



ANSTEY-KEANE URBAN DEVELOPMENT PRECINCT EAST STRUCTURE PLAN

PART ONE IMPLEMENTATION

October 2020

Title: Anstey- Keane Urban Development Precinct East Structure Plan

Prepared for: Department of Communities

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

05-Nov-2020
..... Date

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


.....

an officer of the Commission duly authorised by the Commission pursuant to section 16 of the Planning and Development Act 2005 for that purpose, in the presence of:


..... Witness

09-Nov-2020
..... Date

05-Nov-2030
..... Date of Expiry

Table of Amendments

| Amendment No. | Summary of the Amendment | Amendment type | Date approved by WAPC |
|---------------|--------------------------|----------------|-----------------------|
| | | | |
| | | | |

Executive Summary

The Anstey-Keane Urban Development Precinct East Structure Plan (Structure Plan) comprises approximately 48ha of land, being generally bound by Armadale Road, Anstey Road and Keane Road, Forrestdale.

The Structure Plan area is zoned 'Urban' under the Metropolitan Region Scheme (MRS) with Amendment 96 currently underway to rezone the land from 'Rural Living 2' and 'Public Purpose' (Local Reserve) to 'Urban Development' in the City of Armadale Town Planning Scheme No. 4 (TPS4). Consistent with Amendment 96, this LSP is lodged in accordance with TPS4 provisions, which requires a structure plan prior to development or subdivision for land zoned 'Urban Development'.

The Structure Plan allows for the creation of a residential neighbourhood that responds to the surrounding land use context, as well as drawing on key elements of the Southern River / Forrestdale / Brookdale / Wungong District Structure Plan which provides a high level framework for future land use and development in the area. The Structure Plan is also consistent with the strategic planning for the area with Perth and Peel@3.5million, the South Metropolitan Peel Sub-regional Framework and the City's Local Planning Strategy all identifying the Structure Plan area for future residential development.

Through the inclusion of a permeable and legible road local road network, the Structure Plan establishes an interconnected interface for both existing and future development of the surrounding land. With densities ranging from R30 to R60, the Structure Plan is capable of deliver a residential target of 26.6 dwellings per residential site hectare, achieving Stage government density targets.

The Structure Plan provides a network of public open space areas which will provide residents with a combination of passive and active spaces whilst also accommodating regional and local drainage by way of a 'Living Stream' which passes through the site. A 4ha primary school site is also delivered, acknowledging that the broader Anstey Road Precinct forms a school catchment.

The site can be readily serviced, with essential infrastructure located within proximity and easily extended to the Structure Plan area. In preparation of the Structure Plan the following reports have been prepared, and are summarised in Part 2 of the Structure Plan report, with complete copies included as technical appendices:

- Environmental Assessment Report
- Bushfire Management Plan
- Landscape Masterplan
- Local Water Management Strategy
- Transport Impact Assessment
- Road Traffic Acoustic Assessment
- Engineering Servicing Report
- Non-residential Land Use Option Report

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

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

Table 1: Land Use Summary

| Item | Data | Section Number referenced within the Structure Plan Explanatory Report |
|--|--|--|
| Total area covered by the structure plan | 48.03 hectares | Section 1.2.2 |
| Area of each land use proposed Zones (as per the Scheme) | | Section 3.1 |
| - Residential | 25.2 hectares | |
| - Industrial Business | 1.7 hectares | |
| Reserves (as per the Scheme and MRS) | | |
| - Road Reserves | 12.2 hectares | |
| - Parks and Recreation | 4.6 hectares | |
| - Public Purpose (Primarcy School) | 4.0 hectares | |
| - Public Purpose (Drainage) | 0.35 hectares | |
| Total estimated lots yield | 650 - 670 lots | Section 3.2.1 |
| Estimated number of dwellings | 675 - 695 dwellings | |
| Estimated residential site density - Dwellings per gross urban zoned hectare (as per Perth & Peel@3.5 million and Liveable Neighbourhoods) | 26.6 dwellings per residential site hectare | |
| Estimated population | 1918 people @ 2.8 people per household | |
| Number of Primary Schools | 1 | Section 3.8 |
| Number of Secondary Schools | None | |
| Amount of Public Open Space | 4.1 hectares (gross) 2.2 hectares (unrestricted) 88% 0.8 hectares (restricted) 12% | Section 3.3 |

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Plan A: Local Structure Plan

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 Anstey-Keane Urban Development Precinct East 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 Anstey-Keane Urban Development Precinct East 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 Anstey-Keane Urban Development Precinct East Structure Plan constitutes a Local 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 And Subdivision

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 the Scheme.

The following land uses are not compatible with adjacent residential uses and should not be located within the structure plan area:

- Bulky Goods Showroom.
- Motor Vehicle, Boat and Caravan Sales.
- Light Industry.
- Restricted Premise.
- Storage.
- Transport Depot.
- Warehouse.

6.2 Residential

6.2.1 Dwelling Target

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

6.2.2 Density

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

6.3 Public Open Space

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

6.4 Environmental

Prior to the lodgement of a subdivision application a Botanical and Fauna survey is to be undertaken for the lots subject to the application. Where a survey has been conducted to support the structure plan, those lots already surveyed would not be subject to a further survey.

6.5 Movement Network

- (i) The Allen Road/Keane Road roundabout is subject to further detailed design at subdivision stage accounting for industrial traffic and the 132kv transmission line alignment.
- (ii) Detailed cross sections for Allen Road are to be determined in consultation with the City of Armadale and Western Power prior to the lodgement of a subdivision application abutting Allen Road.

6.6 Primary School

- (i) Development of the primary school is to ensure that school buildings and classrooms are located outside of the 200m buffer to the Dampier to Bunbury Natural Gas Pipeline.
- (ii) A Notification on the Certificate of Title of the primary school site advising that the school is within 200m of the Dampier to Bunbury Natural Gas Pipeline is required at the subdivision stage.

7.0 Development

7.1 Local Development Plans

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

- (i) Lots abutting areas of Public Open Space.
- (ii) Lots subject to 'Quiet House Design' requirements as identified in the Road Traffic Acoustic Assessment.
- (iii) Prior to the lodgement of a development application and/or as a condition of subdivision approval, a Local Development Plan is to be prepared for all lots located within the Industrial Business zone to address the following:
 - Reciprocal rights of access between lots;
 - Design and interface with residential areas.
- (iv) Lots affected by the 132Kv powerlines along Allen Road.

7.2 Notifications on Title

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

- (i) Land or lots deemed to be affected by road traffic noise as identified in the Road Traffic Acoustic Assessment contained within Appendix 3.

7.3 Bushfire Management

This Structure Plan is supported by a Bushfire Management Plan (Appendix 2). Regardless of whether the land has been formally designated as bushfire prone, any building to be erected on land identified as falling within 100 metres of a bushfire hazard is designated as bushfire prone land and shall comply with the requirements of Australian Standard 3959 under the Building Code of Australia.

8.0 Other Requirements

8.1 Conditions of Subdivision Approval

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

- Urban Water Management Plan.
- Bushfire Management Plan.
- Acid Sulphate Soils Management Plan.
- Environmental Management Plan for subdivision abutting Lots 43 and 44 Keane Road.
- Fauna Management Plan.

8.2 Development Contributions

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

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

LEGEND

ZONES

- Residential R25
- Residential R30
- Residential R40
- Residential R60

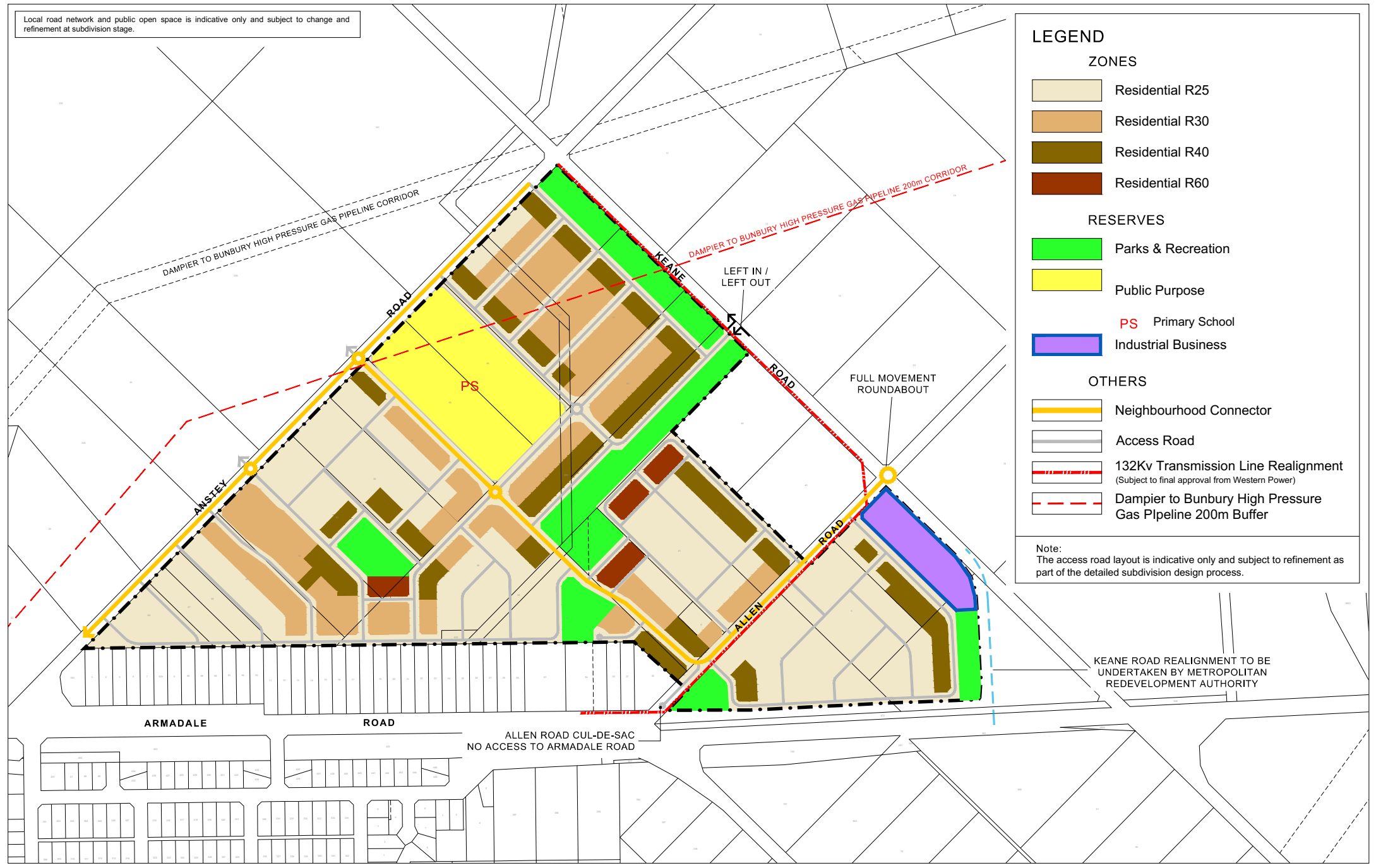
RESERVES

- Parks & Recreation
- Public Purpose
- PS Primary School
- Industrial Business

OTHERS

- Neighbourhood Connector
- Access Road
- 132Kv Transmission Line Realignment
(Subject to final approval from Western Power)
- Dampier to Bunbury High Pressure Gas Pipeline 200m Buffer

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



KEANE ROAD REALIGNMENT TO BE UNDERTAKEN BY METROPOLITAN REDEVELOPMENT AUTHORITY

ALLEN ROAD CUL-DE-SAC
NO ACCESS TO ARMADALE ROAD





ANSTEY-KEANE URBAN DEVELOPMENT PRECINCT EAST STRUCTURE PLAN

PART TWO EXPLANATORY REPORT

October 2020



Government of **Western Australia**
Department of **Communities**



Town Planning + Design
www.cleplan.com.au

Title: Anstey-Keane Urban Development Precinct East Structure Plan
Prepared for: Department of Communities
CLE Reference: 3068Rep63C
Date: 7 October 2020
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1.0 Planning Background

1.1 Introduction and Purpose

The Anstey-Keane Urban Development Precinct East Structure Plan (the Structure Plan) has been prepared on behalf of the Department of Communities over the land known as the 'Anstey Road East Precinct' in Forrestdale. The Structure Plan is lodged in accordance with the City of Armadale Town Planning Scheme No. 4 which requires a structure plan for land zoned 'Urban Development'.

The purpose of the Structure Plan is to provide a planning framework to guide future subdivision and development across the site. It draws on key land use elements of the Southern River / Forrestdale / Brookdale / Wungong District Structure Plan and reflects the recommendations of Perth and Peel 3.5million and the Sub Regional Planning Framework.

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:** Contains the Structure Plan Map and outlines the requirements that will be applied when assessing subdivision and development applications.

- **Part 2: Explanatory Report:** 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 (Coterra Environment);
 - Bushfire Management Plan (Bushfire Safety Consulting);
 - Local Water Management Strategy (Hyd2o);
 - Transport Impact Assessment (Transcore);
 - Road Traffic Acoustic Assessment and Environment Impact Acoustic Assessment (Herring Storer)
 - Engineering Servicing Report (JDSi Consulting Engineers);
 - Landscape Masterplan (Emerge Associates); and
 - Non-residential Land Use Option Report (Shrapnel Urban Planning).
- **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 within the Structure Plan area.

1.2.1 Location

The Structure Plan is located in the City of Armadale, approximately 6km west of the Armadale Strategic Metropolitan Centre and 22km south of the Perth CBD (Figure 1: Location Plan).

The Structure Plan area is generally bound by:

- Keane Road to the north-east;
- Anstey Road to the north-west; and
- Armadale Road to the south.

The Structure Plan area has excellent access to major traffic routes including Armadale Road, the Kwinana Freeway and Tonkin Highway. The Structure Plan will see the development of a residential community within one of the fastest growing residential regions in Australia.

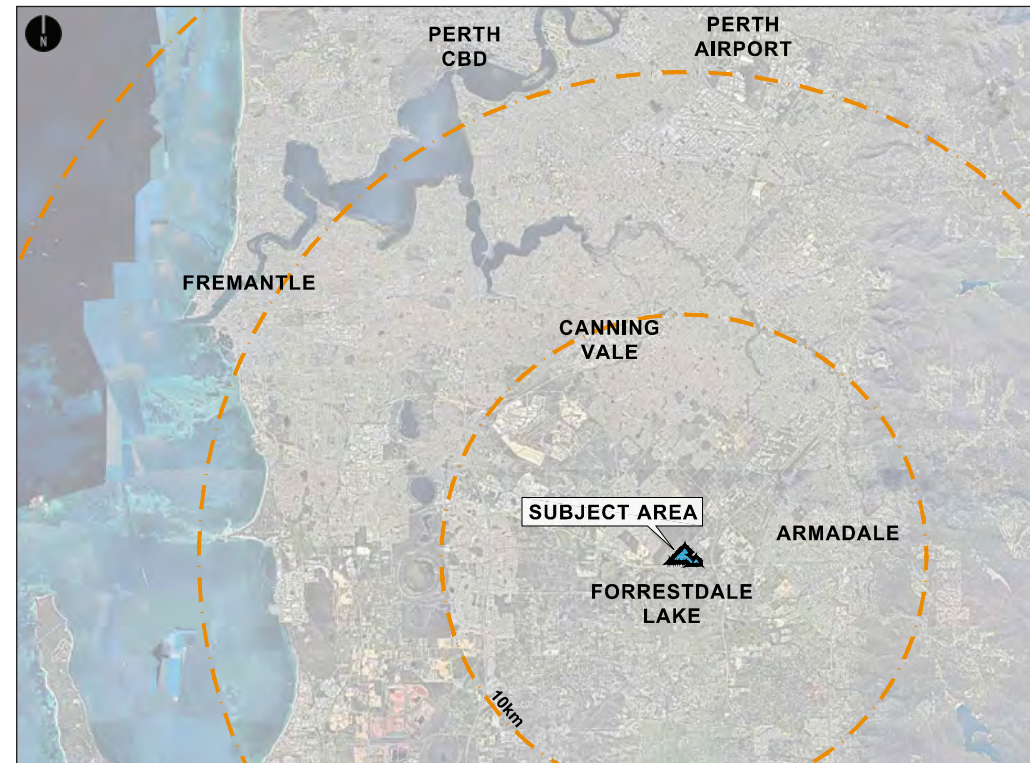


Figure 1 Location Plan

Source: Nearmap

1.2.2 Area and Land Use

The Structure Plan area is approximately 48ha and is presently used for rural lifestyle lots and horse agistment (Figure 2: Site Plan).

Past agricultural pursuits have had a considerable impact on the natural environment of the site resulting in extensive clearing of vegetation for livestock grazing and other semi-rural activities. The site connects into the existing road network via Anstey and Keane Roads which run along the north-western and north-eastern boundaries of the Structure Plan area respectively.

The Water Corporation’s Baileys Branch Drain crosses the Structure Plan area generally in a north-south direction and is located within a 15m wide local drainage reserve.

1.2.3 Ownership and Title Details

This Structure Plan comprises 35 titles. This land is legally described as set out in Table 1.



Figure 2 Site Plan
Source: Nearmap & SLIP

Table 1: Land Ownership

| Lot No. | Diagram / Plan | Volume | Folio |
|---------|----------------|--------|-------|
| 5 | D041103 | 1323 | 989 |
| 6 | D041103 | 1323 | 990 |
| 7 | D084127 | 1963 | 211 |
| 8 | D084127 | 1963 | 212 |
| 10 | D061348 | 1601 | 803 |
| 39^ | P003347 | 1473 | 789 |
| 41^ | P003347 | 409 | 111A |
| 42^ | P003347 | 409 | 111A |
| 47^ | P003347 | 1635 | 638 |
| 48^ | P003347 | 1499 | 899 |
| 49 | P003347 | 2085 | 547 |
| 50^ | P003347 | 46 | 237A |
| 51^ | P003347 | 64 | 48A |
| 52 (W) | P003347 | 2136 | 833 |
| 52 (E) | P011900 | 1473 | 788 |
| 53 (W) | P003347 | 56 | 27A |
| 53 (E) | P011900 | 1544 | 953 |
| 54 (W)^ | P003347 | 64 | 39A |

| Lot No. | Diagram / Plan | Volume | Folio |
|---------|----------------|--------|-------|
| 54 (E) | P011900 | 47 | 248A |
| 55^ | P003347 | 58 | 172A |
| 57^ | P003347 | 73 | 124A |
| 58^ | P012358 | 1503 | 386 |
| 60^ | D054678 | 1540 | 905 |
| 80^ | D071642 | 1777 | 991 |
| 81^ | D071642 | 1777 | 992 |
| 84 | D039662 | 513 | 141A |
| 86 | D042601 | 1322 | 507 |
| 87 | D042601 | 1320 | 222 |
| 650 | P302537 | 1635 | 637 |
| 651 | P302537 | 1540 | 904 |
| 652 | P302537 | 2080 | 55 |
| 653 (N) | P302537 | 1483 | 572 |
| 653 (S) | P302537 | 1483 | 572 |

^ Lots controlled by Department of Communities

Department of Communities has a controlling interest over 14 lots, and as the major landowner has prepared the Structure Plan.

1.2.4 Surrounding Land Use and Context

The Structure Plan represents the next phase in the consolidation of the Forrestdale community with the following a brief summary of the local context:

- Land to the north of Keane Road is the Metropolitan Redevelopment Authority's Forrestdale Business Park Estate.
- Land on the western side of Anstey Road generally consists of a number of larger private rural-lifestyle lots which are presently subject to local structure planning (by others).
- The Dampier to Bunbury Natural Gas Pipeline, being a high pressure gas main, passes over the land located on the opposite side (west) of Anstey Road. The easement associated with this pipeline does not fall within the Structure Plan area.
- Armadale Road runs along part of the southern edge of the Structure Plan area, reserved as 'Primary Regional Roads'.
- Tonkin Highway (reserved 'Primary Regional Roads') is located approximately 350m east of the Structure Plan area.
- The Forrestdale town site is located on the southern side of Armadale Road.
- Armadale Strategic Metropolitan Centre (6km east) and the Haynes Neighbourhood Centre (3km east) are both directly accessible from the Structure Plan area along Armadale Road, offering immediate employment opportunities and access to retail, commercial and community services.

1.3 Planning Framework

1.3.1 Metropolitan Region Scheme Zoning

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

1.3.2 City of Armadale Town Planning Scheme No 4.

The Structure Plan area is currently zoned 'Rural Living 2' with the Bailey's Branch Drain reserved 'Public Purpose' in the City of Armadale Town Planning Scheme No. 4 (TPS4).

On 28th May 2018 the City of Armadale Council initiated Amendment 96 to TPS4 rezoning the land 'Urban Development' on the scheme map, establishing a corresponding Development (Structure Planning) Area and inserting a number of applicable development requirements into Schedule 8 of TPS4 which must be undertaken at the time of subdivision and development.

Under an 'Urban Development' zone a structure plan is required prior to subdivision and development, with this Structure Plan consistent with the proposed amendment.

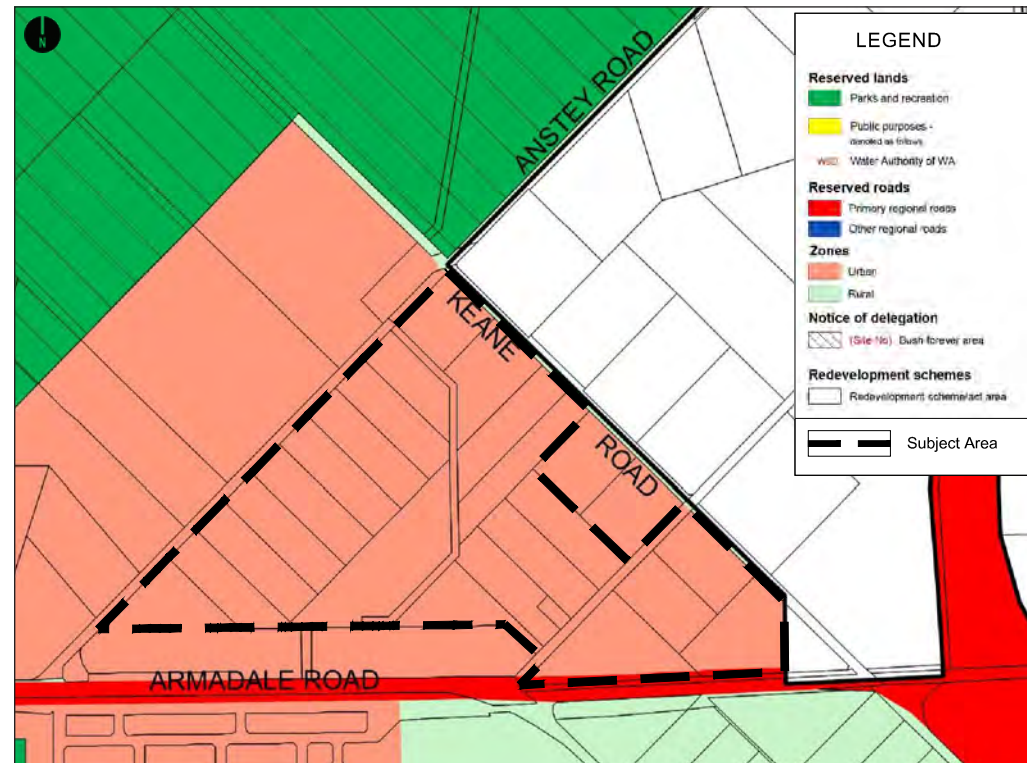


Figure 3 MRS Zoning

Source: WAPC

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 Forrestdale). 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 realises the objectives of the DSP, creating a largely residential development that appropriately responds to the Bailey’s Main Drain which traverses the site by including the drain within appropriately landscaped open space.

The DSP also includes the provision of a neighbourhood centre within the Structure Plan area, to support retail, commercial and community facilities as appropriate based upon market demand. The Structure Plan addresses this requirement.

1.3.4 Strategic Planning Framework

Perth and Peel@3.5million (March 2018)

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

It 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. It also confirms a residential density target of 26 dwellings per residential site hectare. This is discussed in more detail later in this report.

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

The draft South Metropolitan Peel Sub-regional Framework (the Framework) provides an additional level of detail regarding the implementation of Perth and Peel@3.5million 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.

Whilst the Structure Plan area was identified in the Sub-Regional Strategy as ‘Urban Expansion’, the WAPC recently rezoned the Structure Plan area ‘Urban in the Metropolitan Regional Scheme (Minor Amendment 1321/57), recognising the growth rates and infrastructure availability in Forrestdale and the need for an additional 39,850 dwellings for the Armadale locality (Figure 5: South Metropolitan Peel Sub-regional Framework).

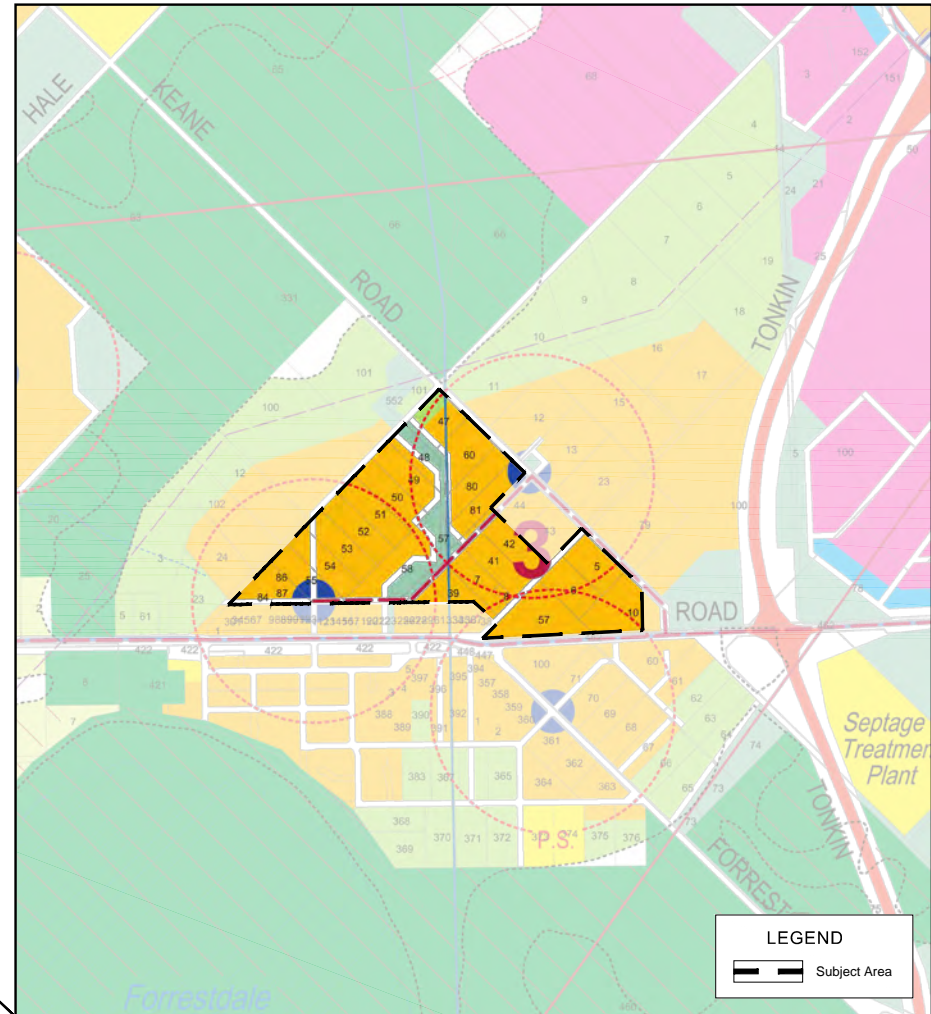
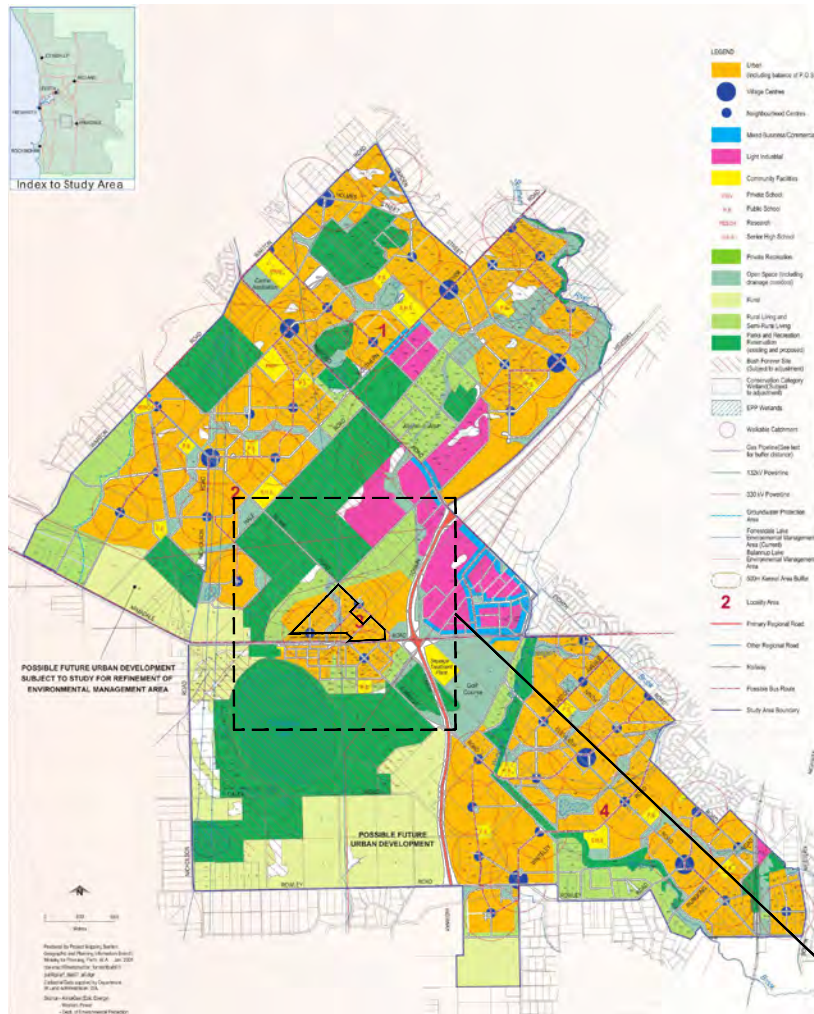


Figure 4 Southern River / Forrestdale / Brookdale / Wungong DSP
Source: xxxxx

City of Armadale Local Planning Strategy (2016)

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

The Strategy identifies the Structure Plan area as ‘Urban Development Area’ confirming that the land is suitable for urban development which will assist in maintaining a level of housing affordability, ensure the cost effective delivery of infrastructure and services, and to support local economic development of the City.

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

The Structure Plan fulfils the strategic planning objectives set out in the Local Planning Strategy.

1.3.5 Other Planning Considerations

The following section summarises other government policies relevant to urbanisation and development of the Structure Plan area.

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 Amendment is consistent with SPP 3.0 as it realises planned urban consolidation within the region. Further the site has excellent access to existing and planned transport networks, employment nodes and activity centres, all in addition to there being no environmental constraints on the site. All essential service infrastructure can be readily and efficiently connected from immediate surrounding areas.

WAPC State Planning Policy 3.7: Planning in Bushfire Prone Areas

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

This Structure Plan is supported by a Bushfire Management Plan (BMP) demonstrating that bushfire risk is not an impediment to the development of the land and that all fire considerations can be appropriately managed in accordance with the Guidelines.

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

WAPC State Planning Policy 4.1: State Industrial Buffer Policy

SPP 4.1 sets out to prevent land use conflict between industrial facilities and other sensitive land uses, in this instance being associated with the Forrestdale Business Park located to the north of Keane Road.

The Structure Plan directly responds to the Forrestdale Business Park by ensuring that only non-residential land uses front on to Keane Road, thereby establishing a transition between the industrial activities in the Business Park and future development to the south of the site.

This is discussed in further detail in Sections 2.9 and 3.7.



Figure 5 South Metropolitan Peel Sub-regional Framework

Source: WAPC

WAPC State Planning Policy 4.2: Activity Centres for Perth and Peel

SPP 4.2 sets out the broad planning requirements for the planning and development of new activity centres throughout Perth and Peel, in this instance being associated with an 'Industrial-Business' zone planned to face on to the adjacent Forrestdale Business Park.

The Structure Plan has responded to the Forrestdale Business Park by creating this 'Industry-Business' zone along Keane Road, ensuring a separation between future residents within the Structure Plan area and the activities carried out within the Forrestdale Business Park. In accordance with SPP 4.2, a Retail Sustainability Assessment will be required for any 'shop-retail' land use proposed for the 'Industrial-Business' zone, ensuring any such proposal can be assessed and determination whether the proposal is justified or not.

This is discussed in further detail in Section 3.7.

WAPC State Planning Policy 5.4: Noise and Rail Noise

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

The Structure Plan abuts Armadale Road, a primary freight route and a road anticipated to carry in excess of 23,000 vehicles per day (VPD). As a consequence, a Road Traffic Acoustic Assessment has been undertaken by Herring Storer Acoustics as part of this Structure Plan to assess road noise associated with this key route as set out in SPP 5.4.

The assessment concludes that transport noise reaching residential properties could be contained within the thresholds specified by the Policy through the use of interface treatments such as Quiet House Design criteria, and notifications on title to inform future owners of the potential noise impact.

The Road Traffic Acoustic Assessment prepared for the Structure Plan is discussed in further detail in Sections 2.7 and 3.6 and attached in full as Appendix 3.

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

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

Of particular relevant to the Structure Plan is the Policy's encouragement of the retention and enhancement of open drains by converting them to multiple use corridors that provide habitat for wildlife and passive recreation opportunities wherever possible.

The design of the central public open space will see the Baileys Branch Drain (currently an open, rural standard drain) realigned and constructed into Living Stream of high amenity with a strong storm water management purpose.

This Living Stream will form the backbone of a linked system of open spaces, leading to the creation of a green corridor with multiple functions of conservation, water quality management and public access for recreation. The pedestrian and ecological connectivity within the green corridor of the Living Stream address the access, recreation and ecological requirements of the site. The Living Stream will be aligned to maximise retention of existing native trees and understorey vegetation, with further ecological enhancement and wildlife habitat creation via appropriate native planting. Retained trees in open space areas will provide shade and create an enhanced backdrop to recreation areas. Planting will consist of predominantly native waterwise species, with hydrozoned irrigation design, all undertaken in collaboration with the City of Armadale. Select exotic trees will be placed at key locations within POS areas to emphasise focal points and key user spaces.

Biofiltration areas for water quality treatment of the first 15mm of stormwater runoff will be provided within the open space areas relative to each drainage catchment. All other storage and attenuation of stormwater flows will be accommodated in the Living Stream.

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.

Forrestdale Business Park (West) Structure Plan (2013)

The Forrestdale Business Park (West) Structure Plan is the operational structure plan covering the Metropolitan Development Authority’s Forrestdale Business Park Estate located on the northern side of Keane Road, guiding and coordinating subdivision and development (Figure 6: Forrestdale Business Park (West) Structure Plan).

The Structure Plan shows the land adjacent to Keane Road (and fronting onto the Structure Plan area) as being for ‘Industry – Service’ activities, being a zone that supports uses such as ‘wholesaling, showrooms, trade and professional services which by reason of their scale, character, operational or land requirements are not generally appropriate to, or cannot conveniently, or economically be accommodated within either regional, district or local retail centres.’

Importantly, the Forrestdale Business Park (West) Structure Plan, in providing for this ‘Industry – Service’ zone along Keane Road creates a transition between the future residential development within the Structure Plan area and the more traditional industrial activities located further within the core of the business park.

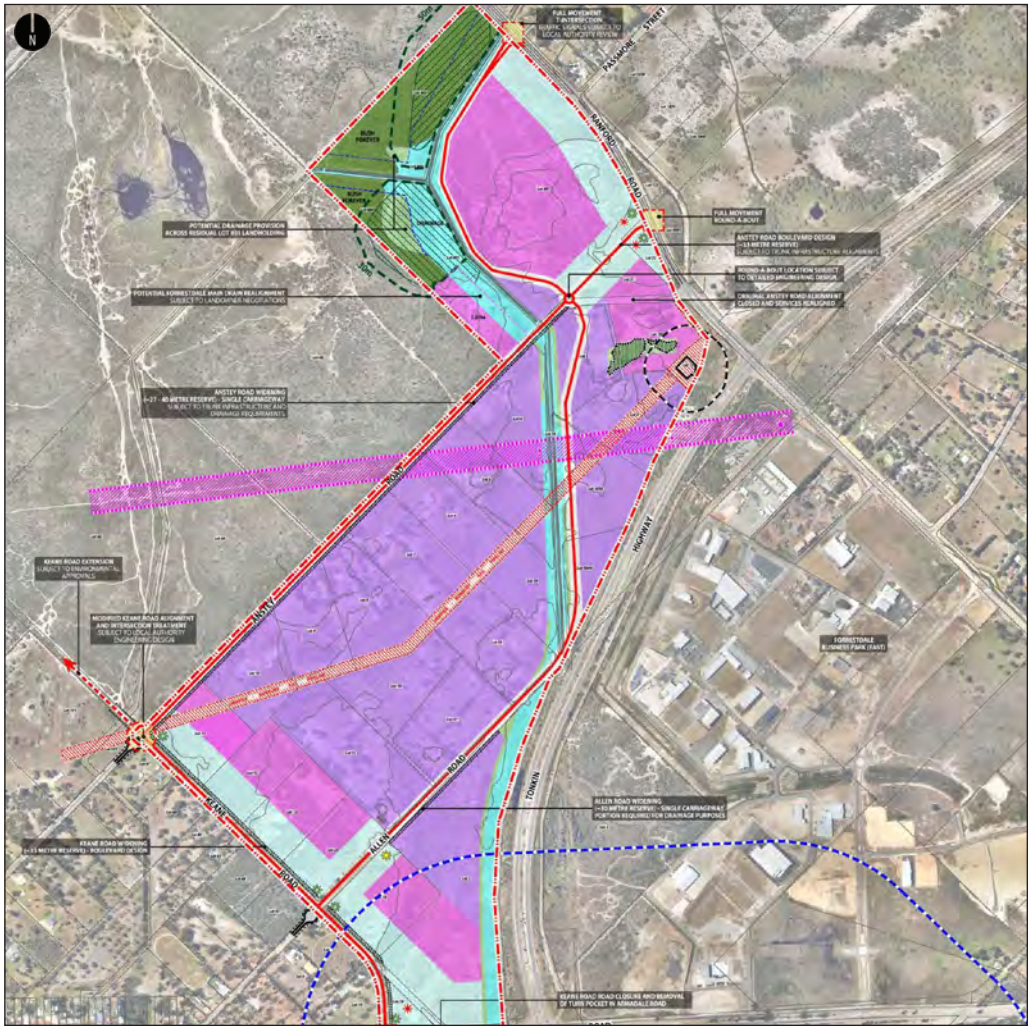


Figure 6 Forrestdale Business Park (West) Structure Plan (2013)

Source: Metropolitan Redevelopment Authority

2.0 Site Conditions and Constraints

The Structure Plan area has been cleared and used for peri-rural pursuits, primarily horse grazing and agistment which has a resulting in most of the natural environment being removed, highly disturbed and/or degraded.

Coterra Environmental have prepared a comprehensive Environmental Assessment Report (EAR) which describes 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 through the planning approval process and through the application of appropriate land use responses and management practices.

The following section summarises the key findings of this analysis with a complete copy of the EAR provided as Appendix 1.

2.1 Topography, Landform and Soils

The Structure Plan area is relatively flat, ranging from approximately 22m Australian Height Datum (AHD) in the north-east corner up to 24m AHD in a number of pockets across the site.

Regional geology mapping shows the Structure Plan area as primarily comprising fine to medium grained Bassendean Sand (white to pale grey at the surface, yellow at depth) overlying sandy clay and of the Guildford Formation. There are two isolated pockets of grey to black fine to medium grained slightly peaty sand.

The topography and soils within the Structure Plan area is suitable for urban development.

2.1.1 Acid Sulphate Soils

The Department of Environment and Regulation (DER) Acid Sulphate Soil (ASS) risk mapping shows the majority of the site as 'moderate to low risk of ASS occurring within 3m of the natural soils surface (or deeper)'. There are only two isolated high risk areas mapped within the south-west and north-east corner of the site. The Structure Plan area is therefore suitable for urban development with an ASS investigation (if necessary) to be prepared in the usual manner prior to any excavation or dewatering as part of the subdivision.

2.1.2 Contamination

The Structure Plan area is not located within any Department of Water and Environmental Regulation (DWER) listed contaminated sites with past and present use of the land for peri-rural pursuits such as horse agistment not generating a high risk of contamination.

2.2 Flora and Vegetation

The majority of the Structure Plan area is cleared of native vegetation, a result of the long period of agricultural activity on the land with only isolated patches of vegetation remaining.

A Flora and Vegetation Survey was undertaken by Bennett Environmental Consulting in May, September and November 2016.

The surveys found:

- The majority of the site was found to be typically a mixture of planted species over weed and paddock grass species.
- The vegetation within the Structure Plan area has been generally identified as 'Good to Degraded' to 'Completely Degraded'.
- Only a small portion of bushland was considered as 'Good', located in Lot 53 the Structure Plan area. This bushland will be retained and incorporated within an area of public open space as part of the Structure Plan.
- There were no Floristic or Ecological Communities found within the Structure Plan area, with the vegetation conditions found to be too poor.

2.3 Fauna and Habitat

A fauna habitat survey was undertaken in April 2016 to identify fauna values of the site, to investigate the potential for the proposed development to impact upon native fauna and fauna habitat.

The survey found that the Structure Plan area had little native fauna habitat due to the site having been largely cleared through past agricultural and horse agistment activities, with what remnant vegetation remaining being generally classified 'Degraded' to 'Completely Degraded'.

An inspection of extant trees within the Structure Plan area for black cockatoo habitat found no evidence of quality foraging habitat for the Carnaby Black Cockatoo and no evidence of roosting, with development of the site posing no significant impact to this species.

2.4 Hydrology

The management of ground and surface water is comprehensively addressed within the Local Water Management Strategy (LWMS) prepared by Hyd2o Hydrologists in support of the Structure Plan.

The LWMS clearly demonstrates that hydrology is not a constraint to urban development. The existing hydrological conditions of the Structure Plan area are summarised below, while the key principles of the LWMS are discussed further in Section 3.7.

2.4.1 Wetlands

The Department of Biodiversity, Conservation and Attractions (DBCA) geomorphic wetlands database shows that there are no Conservation Category or Resource Enhancement wetlands located within the Structure Plan area.

A Multiple Use management category wetland is located in the central portion of the Structure Plan which is a low management category wetland with little or no ecological value, making it suitable for urban development.

The Forrestdale Lake (Class A reserve) is located approximately 500m south of the Structure Plan area, with a small portion of the Structure Plan area falling within the wetland protection area. Future development within this area requires planning approval prior to development.

2.4.2 Surface Water

The Water Corporation's Baileys Branch Drain flows across the site in a northerly direction, away from the Forrestdale Lake. The Baileys Branch Drain is a tributary of the Forrestdale Main Drain, connecting into Forrestdale Main Drain approximately 2.3km downstream of the Structure Plan area.

The Baileys Branch Drain was constructed to manage district groundwater and convey stormwater away from the Forrestdale town site. The Forrestdale Main Drain Arterial Drainage Strategy provides both pre- and post-development modelling scenarios for the Baileys Branch Drain, including necessary drainage upgrade requirements.

The Structure Plan provides the need for the ongoing management of surface water by taking district stormwater from southern landholdings into a reconfigured Baileys Branch Drain.

2.4.3 Ground Water

The Perth Groundwater Atlas regional mapping shows that groundwater levels range between approximately 23m to 24m AHD, meaning a clearance from natural ground level of between 0.5m to 1m. The groundwater typically flows in a northerly direction.

A pre-development monitoring programme was undertaken by way of seven groundwater bores installed throughout the Structure Plan area, with level and quality results gathered between April 2016 and September 2017. These results generally confirmed mapped water levels and found water quality to be typical for the Swan Coastal Plain.

2.5 Heritage

The Department of Aboriginal Affairs Aboriginal Heritage Enquiry Systems list no registered sites within or adjacent to the Structure Plan Area. There are no listed European sites of heritage significance located within the subject site.

2.6 Bushfire Management

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

The BMP concludes that bushfire risk is not an impediment to development and that the bushfire risk can be managed through the implementation of asset protection zones, interface treatments and the construction of dwellings within 100m of bushfire prone vegetation in accordance with AS3959 Construction of buildings in bushfire prone areas.

A complete copy of the FMP is included as Appendix 2 with the manner in which the Structure Plan responds to bushfire hazards, discussed in further detail within Section 3.4 of this report.

2.7 Road Transport Noise

A Road Traffic Acoustic Assessment has been undertaken by Herring Storey Acoustics, assessing the impacts of traffic movements along Armadale Road, which abuts the southern boundary of the Structure Plan. This Assessment has been prepared in accordance with State Planning Policy 5.4 – Road and Rail Noise (SPP 5.4).

The Assessment identifies a number of dwellings where noise would exceed the 'noise target', showing that this impact can be satisfactorily ameliorated through the use of interface treatments such as Quiet House Design criteria. Notification would be placed onto titles of affected properties to inform future owners of potential impacts and required treatments.

A copy of the Road Traffic Acoustic Assessment is provided in Appendix 3.

2.8 Westfield Waste Treatment Plant

The Structure Plan is not affected by the odour buffer associated with the Westfield Waste Treatment Plant, which is situated to the south-east of the site.

2.9 Interface to Forrestdale Business Park

The Structure Plan responds to the Metropolitan Redevelopment Authority's Forrestdale Business Park (north of Keane Road) by creating a non-residential transition between the industrial activities of the Business Park and future residents within the Structure Plan area.

The Forrestdale Business Park Structure Plan provides for its own transition between the 'higher impact' industrial activities which are to be located centrally within the Business Park and those planned for along the northern side of Keane Road which are of a lower intensity such as 'wholesaling, showrooms, trade and professional services which by reason of their scale, character, operational or land requirements are not generally appropriate to, or cannot conveniently, or economically be accommodated within either regional, district or local retail centres.'

The Structure Plan continues this strategy, providing for a non-residential centre (zoned 'Industry Business' in TPS4) along the southern side of Keane Road, reflecting the lower intensity uses to the north. Collectively this ensures that no future residential property will abut or be in proximity to any industrial activity which would potentially detrimentally affect a resident's amenity.

Further to the strategy of the Structure Plan, the Environmental Protection Authority's Guidance Statement No. 3 – Separation Distances between Industrial and Sensitive Land Uses provides advice on what the EPA's expectations are with regards to any environmental impact with 'a focus on protecting sensitive land uses from unacceptable impacts on amenity that may result from industrial activities, emissions and infrastructure'. The guidance statement goes on to note that 'It is generally expected that, through appropriate site layout, design of facilities, and the implementation of engineering and process controls, emissions from an individual industrial land use can be prevented from causing an adverse environmental impact beyond the boundaries of the particular site or beyond the boundaries of an industrial estate.' The guidance statement goes on to conclude that 'To ensure an appropriate level of environmental protection, the EPA expects that individual industrial developers will take all reasonable and practicable measures to prevent or minimise emissions from their premises'.

The subsequent DWER industrial licencing requirements identifies the need for premises with potential to cause emissions and discharges to air, land or water to obtain a Works Approval for construction and a Licence or Registration for operation. Any land use that results in emissions or discharges to the air with the potential to impact adjacent residential development will need to consider Guidance Statement No. 3 and obtain any necessary license from DWER prior to operations.

The proposed industrial business zone is discussed further in Section 3.8.

3.0 Land Use And Subdivision Requirements

3.1 Land Use

The Structure Plan provides for a robust planning framework for the development and delivery of a future residential community within the broader Anstey Road Precinct. A Development Concept Plan has been prepared for the site to demonstrate how the development could occur based on the Structure Plan principles and requirements (Figure 7: Development Concept Plan).

It needs to be acknowledged that the Development Concept Plan represents only one way development could occur and the concept will be refined at the time of subdivision.

The key principles of the Development Concept Plan are to:

- Allow for the creation of a diverse range of high quality housing choices that appeal to a wide market segment.
- Deliver high quality open space areas that serve both an amenity and local and district drainage function.
- Deliver a permeable, interconnected road and path network.
- Provide an urban form that responds to the local context and location within both the Anstey Road Precinct and broader Forestdale locality.
- Deliver a 4ha primary school site, recognising that the wider Anstey Road Precinct forms one school catchment.
- Extend the necessary services and infrastructure in a timely and coordinated manner to support the future development.
- Ensure an appropriate interface with the Forrestdale Business Park Estate is established, protecting the activities of this key industrial estate while also ensuring the amenity of future residents within the Structure Plan area.

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

- A yield of approximately 650-670 dwellings across the Structure Plan area, with residential densities of R30, R40 and R60. The R40 density is focused around key access roads and areas of high local amenity, with R60 reserved for identified grouped or multiple development sites.
- An area of approximately 4.2 hectares (gross) of public open space ensuring opportunities for passive recreation and, delivering key local and district drainage objectives.
- A permeable local road network that connects to the existing regional road network, providing for pedestrian and cycling infrastructure, and future public transport services.
- A 4ha primary school site (public purpose – local reserve).
- A non-residential land use transitional area between the Forestdale Business Park and future residential development, minimising impacts of industrial activities upon future residents.
- Appropriate separation between identified bushfire hazards along the northern and southern edges of the Structure Plan area and all future dwellings.

A Land Use Schedule is included as Table 2, and should be read in conjunction with the Development Concept Plan (Figure 7), and the Public Open Space Schedule, shown as Table 3.



Figure 7 Development Concept Plan

3.2 Residential

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

3.2.1 Dwellings Yields and Density Targets

The Structure Plan has the potential to create approximately 650 - 670 residential lots, set in a density range of R30 to R60 and based on the following planning principles:

- A base coding of R30 applies, providing opportunities to deliver a range of front loaded lots ranging in size from 300m² to 450m².
- Medium density R40 coded lots are typically fronting areas of public open space (where a higher level of amenity exists), and on street corners or at the end of street blocks where good opportunities for integration exists. This coding provides the opportunity to deliver cottage style housing (single or double storey) with front or rear laneway access or for the contemporary 'compact' lots, that typically bookend street blocks in order to create a traditional streetscape to the secondary street. Single lot sizes will generally range from 180m² to 300m².
- R60 coded lots will be allocated to areas adjacent to public open space, providing opportunities for small cottage lots that can accommodate contemporary double storey residential development, or applied to select discrete grouped/multiple dwelling lots in appropriate locations.

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 26.6 dwelling per site hectare, exceeding the target set out in Perth and Peel@3.5million. This figure exceeds the Liveable Neighbourhoods requirement for an average of 22 dwellings per residential site hectare.

3.2.2 Local Development Plans

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

Lots abutting areas of Public Open Space

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

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

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

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

- Minimum setbacks to the public open space.
- Major openings (other than bedrooms) to address the open space.
- Permeable fencing to promote surveillance.

3.3 Public Open Space

The Structure Plan creates a framework for the delivery of public open space that will serve a range of functions within the Structure Plan area, balancing active and passive recreational pursuits and delivering key drainage objectives, both at a local and district level.

The Structure Plan provides for approximately 4.6ha of local open space which (when Liveable Neighbourhoods credits are applied) represents around 10.6% POS as shown in Table 2 (Land Use Schedule), Table 3 (Public Open Space and Drainage Schedule) and Figure 8: Landscape Masterplan.

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

- 4.6ha (gross) of open space is distributed across the Structure Plan, accommodating both active and passive uses and in part performing a living stream multi use drainage function.
 - Approximately 0.25ha 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 close to source, using bio-retention areas within areas of open space.
 - Only 0.82ha (approx.) of the public open space is made up of restricted use open space, as defined by Liveable Neighbourhoods. Liveable Neighbourhoods specifies that no more than 2% of the 10% public open space can be made up of restricted use open space, with the Structure Plan falling well below this limit.
- Majority of drainage from flows over and above the first 15mm event will be directed via a piped road drainage system to the Bailey Branch Drain, with this Drain to be reconfigured as a living stream within a multiple use corridor, increasing its capacity so as to accommodate both local and district drainage.
 - The first 15mm event (district flows) associated with the Bailey Branch Drain has been treated as a deduction.

Liveable Neighbourhoods requires that 10% public open space should be provided of which no more than 2% should comprise 'restricted use' open space, with the aim being to ensure open space areas to provide a balance between offering a diversity of recreational options while also incorporating water sensitive design principles and nature spaces that protect areas of environmental significance.

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

- A senior playing field (with a total area of approximately 5ha) is to be located west of Anstey Road abutting the Structure Plan area, providing a space for organised sports and active amenity. The acquisition and delivery of this senior playing field will be funded by a Development Contributions Scheme which is (at the time of writing) nearing completion. The location and delivery of this senior oval was a resolution of the City of Armadale Council at its Ordinary Meeting on 28 May 2018, with the acquisition and delivery of this senior playing field to be funded by a Development Contributions Scheme which is presently being prepared.
- The expectation of Lots 43 and 44 being retained in their current bushland state providing a further 4.6ha of future open space that will provide residents with an area of passive and natural amenity.
- The POS within the Structure Plan area is largely 'unrestricted', a function of the highly efficient use of the Baileys Branch Drain corridor for local drainage conveyance meaning what public open space is being provided is of excellent quality and highly useable.

It is in this context that the 7.8% public open space is appropriate.

The Landscape Masterplan prepared by Emerge Associates in support of the public open space strategy is included as Appendix 4.

[3.3.1 Description of Public Open Space](#)

The Landscape Masterplan prepared by Emerge Associates describes the intended function and design principles of each area of public open space (Figure 8: Landscape Masterplan). The Structure Plan ensures that public open space can serve a variety of functions throughout the Structure Plan area, balancing active and passive recreational pursuits, whilst allowing for the reconfiguration of the Baileys Branch Drain as a 'living stream' that conveys surface water through the site.

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



Figure 8 Landscape Masterplan
Source: Emerge Associates

Table 2: Land Use Schedule (all areas in hectares)

| | | |
|---|------|--------------|
| Gross Site Area¹ | | 48.03 |
| Less | | |
| Commercial Site | 1.19 | |
| Primary School Site | 4.00 | |
| Drainage Reserve (Keane Road) | 0.35 | |
| 1 year storm event (district flows - Bailey Brance Drain) ³ | 0.70 | |
| Total | | 6.24 |
| Net Site Area | | 41.79 |
| Deductions² | | |
| Total drainage area up to the 1:1 year event | 0.23 | |
| Total | | 0.23 |
| Gross Subdivisible Area | | 41.55 |
| Public Open Space @ 10% | | 4.15 |
| Public Open Space Contribution | | |
| Minimum 80% unrestricted POS | 3.32 | |
| Maximum 20% restricted POS able to be credited | 0.83 | |
| Unrestricted Open Space | | |
| Local Park 1 | 0.34 | |
| Local Park 2 | 0.52 | |
| Living Stream Corridor | 2.74 | |
| Total Unrestricted Use | | 3.58 |
| Restricted Open Space | | |
| Drainage area between 1:1 and 1:5 year events not exceeding 20% of total open space area ² | 0.82 | |
| Total Restricted Use Open Space | | 0.82 |
| Summary of Public Open Space | | |
| Minimum Unrestricted Open Space Required | 3.32 | |
| Unrestricted Open Space Provided | 3.55 | |
| Maximum Restricted Open Space Required | 0.83 | |
| Restricted Open Space Provided | 0.83 | |
| Total Unrestricted & Restricted Public Open Space Provision | | 4.40 |
| Total Public Open Space Provisions as a % of Gross Subdivisible Area | | 10.6% |

Notes:

1. The site area is the total area of the land contained within the inner edge of the line denoting the structure plan boundary on the Structure Plan Map.
2. In accordance with Liveable Neighbourhoods: the area subject to inundation more frequently than a one year average recurrence interval rainfall event is not included as restricted or unrestricted open space and is a deduction from the net site area (LN R33); areas for the detention of stormwater for a greater than one year average recurrence interval up to the five year recurrence interval is restricted open space up to 20%, the area greater than 20% is a deduction (not applicable in this case) (LN R26 & Table 11); areas for the detention of stormwater for a greater than five year average recurrence interval is within unrestricted open space (LN R25).
3. 1 year storm event for district flows associated with Baileys Branch Drain taken as a deduction.

Table 3: Public Open Space Drainage Area Schedule (all areas in sqm)

| Local Open Space Area | Gross Area | Deductions | Restricted Use Open Space | | | Unrestricted Open Space ⁶ | |
|------------------------|--------------------|-------------------------------------|--|-------------------------------------|---------------------------------|--------------------------------------|---------------------------------|
| | | 1:1 year Drainage Area ³ | Gross Area less 1:1 year Drainage Area | 1:5 year Drainage Area ⁵ | Other Restricted Use Open Space | | Total Restricted Use Open Space |
| Local Park 1 | 5300 | 143 | 3357 | 0 | 0 | 0 | 3357 |
| Local Park 2 | 3200 | 0 | 3200 | 0 | 0 | 0 | 3200 |
| Living Stream Corridor | 29500 ⁶ | 2177 | 27323 | 3400 | 4800 ⁷ | 8200 | 19123 |
| Total | 34600 | 2482 | 32118 | 3400 | 4800 | 8200 | 23918 |

Notes:

1. The 1:1, 1:5 and 1:100 year drainage volumes have been sourced from the Hyd2o modelling.
2. The one year average recurrence interval areas shown in the table are based on management of the first 15mm runoff in accordance with Department of Water and Environmental Regulations policy.
3. Areas subject to inundation more frequently than a one year average recurrence interval rainfall event are not included as restricted or unrestricted open space and are a deduction.
4. Areas for the detention of stormwater for a greater than one year average recurrence interval up to the five year recurrence interval up to the five year recurrence interval are treated as restricted open space up to 20%.
5. Areas for the detention of stormwater for a greater than five year average recurrence interval are within unrestricted open space and receive a full open space credit.
6. Gross area of Baileys Branch Drain Corridor excludes 7000sqm of regional (1 year) storm event, which has been taken as a deduction.
7. Powerline easement (4800sqm) along Living Stream Corridor taken as restricted use open space (final alignment to be confirmed). Assumes an easement of 5.1m along the entire length of the Living Stream Corridor, adjacent to the road reserve.

The following is a summary of the key characteristics of the open space:

Bailey Branch Drain Multiple Use Corridor (Living Stream)

The Structure Plan provides for the Bailey Branch Drain to be realigned and reconstructed as a multiple use 'Living Stream' corridor which will pass through the Structure Plan area. This 'Living Stream' is critical in that it conveys both local and district drainage for all rainfall events as well as providing a high quality landscaped space for passive recreation and local amenity.

The Living Stream will form the backbone of a linked system of spaces, leading to the creation of a green corridor with multiple functions of conservation, water quality management and public access for recreation. The pedestrian and ecological connectivity within this green corridor of the 'Living Stream' address the access, recreation and ecological requirements of the site.

The Living Stream will be aligned to maximise retention of existing native trees and understorey vegetation, with further ecological enhancement and wildlife habitat creation via appropriate native planting. Retained trees will provide shade and create an enhanced backdrop to recreation areas. Further planting will consist of predominantly native waterwise with select exotic trees will be placed at key locations to emphasise focal points and key user spaces.

The pedestrian path network and POS recreation nodes will be located in appropriate positions relative to existing retained vegetation and the 'Living Stream'. Playgrounds and shelter nodes will form key focal points with the POS network, providing opportunity for community gatherings and informal recreation (Figure 9: 'Living Stream' Cross Sections).

Biofiltration areas for water quality treatment of the first 15mm of stormwater runoff will be provided within open space areas relative to each drainage catchment with all other storage and attenuation of stormwater flows to be accommodated in the 'Living Stream'.

Presently a 132kV high voltage overhead transmission line runs through the centre of the Structure Plan, with the realignment of this line to be considered as part of subdivision phase. While the final alignment has yet to be determined, it is expected that it will likely be located within road reserves aligned to Baileys Branch Drain.

Local Parks

Two local parks with areas of approximately 3,200m² and 5,300m² are provided to ensure all dwellings are within a 400m walk, in accordance with Liveable Neighbourhoods.

The design of local parks is based on the following principles:

- Retention of remnant trees wherever appropriate.
- Comprising native or low water use shrubs and grasses, for easy and low cost maintenance.
- Open turfed areas will provide an informal play and a kick-about space within one of these local parks.
- Opportunities to provision shelter and picnic facilities with the potential for play equipment.
- Drainage (first 15mm) will be accommodated within landscaped basins.

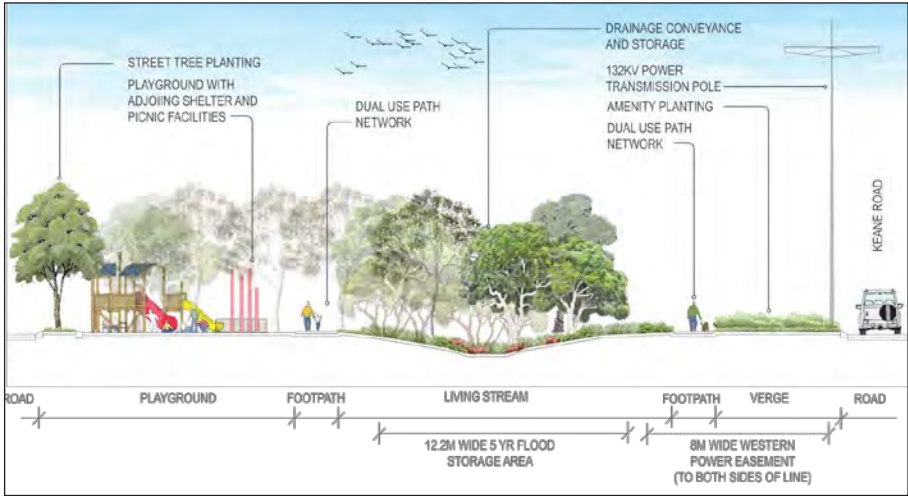
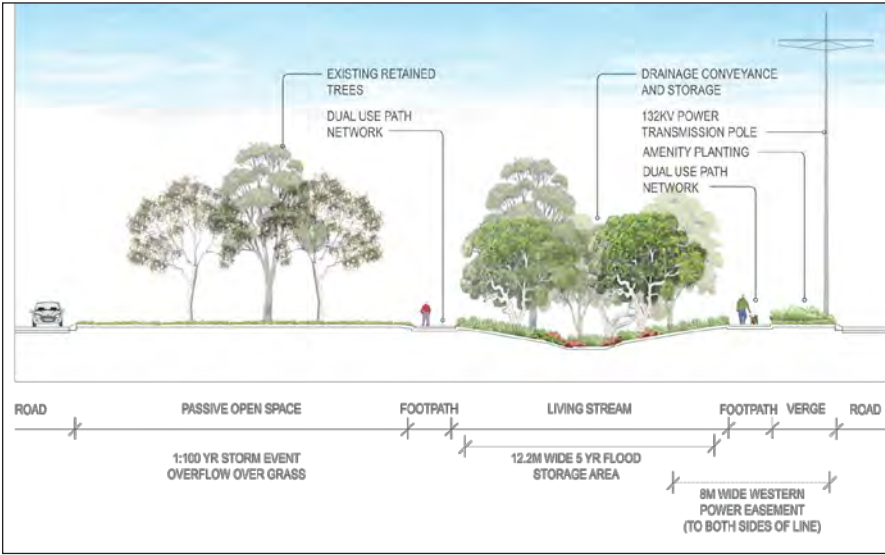


Figure 9 'Living Stream' Cross Section

Source: Emerge Associates

3.4 Bushfire Management

The Structure Plan provides a design response and the planning framework that addresses potential bushfire hazards. It demonstrates that the risk from bushfire is not an impediment to development and it can be managed through a combination of building protection zones, mandatory dwelling setbacks and appropriate construction standards.

In accordance with the WAPC's 'State Planning Policy 3.7: Planning in Bushfire Prone Areas' and 'Planning for Bush Fire Protection Guidelines', a Bushfire Management Plan has been prepared by Bushfire Safety Consulting. It includes a detailed (post-development) Bushfire Hazard Assessment.

This Hazard Assessment shows that bushfire prone vegetation (post-development) is restricted to:

- Grassland within the rural residential lots located to the western side of Anstey Road;
- Native shrubland contained within Lots 43 and 44 Keane Road which abut the Structure Plan area; and,
- Vegetation located within the southern most portion of the Bailey Branch Drain (Lot 61 Armadale Road).

The Assessment requires that an Asset Protect Zone (APZ) of at least 15m be established between the identified bushfire prone vegetation and any future dwellings in order to achieve a Bushfire Attack Level (BAL) of 29 or less in accordance with AS3959 "Construction of buildings within bushfire prone areas." The Structure Plan creates this APZ through the locating streets and mandatory building setbacks between the identified bushfire risk and any future dwellings, ensuring BAL-40 and BAL-FZ construction standards are not required. Any mandatory dwelling setbacks will be implemented via LDPs at the time of subdivision approval.

The planned primary school, which is a Vulnerable Land Use, will need to be accompanied by a subsequent Bushfire Management Plan at the time of development, in order to meet the requirements under SPP3.7.

3.5 Movement Network

A comprehensive Transport Impact Assessment has been prepared by Transcore traffic engineers which forecasts traffic volumes and sets out a recommended road network hierarchy to accommodate expected traffic flows. The following section discusses the key elements of the Assessment, including existing and planned movement network, road hierarchy classification and an overview of the cyclist and pedestrian network. The complete Transcore Transport Impact Assessment is provided at Appendix 5.

[3.5.1 Existing Movement Network](#)

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

Armadale Road is reserved as a Primary Regional Road under the MRS and is classified in the network as a Primary Distributor, under the control of Main Roads WA. It is the main district and regional road connection for the site and is currently constructed as a single carriageway two-lane rural road with a posted speed limit of 80km/h.

Anstey Road abuts the western edge of the Structure Plan and is classified as an Access Road, currently providing local access to the area linking to Armadale Road to the south and Ranford Road to the north. It is constructed as a single carriageway, two-lane rural road with a posted speed limit of 60km/h (as abutting the Structure Plan area).

Keane Road is presently a local Access Road that abuts the northern edge of the Structure Plan area, constructed from Anstey Road to Armadale Road as a single carriageway, two-lane rural road.

Allen Road is a local Access Road which passes through the Structure Plan area, constructed as a single carriageway, two-lane road, kerbed on the southern side which connects into Keane Road.

Tonkin Highway is the major north-south distributor in the south-east corridor, with the highway located approximately 400m east of the Structure Plan area.

A four-arm roundabout, comprising two through lanes in each direction, is constructed at the Armadale Road / Anstey Road / Weld Street intersection to the south of the Structure Plan. Bus service 519 connects to Murdoch Train Station and runs along Armadale Road providing an hourly service Monday to Friday with more frequent services in the peak AM and PM periods.

[3.5.2 Proposed Movement Network](#)

[Road Network](#)

A Transport Impact Assessment has been prepared by Transcore which comprehensively addresses traffic movement considerations within the Structure Plan area. A complete copy of the Transcore Transport Impact Assessment can be found as Appendix 5.

The planned road network shown on the Development Concept Plan provides a robust and permeable layout throughout the Structure Plan area, with strong, direct linkages in both an east-west direction, and in a north south direction, along with providing excellent circulation about the primary school site.

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).

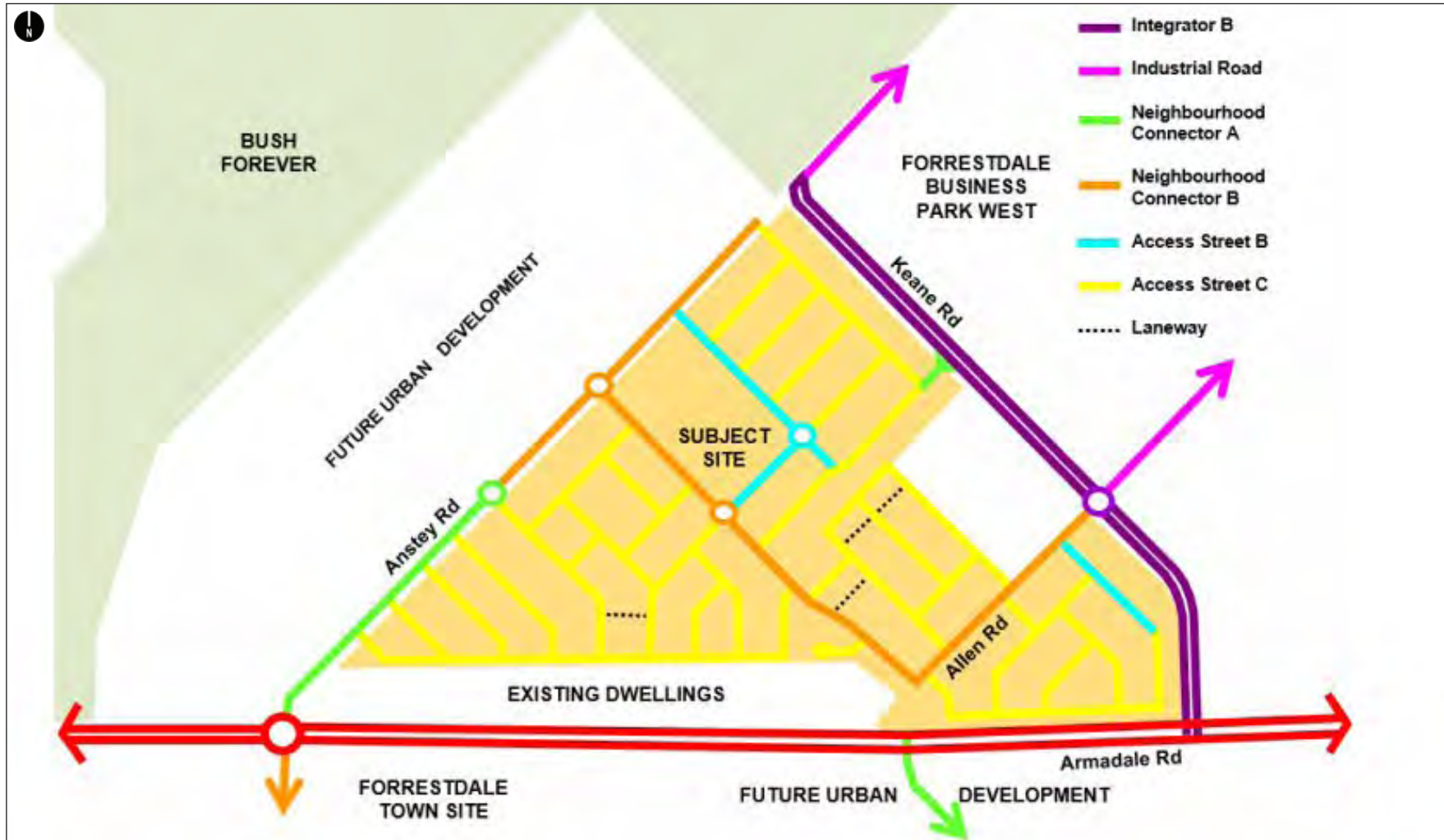


Figure 10 Road Hierarchy
Source: Transcore

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

- **Anstey Road** – Recommended to be reclassified as a Neighbourhood Connector A for approximately on third of its length north of Armadale Road, within an indicative reservation width of 24.4m. The remaining portion (of Anstey Road) is to be then reclassified as a Neighbourhood Connector B, with a reserve width of between 19.4m to 20m, with Keane Road to be terminated from connecting into Keane Road.
- **Keane Road** (abutting the Structure Plan area) – to be upgraded as part of the MRA's North Forrestdale Business Park project to an Integrator B.
- **Neighbourhood Connector** – a future neighbourhood Connector B road will pass through the Structure Plan area, connecting Anstey Road to Allen Road, and in turn to Keane Road providing for through traffic associated with the primary school as well as residential traffic. This neighbourhood Connector has an envisaged reserve width of 18m.
- **Access Streets** – proposed to contain a pavement width of 6m with a reserve width ranging from 14.2 to 16m with the majority to be constructed as 15m road reserves, to be reduced by 1m when adjacent to public open space.
- **Laneways** – shall be a minimum width of 6m to accommodate two way movements and rubbish collection, increased to a width of 9m where these provide the only public road frontage.

As indicated above, the City is planning for Anstey Road to be terminated as a cul-de-sac at the northern end to prevent industrial traffic from the Metropolitan Redevelopment Authority's Forrestdale West Business Park Estate shortcutting through to Armadale Road. The Development Concept Plan reflects this planned outcome.

The Armadale Road / Keane Road intersection is to be constructed as a signalised intersection, to be undertaken by the Metropolitan Redevelopment Authority as part of its Forrestdale Business Park development.

The Keane Road / Allen Road intersection will be constructed as a full movement roundabout, providing access to both the Forrestdale Business Park (north) and the Anstey Road precinct (south).

[Pedestrian & Cyclist Facilities](#)

The Structure Plan delivers a safe and legible pedestrian and cycle movement network, both within the Structure Plan area and through connections to planned urban development in the surrounding areas (Figure 14: Pedestrian and Cyclist Facilities). The key principles for determining the planned pedestrian and cycling facilities are as follows:

- Paths provided to both sides on all Neighbourhood Connectors, with one side comprising a shared path with a minimum width of 2m.
- Footpaths on at least one side of all access roads.
- On-street cycle lanes to be included on Anstey Road, Allen Road and the planned Neighbourhood Connector road, in addition to the existing cycle lanes already along Armadale Road.

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

[Public Transport](#)

The Structure Plan provides a critical mass that will in turn support the development of a robust public transport service. Presently bus route 519 runs along Armadale Road and Nicholson Road from the Murdoch Train Station. It is anticipated that this bus route will service the Structure Plan area along Anstey Road and will be capable of accommodating a public bus route.

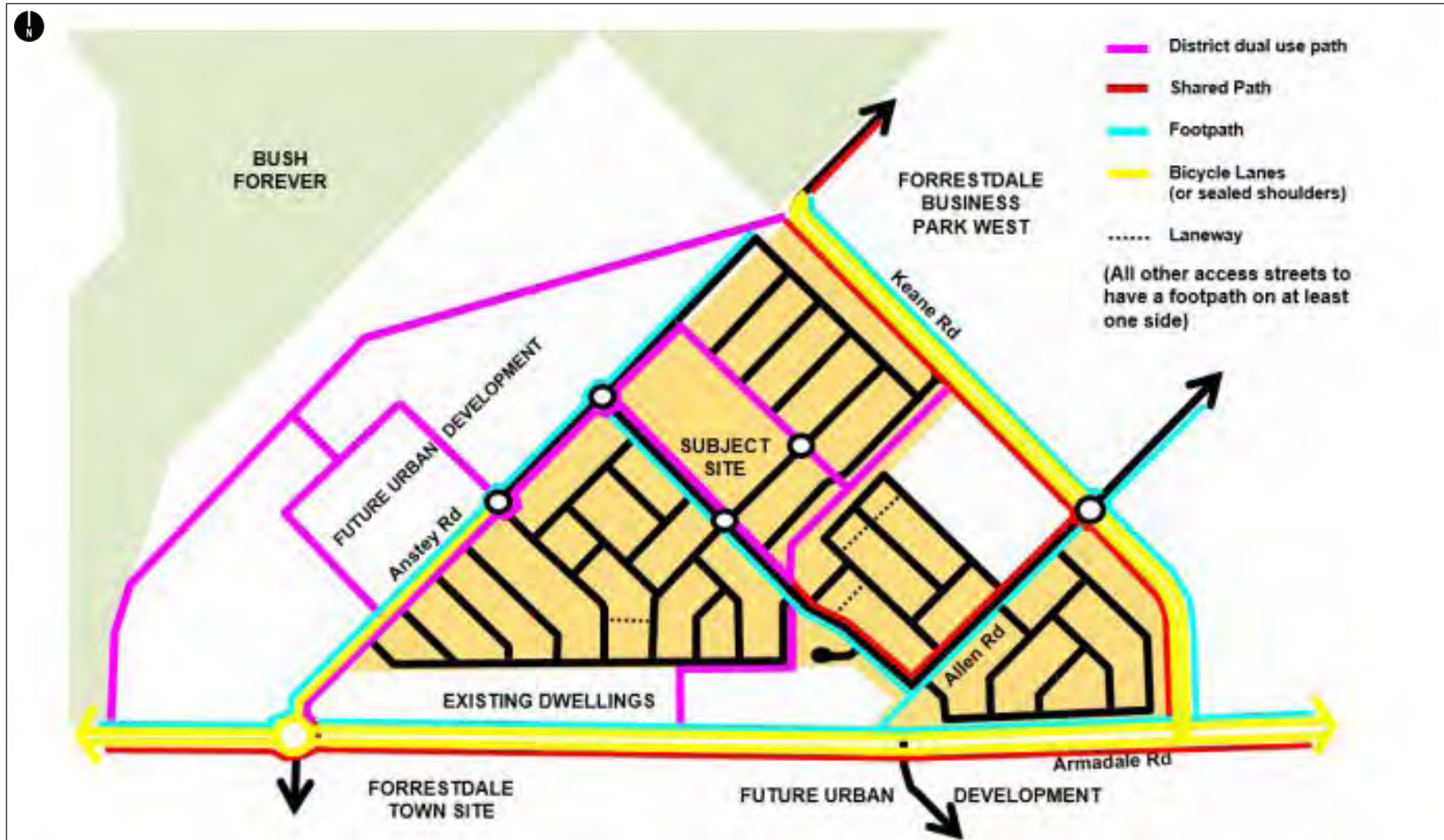


Figure 11 Pedestrian and Cyclist Facilities
Source: Transcore

3.5.3 Analysis of the Transport Network

Transcore have undertaken comprehensive traffic modelling for the movement network proposed by the Structure Plan. It demonstrates that the proposed network and associated reserve widths have the capacity to accommodate expected traffic volumes in the year 2031. This is consistent with the Main Road's regional operational model and strategic transport modelling undertaken by the City of Armadale.

All vehicle movements fall within the acceptable limits outlined by Liveable Neighbourhoods for the respective road categories proposed by the Structure Plan.

It is important to note that the traffic modelling undertaken incorporates all planned development surrounding the LPS area, including the land located on the western side of Anstey Road (as identified by the Southern River / Forrestdale / Brookdale / Wungong District Structure Plan) and traffic volumes generated by the MRA's Forrestdale Business Park, to the north of the Structure Plan area. This has ensured a transparent and robust model.

Armadale Road / Anstey Road Roundabout

A SIDRA intersection capacity analysis shows that the Armadale Road / Anstey Road / Weld Street roundabout to the south of the Structure Plan area will operate satisfactorily using AM and PM peak hour flows at ultimate development (to the year 2031). The analysis confirms that the existing roundabout (two-lanes each way) will operate satisfactorily within both peak periods, offering an excellent level of service at ultimate development.

In the longer term Main Roads WA is planning to upgrade Armadale Road to three lanes each way, with Armadale Road forecast volumes to reach 54,000vpd, which will require minor widening on the Anstey Road northern approach to three lanes.

Armadale Road / Keane Road Signalised Intersection

The Armadale Road / Keane Road intersection is planned to be upgraded as part of the Metropolitan redevelopment Authority's Forrestdale Business Park as a signalised intersection with double right turn lanes onto Armadale Road.

The SIDRA analysis within the Transcore Assessment shows that this intersection has ample capacity during the 2031 AM and PM peak periods. In the longer term with Armadale Road planned to be upgraded to three lanes each way to accommodate forecast volumes of 64,000vpd, this intersection is expected to improve in its capability and its overall level of service.

Keane Road / Allen Road Roundabout

The Keane Road / Allen Road intersection is planned to be upgraded as a full movement roundabout. The SIDRA analysis confirms that this intersection will operate well within acceptable limits during the 2031 AM and PM peak periods with the forecast traffic flows from all surrounding areas at full development, including traffic being generated by the Forrestdale Business Park and the planned commercial centre within the Structure Plan area.

Internal Intersections

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

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

3.6 Traffic Noise Assessment

A Road Traffic Acoustic Assessment and Environmental Impact Acoustic Assessment has been prepared by Herring Storer Acoustics in support of the Structure Plan, prepared in accordance with State Planning Policy 5.4 – Road and Rail Noise ('SPP 5.4').

The assessment modelled and assessed potential road traffic noise impacts upon the Structure Plan area, a result of vehicles travelling along Armadale Road.

The assessment concludes that noise received at future residences located adjacent to Armadale Road would exceed acceptable noise limit targets outlined in SPP 5.4 but that traffic noise can be alleviated through the facade

protection treatment requirements (Quiet House Design packages) for affected properties, with these properties also required to have notifications on title to inform landowners of the necessary construction standards.

The assessment also monitored and modelled noise levels associated with any industrial noise sources within the vicinity of the Structure Plan, with the analysis showing no significant impact. Any industrial activity would be required to comply with the regulatory criteria stipulated in the Environmental Protection (Noise) Regulations 1997.

The Herring Storer 'Acoustic Assessment and Environmental Impact Acoustic Assessment' is provided as Appendix 3.

3.7 Water Management

The Structure Plan has been designed to accommodate the principles of best practice urban water management principles by integrating stormwater detention and infiltration within areas of public open space and developing the existing Baileys Branch Drain as a living stream within a multiple use corridor.

A Local Water Management Strategy (LWMS) has been prepared by Hyd2o in support of the Structure Plan, prepared in accordance with the principles and objectives of WAPC's Better Urban Water Management Guidelines and the Department of Water's Forrestdale Main Drain Arterial Drainage Strategy. The LWMS is likewise consistent with the approved Anstey / Keane Road District Water Management Strategy.

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

The LWMS is provided in its entirety as Appendix 6.

[3.7.1 Stormwater Management Strategy](#)

Stormwater management will be undertaken based around DWER water sensitive design practices.

The system will consist of lot soakwells, subsoil drainage, piped road drainage system, bio-filtration areas, and Baileys Branch Drain realigned and reconfigured as a living stream to provide water quantity and quality treatment for stormwater from the Structure Plan area.

The LWMS refines the stormwater strategy set out in the Department of Water's Forrestdale Main Drain Arterial Drainage Strategy as follows:

- Stormwater from the first 15mm will be infiltrated close to source, using bio-retention areas within areas of open space providing for water quality treatment.
- Stormwater over and above the first 15mm event will then be directed to the Baileys Branch Drain by way of the piped road drainage system.
- The Baileys Branch Drain will be realigned and reconstructed as a living stream within a multiple use corridor, increasing its capacity so as to serve a combined district and local drainage function.
- A single exception is the eastern most catchment in which stormwater will be directed to an area of open space adjacent to Keane Road, prior to flowing under Keane Road (culvert) to the Forrestdale Main Drain Catchment.

[3.7.2 Groundwater Management Strategy](#)

A preliminary earthworks strategy has been prepared over the Structure Plan area in order to achieve suitable separation to groundwater.

Minimum separation between building floor levels of future development and groundwater will be achieved by a combination of fill and subsoil drainage to protect against any post-development groundwater rise. Finished levels and fill requirements, as a detailed design issue, will be addressed as part of the engineering design and UWMP stage.

All subsoil drainage will be free draining in accordance with Department of Water and Environmental Regulation requirements and treated for water quality prior to discharge while subsoil drainage will be determined at UWMP stage.

[3.7.3 Implementation and Monitoring](#)

The LWMS sets the overall water management strategy for development within the Structure Plan area. It will be the responsibility of the developer to construct and maintain the stormwater drainage system in accordance with UWMP(s) to be prepared at subdivision stage.

Post-development monitoring of groundwater levels and quality will be carried out over a three year period, in consultation with DWER and the City of Armadale at the time of UWMP. All water quality testing will be undertaken by a NATA approved laboratory.

The Baileys Branch Drain will be subject to an ongoing maintenance agreement between the City of Armadale and the Water Corporation.

3.8 Activity Centres

The Structure Plan area is in close proximity to a number of existing activity centres, ensuring immediate and excellent access to employment opportunities, and retail commercial and community services:

- The Armadale Strategic Metropolitan Centre is located 6km east of the Structure Plan area, identified as a district centre in ‘State Planning Policy 4.2 – Activity Centres for Perth and Peel’, providing for a wider range of commercial, community and employment opportunities.
- The Rockingham and Fremantle Strategic Metropolitan Centres are also easily accessible from the Structure Plan area.
- The ‘Haynes Neighbourhood Centre’ is a large neighbourhood centre located only 3km east of the Structure Plan area.

The Southern River/Forrestdale/Brookdale/Wungong District Structure Plan provides for a local centre within the Anstey Road Precinct however, also states that amount of retail floorspace ‘requires definition at the detailed planning stage’. The City’s Local Planning Strategy (2016) has subsequently indicated that the Anstey Road Precinct accommodates no local centres.

Nevertheless, the Structure Plan responds in providing the option to provide some local retail amenity through creating a commercial centre at the intersection of Keane Road and Allen Road.

The purpose of this centre is two fold:

- Creating a non-residential transition between the Forrestdale Business Park estate and future residential; and
- Providing the possibility of retail convenience and personal services for future residents as well as passing traffic. The final extent and configuration of this commercial centre will be dependent on market demand and subsequent assessment.

A ‘Non-residential Land Use Option’ report has been prepared by Shrapnel Urban Planning which substantiates that the zoning of the centre ‘Industrial Business’ under TPS4 is appropriate, providing for a significant number of complimentary land uses which still create the necessary transition between Forrestdale Business Park. The document also confirms that the location and configuration of the Centre is appropriate, with Keane Road offering a high level of visibility passing traffic. The report also substantiates that the full movement roundabout (at the interception of Keane Road and Allen Road) is critical for the viability of the centre, providing the site will the necessary accessibility that will ensure its ongoing success.

The ‘Non-residential Land Use Option’ prepared by Shrapnel Urban Planning is provided as Appendix 7.

In acknowledgment of the City’s Local Planning Strategy not designating any retail floorspace within the Structure Plan area and in accordance with State Planning Policy 4.2 Activity Centres for Perth and Peel, a Retail Sustainability Assessment will be required as part of future development application(s) that proposes any ‘shop-retail’ floor area, to allow the City to appropriately assess the need and appropriateness of such land uses given its context.

3.9 Education

The Structure Plan delivers one 4ha 'stand alone' primary school site.

The Department of Education requested a primary school site within the Structure Plan area to serve the overall Anstey Road Precinct on the basis that this entire Precinct equates as one (primary school) catchment.

The location and configuration of the primary school site is consistent with the City of Armadale 'Preferred Location Scenario', which was supported by Council at its Ordinary Meeting on 28 May 2018. The Department of Education has also provided support for the size and location of the primary school site.

The primary school site is surrounded by road reserves on all four boundaries, allowing for excellent access and circulation, consistent with the principles of Liveable Neighbourhoods. A portion of the school site is situated within 200m of the Dampier to Bunbury Natural Gas Pipeline. No school buildings or classrooms can be constructed within 200m of the Dampier to Bunbury Natural Gas Pipeline, with this affected land to be used for the school's playing field.

Further to the primary school provided within the Structure Plan area, the site is also in close proximity to a number of other educational facilities, including the Harrisdale Senior High School located approximately 2km north and the Forrestdale Primary School located approximately 1km south of the Structure Plan area. St John Bosco College is a Catholic facility (Kindergarten to Year 12) located on Armadale Road, approximately 1km west from the Structure Plan area, providing a non-government school option for future residents.

3.10 Servicing and Staging

The following section summarises the engineering considerations in the Engineering Servicing Report prepared by JDSi Consulting Engineers, The Engineering Servicing Report is provided as Appendix 6.

[3.10.1 Earthworks Strategy](#)

Key aspects of the earthworks strategy are:

- Ensure a minimum separation distance of 0.5m to 1m clearance from the Annual Average Maximum Groundwater Level and finished lot levels.
- Create finished levels within the Structure Plan area that accommodate gravity-reliant infrastructure to facilitate appropriate servicing (to the planned sewer pump station within the Structure Plan area).
- Match into the ground levels found within existing road reserves including Allen Road, Anstey Road, Armadale Road and Keane Road.
- Provide for finished levels that ensure that stormwater flows (greater than the 5 year storm event) flow to the Baileys Branch Drain freely by way of a pit and pipe system.

[3.10.2 Sewer](#)

Water Corporation planning has a sewer pump station to be located within the Structure Plan (referred to as the Balannup Waste Water Pump Station L). This pump station will service the Structure Plan area, the planned residential development on the eastern side of Anstey Road and the Forestdale Business Park to the north. Sewerage will flow via a proposed DN150 gravity sewer network to the pump station, in turn connecting into a DN300 sewer main which will head along Anstey Road.

3.10.3 Water Reticulation

The Structure Plan will be provided with reticulated water via extensions to an existing DN1400 cast iron water distributor main located in the Allen Road reserve and a DN1400 steel main located in the Anstey Road reserve.

3.10.4 Power Supply

Existing Western Power overhead infrastructure is located within Allen, Keane and Armadale Roads have the capacity to service development, with these powerlines to be undergrounded as part of future works.

A 132kV high voltage overhead transmission line that runs through the centre of the Structure Plan is protected by a 16m easement, with this transmission line to be realigned as part of subdivision phase. The new alignment, which has 'in principle' support from Western Power, is planned to run from its current position at Armadale Road, northwards within the Allen Road reserve and then westwards within the Keane Road reserve. For Allen Road, the transmission line is expected to be aligned within the sewer trunk main services corridor (within this reserve), with the resulting transmission line easement necessitating a 4m minimum setback for residential properties fronting onto Keane Road.

Figure 12 shows an indicative cross section of Allen Road, showing the relationship between the realigned transmission line, its 16m wide easement, the road pavement and the impact on the verge and adjacent residential properties. This configuration is subject to final Western Power approval.

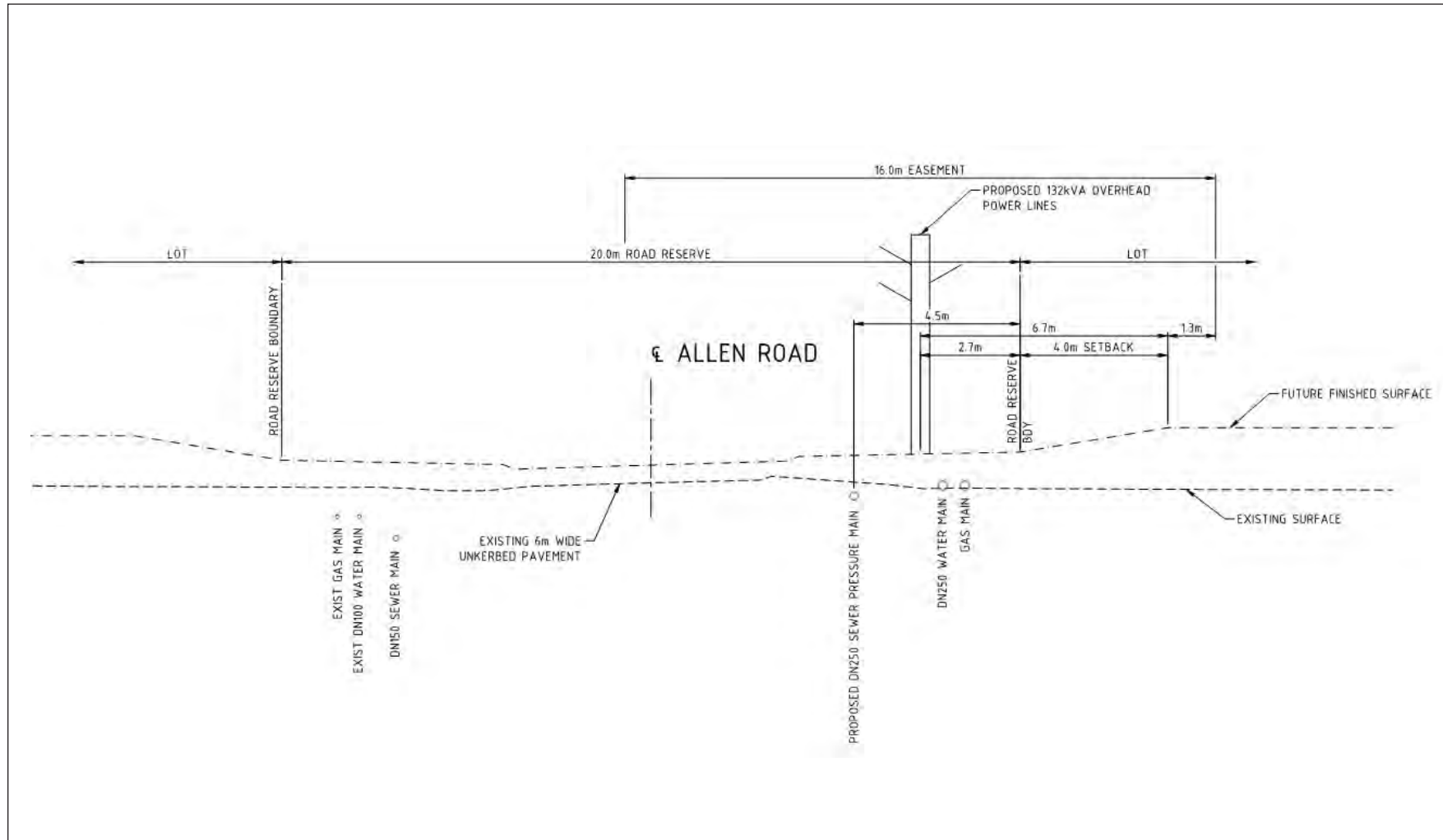


Figure 12 Allen Road Cross Section

Source: JDSI Consulting Engineers

3.10.5 Gas Supply

The Structure Plan area will be serviced via a PVC DN80 medium pressure main which is within the Allen Road reserve. Atco Gas has confirmed that these gas mains have capacity to service the Local Structure Plan area once fully developed. A DN300 steel high pressure main is located in the Anstey Road reserve west of the Structure Plan area, with works within 15m proximity of this main requiring prior approval from Atco Gas.

3.10.6 Telecommunications

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

3.10.7 Staging and Timing

It is anticipated that the Structure Plan will be implemented to match market demand. Initially development will be focused about Anstey Road to facilitate the construction of the estate entry off Anstey Road and easy extension of necessary services. Development will then typically proceed in a north to east fashion, providing for a progressive and logical extension to the estate. An indicative staging plan is shown as Figure 12.

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

3.11 Developer Contributions

The 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.

A Development Contributions Scheme is presently being prepared by PRM Property and Cedar Woods Property in close collaboration with the City of Armadale, with a draft DCS nearing completion. A voluntary legal agreement will be entered into with the City once all necessary infrastructure items have been confirmed and agreed to with key landowners.

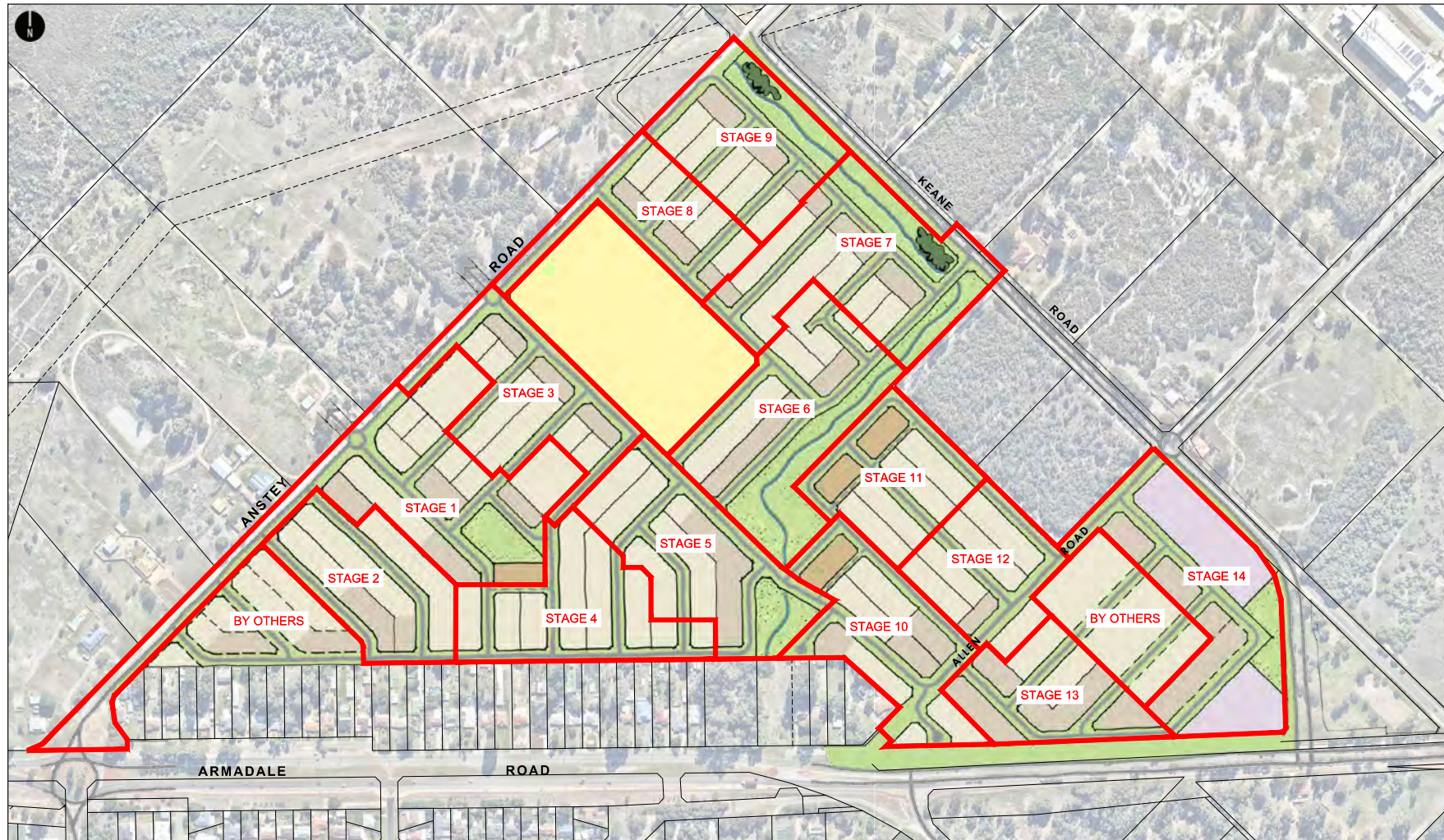


Figure 13 Indicative Staging