prepared to control built form. These LDP's will address:

- Built form orientation;
- Minimum setbacks to the public open space;
- Major openings (other than bedrooms) to address open space; and
- Permeable fencing to ensure constant 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 Warton Road, as identified in the Lloyd George Noise Assessment (Appendix 4). 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 a framework for the delivery of public open space that can serve a variety of functions, balancing active and passive recreational pursuits and delivering key drainage objectives.

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 and provided as Appendix 5.

The Structure Plan also includes an additional area of parkland in the northern corner of the site. This was initially proposed as an area of public open space, however, at the request of the City this has been modified to a drainage reserve.

The Structure Plan will retain, where possible, carefully selected mature trees within key areas of public open space. It is important to note that the landscaping designs are conceptual only and will be refined as part of subsequent stages of planning and in consultation with the City of Armadale.

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

Western Entry POS (POS 1)

- Total area of approximately 3,500m².
- Located at the western entry of the estate from Warton Road to retain a large existing tuart tree as the key feature of the park, providing environmental and visual amenity as well as opportunities for informal shading.
- Incorporates a landscaped drainage basin to support 1:1, 1:5 and 1:100 drainage events.
- A picnic shelter to be positioned on the edge of the dampland under the tuart tree and adjacent a turfed informal recreation space.

Eastern Entry POS (POS 2)

- Total area of approximately 2,900m².
- Located at the eastern entry of the estate from Lockeville Boulevard, opposite the proposed primary school.
- Incorporates a landscaped drainage basin to support 1:1, 1:5 and 1:100 drainage events.
- Located to retain three large existing trees to maximise the level of shaded across the area and to provide a high degree of environmental and visual amenity for pedestrians utilising the space.
- Provision of a boardwalk which provides meandering pedestrian connections to the rest of the estate, nestled between existing trees and low native understorey planting to provide an attractive woodland effect and ensure passive surveillance is maintained. The boardwalk will incorporate custom seating areas to provide opportunities for high amenity passive recreational activities.

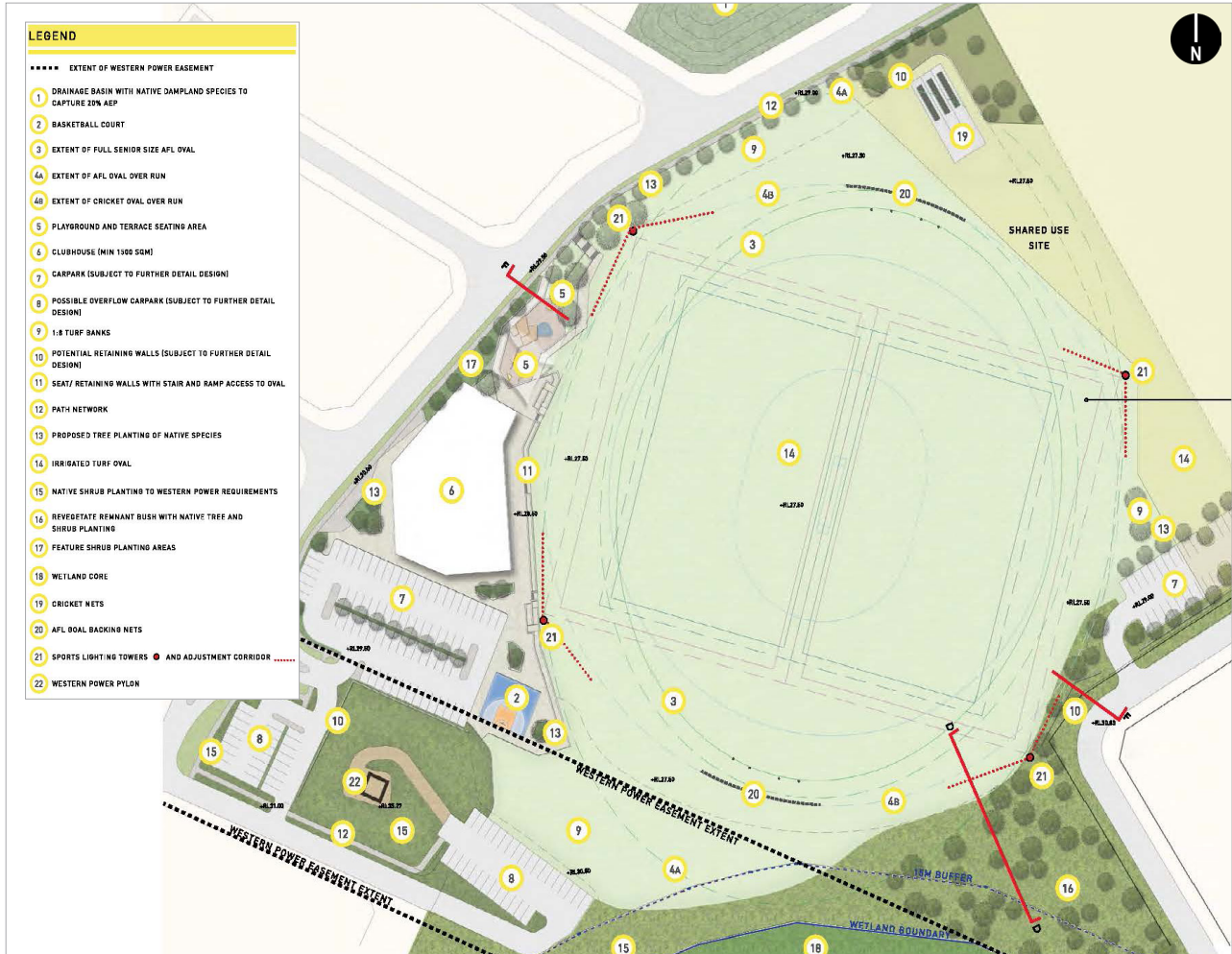
Neighbourhood Active Open Space (POS 3)

- Total area of approximately 4.24ha.
- Located in the south-east corner of the site and co-located with the proposed primary school.
- Represents the primary park in the estate, providing both an active and social hub for the community as required by the requirements of Schedule 8 (West Piara Precinct South) via Amdt 118.
- Provides a variety of district level facilities including a variety of sports fields, a clubhouse, car parks and a playground incorporating terraced seating that overlooks the playground and playing fields.
- Approximately half of the northern boundary abutting the future primary school is turfed, large enough to accommodate a range of sports fields including AFL, soccer, cricket and rugby.
- Retention of a pocket of remnant vegetation remaining in the southeast corner of the POS which will be re-vegetated to its original condition along the boundary of the existing wetland.
- The oval run-off area will extend into the high voltage Western Power easement (Lot 88) and will incorporate car parks and low native shrub planting complying with Western Power planting criteria. A crushed compacted limestone track will provide access for Western Power service vehicles to the pylon located in this area.

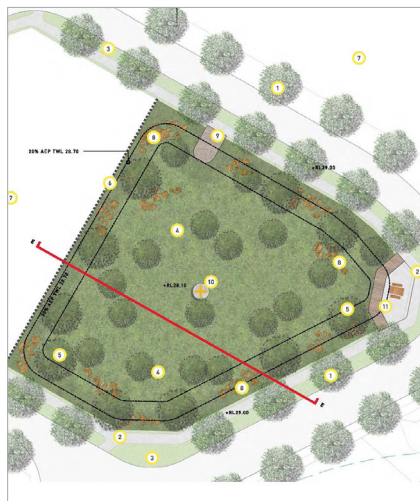
Central POS (POS 4)

- Total area of approximately 2,500m².
- Located centrally within the estate adjacent to the Neighbourhood POS and future Primary School.
- Incorporates a landscaped drainage basin to support 1:1, 1:5 and 1:100 drainage events.
- Located adjacent to the Neighbourhood Active Open Space it reduces stormwater capture needs to maximise the useable space and support a seamless interface with the co-located primary school.
- Will reflect a revegetated dampland with low native understorey planting around the upper levels of the basin embankments to provide an attractive woodland effect and maintaining passive surveillance.

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Neighborhood Active POS



Central POS



Western Entry POS



Eastern Entry POS

Figure 9 - Landscape Concepts

Source: Plan E Landscape Architects

3.3.2 Streetscape

While not usually acknowledged as traditional public open space pursuant to *Liveable Neighbourhoods*, streetscapes make up an important component of the public realm, and the quality of landscaping within the key streets assists to deliver a true sense of place within new urban areas.

Street trees are proposed for all streets within the estate, which will either be planted at time of subdivision works, or as part of front yard landscape packages once residents have moved into their homes. A simple and limited palette of street tree species will be used in order to create an identifiable and unifying theme for the estate.

3.3.3 Public Open Space Provision and Schedule

The Structure Plan provides for approximately 4.95ha of public open space which (once *Liveable Neighbourhoods* credits are applied) represents around 18.19% POS as shown in Table 4 (Public Open Space and Drainage Schedule).

Table 4 (Public Open Space and Drainage Schedule) makes provision for the following:

- 18.19% of public open space far exceeding the required 10% *Liveable Neighbourhoods* requirement. The following is a summary of the key aspects of the open space provision based on *Liveable Neighbourhoods* requirements.
- 4.95ha (gross) of open space is distributed throughout the Structure Plan area, accommodating both active and passive uses and performing a drainage function.
- 0.18ha 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.
- 0.44ha of open space will receive drainage from the 1 in 1 to 1 in 5 year drainage event in landscape infiltration basins and swales in accordance with water sensitive urban design principles. The 1 in 1 to 1 in 5 year event is treated as restricted use open space in accordance with *Liveable Neighbourhoods*.
- The wetland buffer is credited as being restricted use open space in accordance with *Liveable Neighbourhoods*.
- A separate drainage reserve is provided in the northern corner of the site as a deduction from the overall site area.
- All other POS areas are unrestricted open space (approx. 4.50ha), providing a range of passive and active functions, as well as local amenity for future residents.

The POS provision in the Structure Plan area will exceed the requirements of *Liveable Neighbourhoods*. This is due to the delivery of the playing field and community facility within the Structure Plan area that necessitates a sufficient land area for playing surfaces, buildings and supporting infrastructure/facilities.

The playing field/community facility and POS land area over and above the *Liveable Neighbourhoods* requirement of 10% is identified as a common infrastructure item in DCP No. 3. Due to this resultant overprovision of POS within the structure plan area, DCP No. 3 provides an equitable mechanism to acquire the area of POS above the developer's standard 10% POS provision.

Table 4: Land Use Schedule (all areas in hectares)

Public Open Space Schedule (all areas are in hectares)			
LSP Site Area (excluding existing Road Reserves)			31.350
Existing Deductions			
Mason Road Widening		0.207	
Lockeville Boulevard widening		0.095	
Primary School		3.500	
Surplus 2% Restricted POS (1.0275 minus 0.5468ha)		0.000	
Drainage 1:1yr event (Total as per JDA advice 03.08.2022)		0.179	
Dedicated Drainage Reserve (NW corner)		0.166	
Total existing deductions		4.147	
Net Site Area			27.203
Structure Plan Deductions			
Restricted POS over 2%		0.000	
Total Structure Plan Deductions		0.000	
Gross Subdivisible Area			27.203
POS @ 10%			2.720
Public Open Space Requirement			
May Comprise:			
Min 8% unrestricted POS		2.176	
Max 2% restricted POS		0.544	
TOTAL POS REQUIRED			2.720
Public Open Space Provided	Unrestricted POS Area	Restricted POS Area	
Park 1 - Western Entry POS (Warton Road)	0.211	0.098	
Park 2 - Eastern Entry POS (Lockeville Blvd)	0.183	0.074	
Park 3 - Neighbourhood Active POS	4.072	0.160	
Park 4 - Central POS	0.040	0.109	
TOTAL (ha)	4.507	0.441	
Additional Deductions			
Restricted Open Space Surplus			0.000
Revised Public Open Space Contribution			
Unrestricted POS provided	4.507		16.57%
Restricted POS provided	0.441		1.62%
Total Creditable POS Provided	4.948		18.19%

Notes:

- 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).
- This Schedule is for plan CLE Ref. 3297-36H ((minus nothern drainage reserve which was previously an open space credit) and uses the drainage calculations prepared by JDA (Aug 2022).
- The 0.16ha of restricted use public open space associated with Park 3: Neighbourhood Active POS relates to open space contained within the wetland buffer.

3.4 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 (refer Appendix 7), 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 to urban 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.

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. It is noted that the preliminary drainage catchments plan contained with the LWMS (Appendix 7) contains a subdivision design that is indicative only.

3.4.1 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 requirements 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 15 mm of rainfall (approximately equivalent to the 1 EY 1 hour rainfall or small event):

- Stormwater generated from connected impervious areas within lots will be retained and infiltrated on-site in soakwells or other underground storage devices.
- Stormwater runoff from roads will be piped to downstream bio-retention areas within areas of open space.
- Bio-retention areas will be underlain with amended soils and planted with water-tolerant plant species suitable for water quality treatment.

Minor Drainage

For stormwater runoff above the first 15 mm of rainfall (small event) up to and including the 20% AEP event:

- Stormwater will be conveyed primarily by the road pipe network to the downstream flood management areas.
- Runoff generated from within residential lots in excess of on-site soakwells or other underground storage devices capacity will flow overland via driveways or front of lots into the road drainage pit and pipe network.
- Flood management areas are located at the catchment low points within areas of open space and stormwater will be retained and infiltrated.

Major Drainage

For stormwater runoff above the 20% AEP (minor event) up to and including the 1% AEP event:

- Stormwater (as in the small and minor events) will be infiltrated within in-situ sands and also runoff from lots in excess of underground storage systems into the road.
- Once the capacity of the road drainage network is reached, stormwater will be conveyed safely overland within the road carriageway which grades towards the downstream flood management areas at the catchment low points and be retained and infiltrated within areas of open space.
- Habitable buildings floor areas will have a clearance of at least 0.5 m above the top water levels of the flood management areas for Catchments B, C and D and 0.3 m for Catchment A.

3.4.2 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 (refer Appendix 8) for the Structure Plan area which shows adequate separation with minimum clearance of 2.5 m from maximum groundwater levels across the Structure Plan area.

Subsoil drainage is proposed within road reserves and beneath drainage areas within the POS to promote infiltration and prevent waterlogging, and as a contingency measure to protect infrastructure in the event of any future groundwater level rise.

3.4.3 Implementation and Monitoring

The LWMS details a monitoring program that will quantitatively assess the hydrological impacts of development of the Structure Plan area.

Post-development monitoring of groundwater levels and quality will be carried out quarterly over a 3 year period. All water sampling will be conducted according to Australian Standards and all water quality sample testing will be conducted by a NATA-approved laboratory.

3.5 Movement Network

A Transport Impact Assessment (TIA) has been prepared by Transcore, refer Appendix 6. The TIA demonstrates that the Structure Plan area can be supported by the existing and proposed external traffic network depicted on the Structure Plan as well as the street layout shown on the development concept plan.

This section provides a summary of the key elements of the TIA including details of the existing and proposed road networks, the road hierarchy and traffic generation. Further consideration is also given to public transport, cyclist and pedestrian network provision.

3.5.1 Existing Movement Network

The Structure is supported by a regional road network that allows for convenient access to local, district and regional destinations. The key aspects of the existing road network are as follows:

Armadale Road is located approximately 800m south of the Structure Plan area is reserved as a Primary Regional Road in the MRS and classified as a Primary Distributor Road according to the Main Roads WA functional road hierarchy. Armadale Road is the key regional road connection to the site, and has recently been upgraded to dual divided carriageway standard (two lanes each way) with a posted speed limit of 80 km/h. Armadale Road is an identified primary freight route.

Warton Road abuts the western edge of the Structure Plan and is classified as a District Distributor A Road by Main Roads and classified as an Integrator Road A. It is constructed to a dual divided carriageway standard (two lanes each way) with a speed limit of 80km/h adjacent to the subject site. Warton Road is also identified as an primary freight route.

Mason Road abuts the northern boundary of the Structure Plan, 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.

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.

3.5.2 Proposed Movement Network

Road Network

The proposed road network follows a logical and orderly hierarchy which provides legible and useable networks for all modes of transport for travel, to, from and within the area. The network has been defined by predicted traffic volumes, road function and design characteristics. The Structure Plan provides for both strong and direct north-south and east-west linkages to surrounding higher order roads, as well as the future primary school and neighbourhood active public open space. The proposed road network has also been designed with regard to adjoining structure plans in the area which are currently under construction, particularly that of Stockland's Wildflower Estate to the south – thereby ensuring excellent connections for those traveling to and from the site.

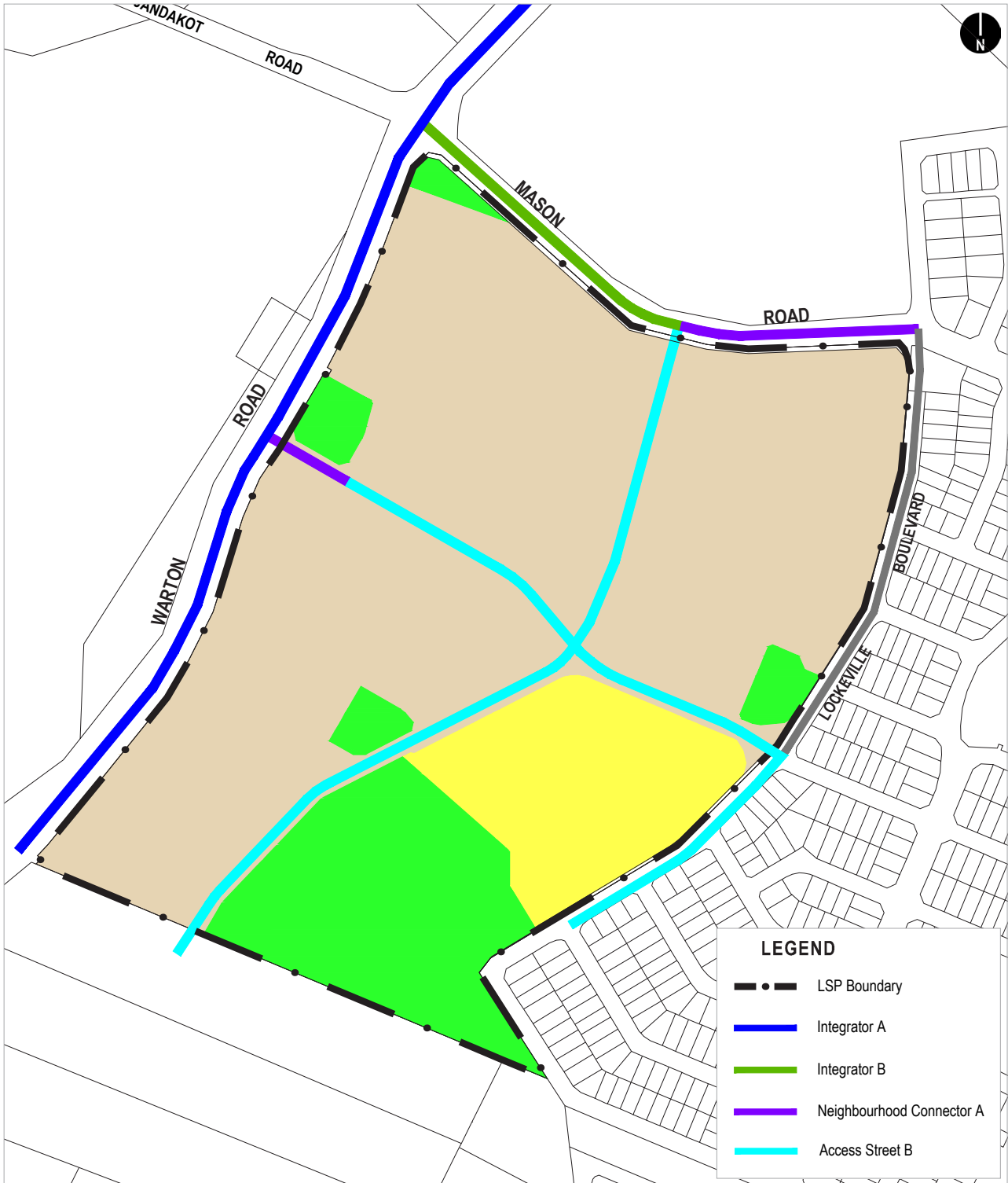


Figure 10 - Road Hierarchy Plan

Source: Transcore

The Road Hierarchy Plan shows the hierarchy of the movement network planned for the area and the external connections to the existing network (Figure 10: 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.

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

- Warton Road – to remain as currently classified, as an Integrator A Road
- Mason Road – the eastern portion of Mason Road will be extended to a Neighbourhood Connector A standard similar to the existing section east of Southhampton Drive. The western section of Mason Road is envisaged to carry higher traffic volumes and will be constructed as an Integrator B road.
- Lockeville Boulevard – the southern portion is intended to remain as an Access Street D road, with the northern portion between the planned primary school and Mason Road is to be widened in line with an Access Street C road standard.
- Neighbourhood Connector A – a small section of the entry road from Warton Road to the west is proposed to be classified as a Neighbourhood Connector A road. The road will be designed to a width of 23m adjacent the POS and will then reduce to an Access Road B standard with a width of 18m.
- Access Streets – a range of access streets across the Structure Plan are proposed including the two key north-south and east-west Access Street B roads abutting the POS and the planning primary school. As noted above, these will include widths of between 15m and 18m.

All road reserves and street cross-sections shall be designed in accordance with *Liveable Neighbourhoods*. At the detailed design stage, it may be determined that road widening is required to facilitate upgrades to the surrounding road network of Warton Road, Mason Road and Lockeville Boulevard. Any upgrades associated with Mason Road are funded by the applicable Development Contribution Plan, whilst any widening associated with Warton Road and Lockeville Boulevard into the estate will be at the cost of the proponent.

[3.5.3 Assessment of Traffic Impact](#)

The traffic modelling for the proposed movement network demonstrates that the network and associated reserve widths have the capacity to accommodate expected traffic volumes. The modelling undertaken has incorporated forecast volumes up to the year 2041, 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.

Traffic modelling has been based on the provision of 423 dwellings, with a trip generation ratio of 8 trips per day and 0.8 trips per peak hour per dwelling has been applied, consistent with the WAPC Guidelines. The traffic generation expected from the 423 residential dwellings is 3,384 vehicle trips per day which will be distributed through the four key access intersections.

For the primary school, assuming the Department of Education's standard 540 student primary school a trip rate of 1 vehicle per hour per student during before and after school peak hour, it expected the 1,080 trips per day will be generated.

Traffic generated by the structure plan can be adequately accommodated on the future planned external road network, with all vehicle movements falling within the acceptable limits outlined by *Liveable Neighbourhoods* for the respective road categories proposed by the Structure Plan. All roads within the Structure Plan are categorised as Access Streets, except for a small portion of the Warton Road intersection, which is designated as a Neighbourhood Connector A road, highlighting the limited impact the Structure Plan will have on the wider network.

Intersection Analysis

A total of four access points are provided which provide direct connection to surrounding and existing development areas, with access provided to all four boundaries of the Structure Plan area. These connections are summarised below:

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. 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.

Mason Road / Access Street - to be constructed as a 4-way (full movement) intersection, with roundabout treatment.

Lockeville Boulevard / Access Street - to be constructed as a 4-way (full movement) intersection with roundabout treatment, to existing residential development to the east and the proposed primary school.

North-South Neighbourhood Connector / Access Street – the 20m wide road reserve from the south will provide seamless connection to the proposed north-south 18m Access Street B.

3.5.4 Cycling and Pedestrian Movement

The Structure Plan facilitates a safe and convenient pedestrian and cycle movement network through the provision of indirect vehicle routes and landscaped environments, that expand upon existing connections found in adjoining areas, as detailed in the Transport Impact Assessment (refer Appendix 6).

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

- A shared path will be provided the two internal Access Street B roads (2-2.5m in width) as well as extensions to existing connections along Warton Road and Mason Road.
- 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.

3.5.5 Public Transport

The Structure Plan is planned to be serviced in future by the potential high-priority transit corridor along Armadale Road. In the interim, development of the Structure Plan will in part provide the catalyst for this future public transport service. Presently bus route 518 runs along Armadale Road and Wright Road from the Cockburn Train Station.

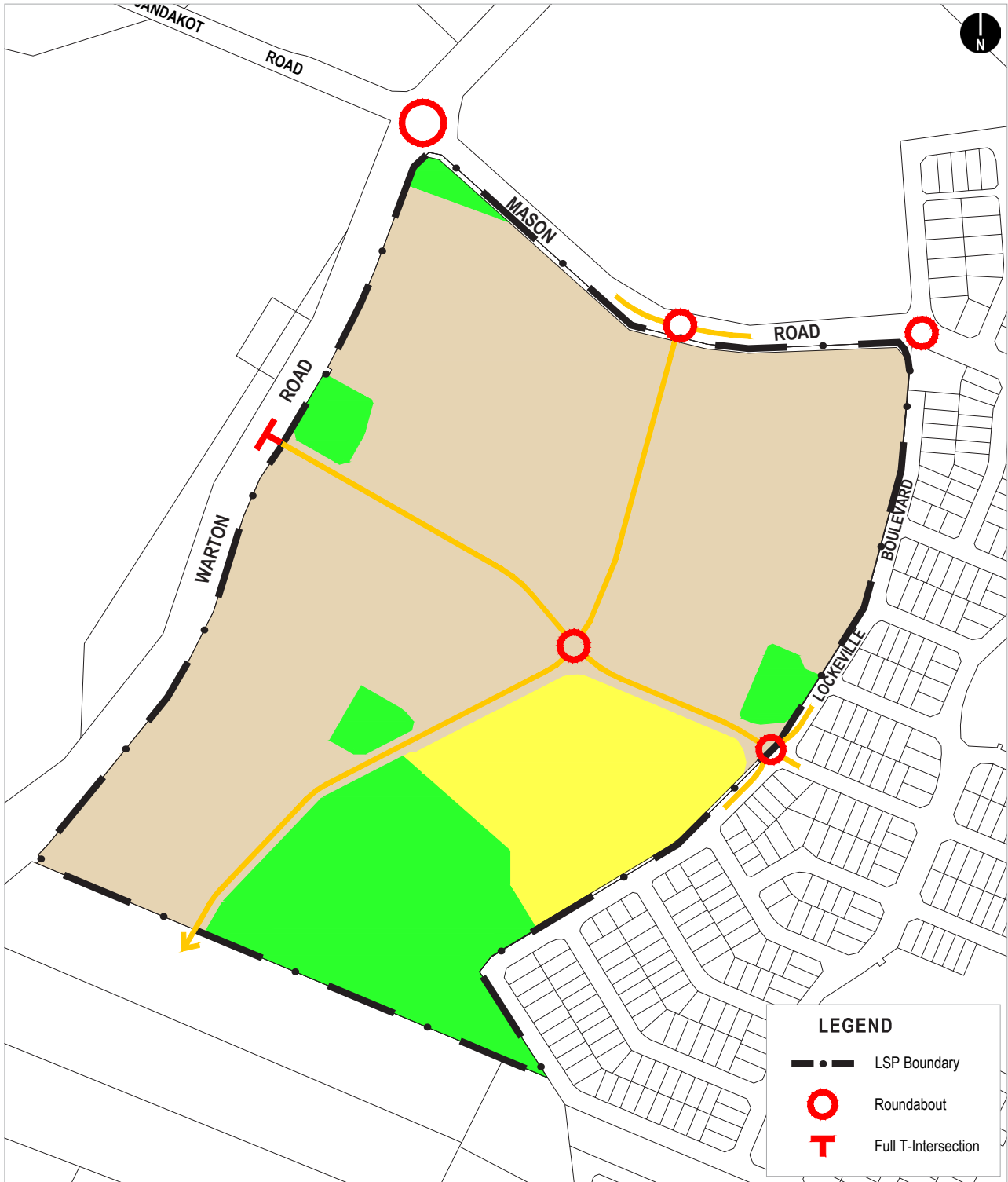


Figure 11 - Intersection Treatments

Source: Transcore

3.6 Noise Management

A Noise Assessment has been prepared by Lloyd George Acoustics in support of the Structure Plan. The main item addressed is associated with road traffic noise from Warton Road and requirements to comply with *State Planning Policy 5.4 – Road and Rail Noise (SPP5.4)*.

The assessment concludes that future road traffic noise impacts can be managed through the implementation of noise mitigation measures and satisfy the requirements of SPP5.4. These are summarised as follows:

- Construction of a noise wall ranging in height between 1.8m and 2.7m (relative to finished design levels) along the western boundary. Due to the earthworks design, no noise wall is nominated at the southern end. Quiet House Packages will be required for some lots and will be detailed at subdivision stage.
- Some single storey dwellings will require Quiet House A.
- Should a dwelling be constructed as two-storey, there may be requirements for the upper floor to be constructed in accordance with Quiet House A, B or C, depending on location within the development.
- Notifications on titles for affected lots as required under SPP5.4.

Final details regarding wall heights and applicable house design packages will be confirmed at detailed design.

3.7 Bushfire Management

An assessment of the site's conditions and the ability for the Structure Plan to comply with SPP3.7 is provided in a BMP prepared by Strategen-JBS&G (refer Appendix 3). The report responds to existing and post-development site conditions, reflecting the relevant changes made by the proposed Structure Plan and demonstrates how compliance with SPP3.7 and the Guidelines will be achieved at future planning stages. The report outlines that:

1. The site currently contains on-site areas of Extreme BHL. However, the post-development BHL assessment demonstrates that on completion of development, all habitable development will be located on land with a Moderate or Low BHL that can sufficiently deliver BAL-29 or lower (refer to Figure 12). A detailed BAL contour assessment will be undertaken at future planning stages (i.e. subdivision) to proof up lot design and demonstrate at a more detailed level that all development will be located within areas of BAL-29 or below.
2. Detailed landscaping inputs will need to be provided at the subdivision/condition clearance stage to confirm the low threat POS exclusions anticipated in this BMP, as well as the potential for classifiable vegetation to occur throughout the REW/buffer in the southeast of the site and the powerline corridor to the south.
3. Based on the anticipated post-development vegetation classifications, the following minimum separation distances will be required to deliver BAL-29 between retained vegetation and proposed habitable development, which the current Structure Plan layout achieves:
 - a. Class A forest (flat/upslope): 21 m
 - b. Class D scrub (downslope >0–5 degrees): 15 m
 - c. Class D scrub (flat/upslope): 13 m
 - d. Class G grassland (downslope >0–5 degrees): 9 m
 - e. Class G grassland (flat/upslope): 8 m.

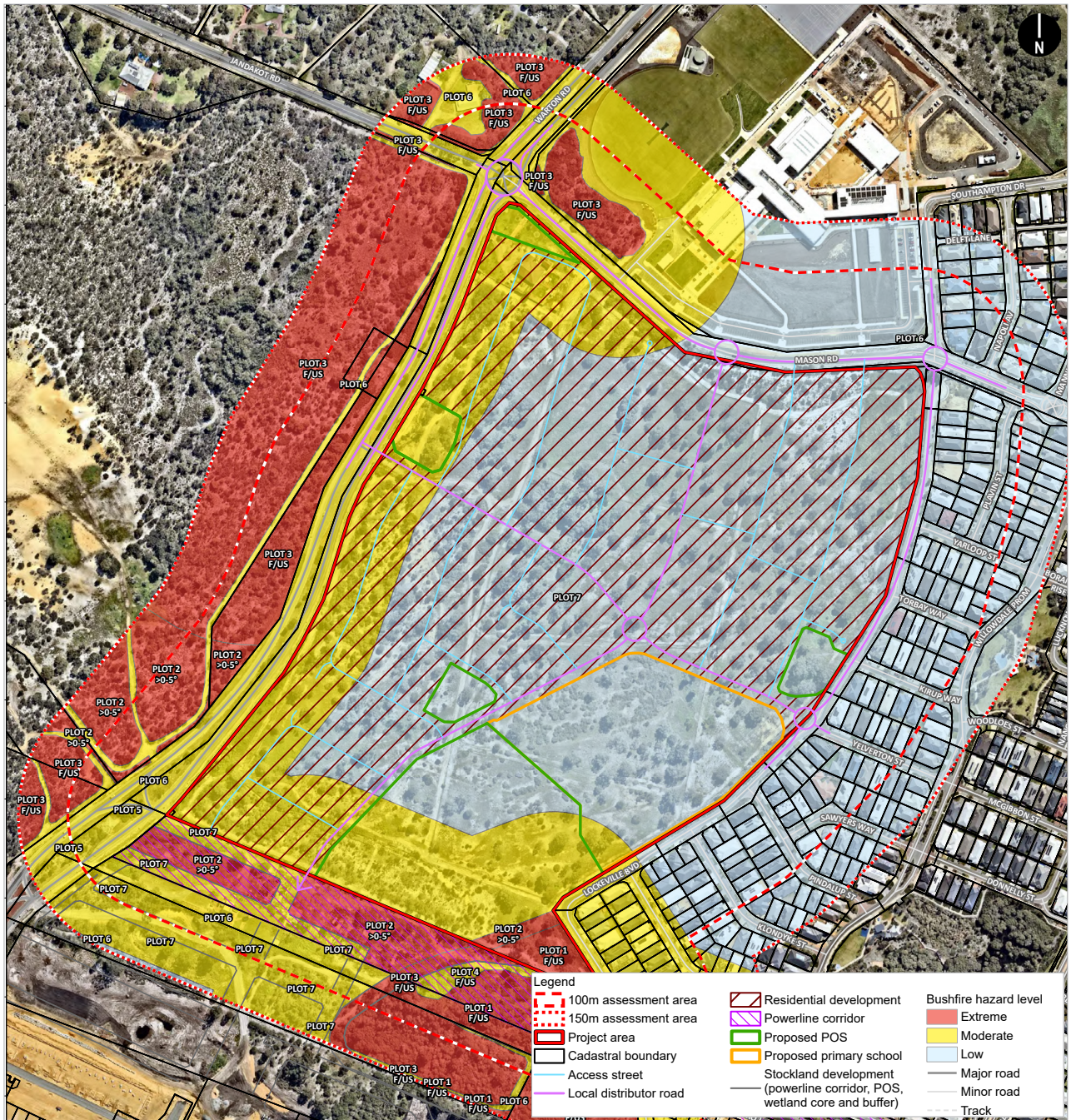


Figure 12 - Post Development Bushfire Hazard Levels

Source: Strategen-JBS&G

4. Although current Structure Plan design will ultimately deliver multiple access connections to the surrounding public road network (i.e. to the east, west, north and south), development is expected to occur in stages. Therefore, staging of development is to ensure that at least two access routes are always provided. This may require provision of temporary staging measures such as temporary compliant no-through roads and/or Emergency Access Ways (EAWs) to deliver compliant access outcomes for individual stages.
5. As the site contains bushfire prone vegetation in a pre-development state, staged construction at the subdivision stage of planning is to consider the BAL impacts from adjacent future stages that have not yet been developed. Low threat staging buffers may need to be implemented around active stages of development to ensure there is no residual impact from vegetation that has not yet been cleared or landscaped to achieve a low threat state.
6. A reticulated water supply and network of street hydrants is expected to be readily achievable for the site via extension of services from adjacent urban development areas.

The preparation of future BMPs are to accompany future stages of planning application (including subdivision) to refine the recommendations and provide BAL contour assessment reflective of detailed lot layout and expected post-development site conditions. The BMP's will need to balance revegetation and bushfire hazard planning outcomes to ensure BAL ratings of existing lots within the adjoining Mason Green estate maintain or reduce their level of BAL rated construction, in accordance with the approved Building permits. Future BMP's should also assess the need to quarantine lots along the southernmost boundary of the estate, pending development of Lot 88 Warton Road, and subsequently a reduction in the perceived bushfire risk.

In summary, the BMP demonstrates that a proposal for the subject land for residential development can meet bushfire requirements of SPP3.7 and the Guidelines through the application of routine requirements, management and design detail.

3.8 Education

To complement the existing and planning education facilities in the Piara Waters locality, a primary school is proposed to be located within the Structure Plan area. The 3.5ha site is to be co-located with the neighbourhood active public open space in the southern portion of the Structure Plan area. Ongoing liaison with the Department of Education shall take place to determine the appropriate timing for acquisition of the primary school site.

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.

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. The future subdivision in the Structure Plan area will need to provide a connection to either Warton Road or Mason Road prior to the creation of the primary school site. This will ensure a suitable road network is in place prior to the school commencing operation, to mitigate any perceived impacts on the existing road network.

3.9 Infrastructure Coordination, Servicing and Staging

An Engineering and Servicing Report has been prepared by Cossill & Webley Consulting Engineers to demonstrate that the land is capable of accommodating residential development and a logical extension of infrastructure within the Structure Plan area. The Engineering Report is provided at Appendix 8. The following summarises key conclusions from the report.

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.

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.

3.9.2 Sewer

The investigation undertaken by Cossill and Webley Consulting Engineers has outlined that reticulated sewerage will discharge into a future pump station to be located in the landholding to the south. The intent is for this to gravitate into the proposed sewer reticulation network within the southern portion of the Structure Plan area.

This pump station will discharge via a proposed pressure main in Armadale Road to the existing Clementine Boulevard Pump Station approximately 4 kilometers west of the site.

3.9.3 Water Supply

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

Specifically, three existing DN250 water mains will be extended into the Structure Plan area at the following three locations:

- Intersection of Nicholson Road and Warton Road to the north.
- From Wright Road and along Mason Road to the west.
- From Armadale Road and along Pegus Way to the south-east.

The Water Corporation has advised that these long term distribution network connections are required support the continued growth of the wider West Piara locality.

[3.9.4 Gas](#)

High pressure gas mains are located within the Warton Road reserve along the western boundary of the site 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.

[3.9.5 Power](#)

The Structure Plan Area will be connected to power via existing underground HV power cables located in both Warton and Mason Roads, as well as existing transformers and switchgear on Warton Road abutting the Structure Plan area.

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 southern 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.

[3.9.6 Telecommunications](#)

The site is within the National Broadband Network (NBN)'s fixed line footprint and hence will be serviced under that agency's roll-out scheme for optic fibre. The developer will be responsible for installing pit and pipe infrastructure that can accommodate the fibre, of which NBN will provide. Subsequent broadband services can be provided by either NBN or an alternative service provider, enabling access for all lots to a high speed telecommunications network.

The design of road reserves, pavement and verge provisions will ensure adequate allowance for services including broadband, which will be accommodate at detailed subdivision stage.

[3.9.7 Development Staging](#)

The staging of the development will be strongly influenced by market forces. Whilst conceptual staging is still being refined, initial stages of the development will commence from Mason Road to the north. Development will then typically proceed in a southerly direction, providing for a logical progression of the estate.

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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