Lots 746-750 & 545 Baldivis Road

Structure Plan

Part Two - Explanatory Report

September 2015 - *As approved by WAPC (August 2015)*

mirvac

CLE TOWN PLANNING + DESIGN

LOTS 746 - 750 & 545 BALDIVIS ROAD, BALDIVIS STRUCTURE PLAN

PART TWO - EXPLANATORY REPORT

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Bushfire - Bushfire Safety Consulting / Emerge Associates

Traffic & Transport Assessment - Transcore

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SITE PLAN AND ORTHOPHOTO

2353-32-01 (15.08.2014), 1:5000@A4

Figure 1

1.0 PLANNING BACKGROUND

1.1 Introduction and Purpose

This Structure Plan applies to Lots 746-750 and Lot 545 Baldivis Road. The Structure Plan has been prepared by CLE Town Planning + Design, on behalf of Mirvac WA and is lodged in accordance with Clause 4.2 of the City of Rockingham Town Planning Scheme No.2 which requires a structure plan for 'Development' zoned land.

The Structure Plan provides a statutory planning framework to guide future subdivision and development of the subject site and refines the level of planning detail provided in the East Baldivis District Structure Plan (DSP). The Structure Plan draws on the key elements of the DSP, whilst ensuring that all environmental, social, economic and infrastructure issues are comprehensively addressed.

The format of the Structure Plan accords with the Western Australian Planning Commission's (WAPC) Structure Plan Preparation Guidelines (August 2012) and provides a framework for future subdivision and development for the site.

The Structure Plan consists of three parts:

Part 1: Statutory Section - contains the Structure Plan Map and the statutory planning provisions and requirements that will facilitate the various initiatives described in the Explanatory Section. These provisions are given the force and effect of the Scheme, pursuant to Clause 4.2.9 of the City of Rockingham Town Planning Scheme No.2.

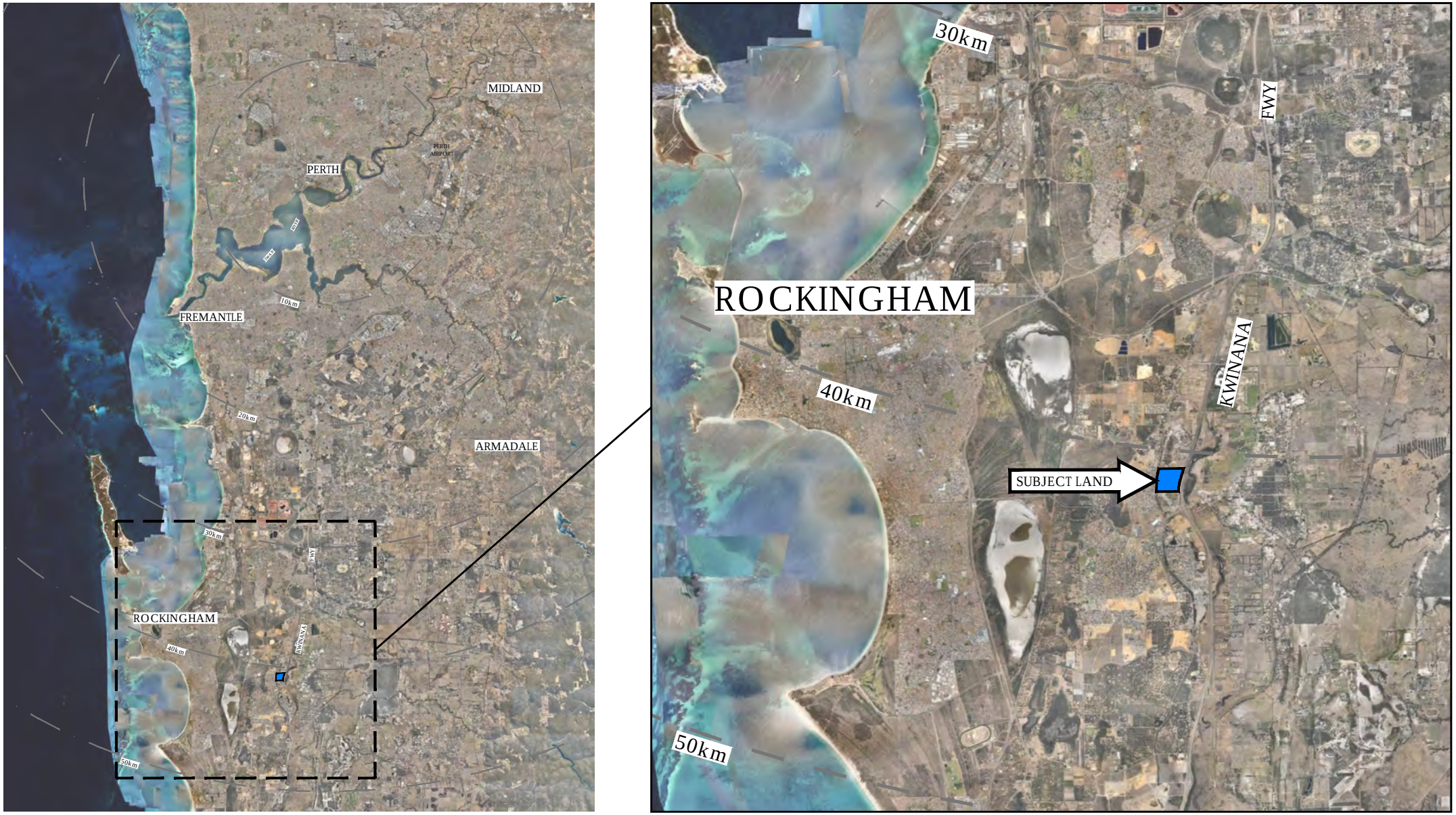
Part 2: Explanatory Section - discusses the key outcomes and planning implications of the background and technical reports and describes the broad vision and more detailed planning framework which will be developed. Part 2 is based on a detailed site specific analysis of opportunities and constraints and the following technical reports and strategies:

- Environmental Assessment Report, including Vegetation Management Strategy and Fauna Management Strategy;
- Transportation Noise Assessment;
- Fire Management Plan;
- Transport Assessment;
- Landscape Concept Plan and Descriptions;
- Local Water Management Strategy; and
- Earthworks and Servicing Strategy.

Part 3: Technical Appendices – includes the technical reports and supporting plans and maps outlined above.

The Structure Plan will facilitate growth of the emerging Baldivis community through the creation of approximately 510 - 540 dwellings. The Structure Plan will allow for a portion of a primary school (2ha), contribute to the extensive public open space network and expand and connect into the existing local road network.

Preparation of the Structure Plan has involved extensive consultation with the City of Rockingham, Department of Planning and relevant service authorities in accordance with the Structure Plan Preparation Guidelines (the Guidelines).



LOCATION PLAN

2353-33A-01 (08.09.2015), Not to scale

Figure 2

1.2 Land Description

The Structure Plan area encompasses all of Lots 746 – 750 and Lot 545 Baldivis Road, Baldivis. A site plan and orthophoto is Figure 1.

The following sections provide a detailed description of the land and surrounds.

1.2.1 Location

The Structure Plan area is located within the City of Rockingham, approximately 40km south of the Perth CBD, and 1.5km north-west of the Baldivis District Centre, as identified in State Planning Policy 4.2 – Activity Centre for Perth and Peel.

The Structure Plan is broadly bounded by Australand's lot 544 Baldivis Road to the north, the Kwinana Freeway to the east, Baldivis Road to the west and Perron Development's lot 921 Baldivis Road to the south. The existing Parks and Recreation (Tramway) reserve is located within the Baldivis Road reserve and abuts the western boundary of the Structure Plan.

The western side of Baldivis Road and southern side of Safety Bay Road are both currently being developed for urban (residential) purposes, whilst the first stage of a district level retail centre has been developed to the south-west of the Structure Plan area, on the north side of Safety Bay Road.

The Kwinana Freeway is located to the east of the Structure Plan which can be readily accessed from the freeway via the Safety Bay Road interchange to the south, or Mundijong Road interchange to the north. A location plan is included as Figure 2.

1.2.2 Area and Land Use

The Structure Plan provides a gross area of 37ha comprising of six lots ranging from 5.7ha to 6.4ha in area.

The land has been extensively cleared and only remnant scatterings of vegetation remain.

1.2.3 Legal Description and Ownership

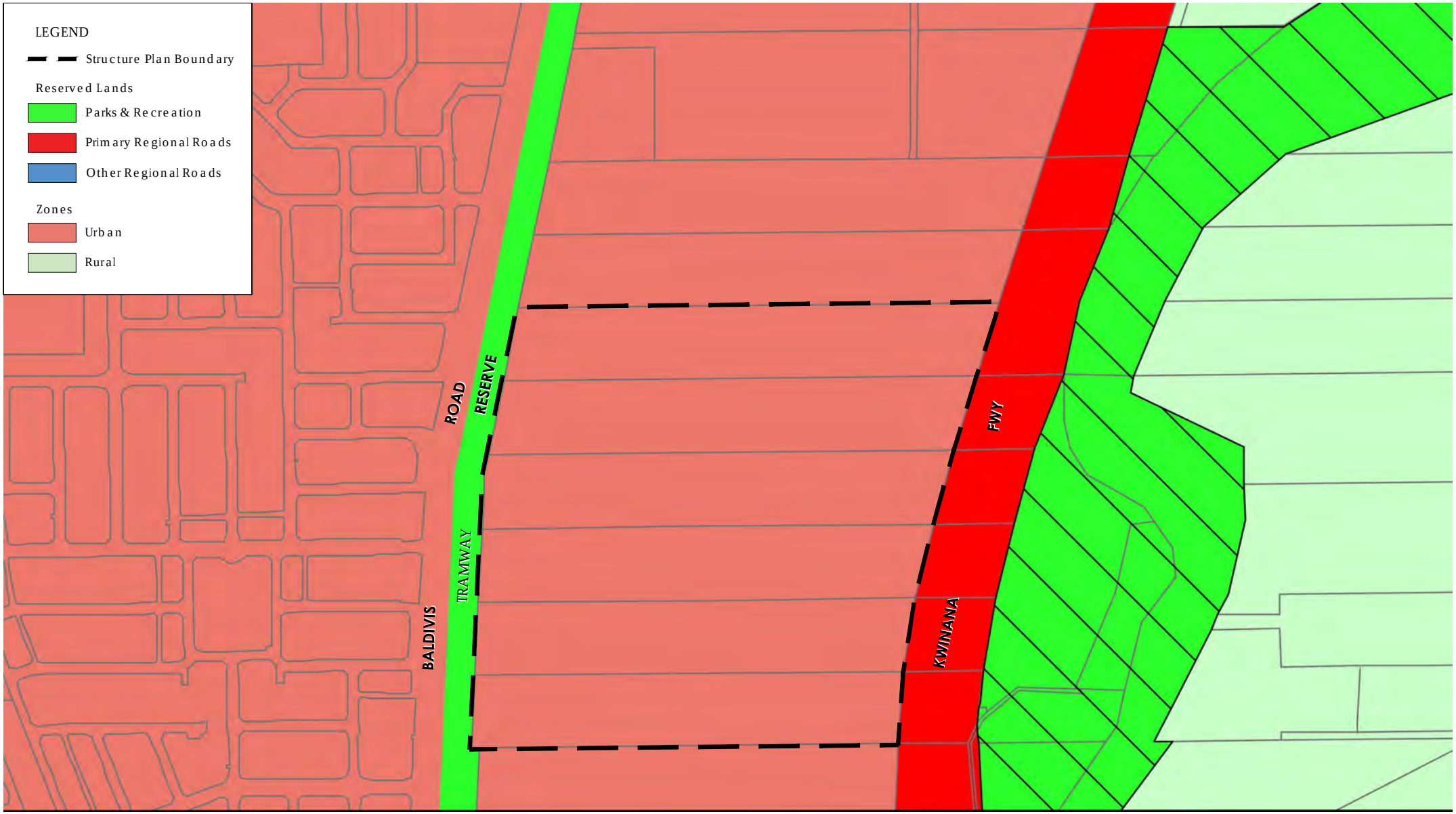
The Structure Plan area comprises of Lots 746 – 750 and Lot 545 Baldivis Road, Baldivis. Mirvac is the landowner of Lots 746 – 750, while Lot 545 is under seperate private ownership. The landowner of Lot 545 has been consulted throughout the preparation of this Structure Plan and is supportive of having Lot 545 included in the Structure Plan.

The legal description and ownership of the lots within the Structure Plan is demonstrated in Table 1.

Table 1 – Land Ownership and Legal Description

Lot No.	Owner	Land Area	Plan	Volume/Folio
746	Mirvac WA	6.4548ha	P25777	2213/ 770
747	Mirvac WA	6.3553ha	P25777	2213/ 771
748	Mirvac WA	6.0880ha	P25777	2213/ 772
749	Mirvac WA	5.9084ha	P25777	2213/ 773
750	Mirvac WA	5.7423ha	P25777	2213/ 774
545	Graham Cramphorn*	6.4272ha	P202744	2054/ 363

** under contract to Rockingham Park*



METROPOLITAN REGION SCHEME ZONING

2353-34-01 (15.08.2014), Not to scale

Figure 3

1.3 Planning Framework

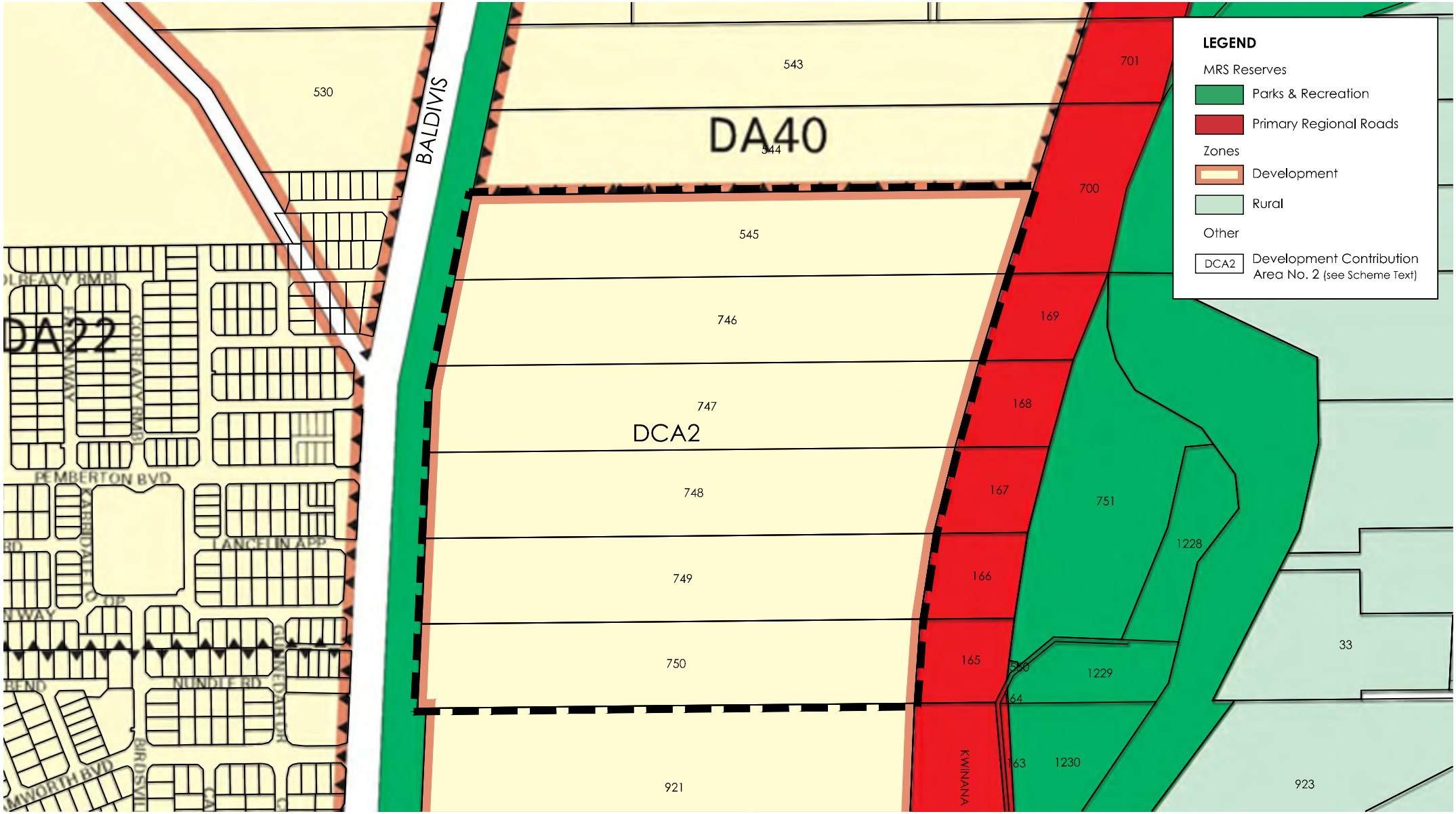
1.3.1 Zoning and Reservation

Metropolitan Region Scheme Zoning

The Structure Plan area forms part of a broader precinct that was recently transferred from the 'Urban Deferred' to 'Urban' zone under the Metropolitan Region Scheme (MRS), with a publication in the *Government Gazette* notifying of the lifting of the urban deferment from the land on 18 March 2014. A plan depicting the current MRS zoning of the Structure Plan area and surrounds is Figure 3.

The immediately abutting land to the east of the Structure Plan area is reserved as Primary Regional Road and accommodates the Kwinana Freeway. The land to the east of Structure Plan area on the opposite side of the Kwinana Freeway is zoned 'Rural' or reserved for Parks and Recreation.

The 'Tramway Reserve' is located within the Baldivis Road reserve and forms the western boundary to the Structure Plan area. The Tramway Reserve is reserved under the MRS for the purpose of Parks and Recreation.



CITY OF ROCKINGHAM TOWN PLANNING SCHEME 2

2353-37A-01 (09.01.2015), Not to scale

Figure 4

City of Rockingham Town Planning Scheme No. 2

The Structure Plan area is zoned 'Development' under Town Planning Scheme No.2 (TPS2) and is located within Development Area "DA40" as identified in Schedule 9 of TPS2.

Schedule 9 sets out the requirements / special conditions for each Development Area. The provisions for DA40 include requirements to include a Fire Management Plan as a detail of a Structure Plan.

The bushfire hazard and the Structure Plan response is discussed further in section 3.3 of this report, while the Fire Management Plan, prepared by Emerge Associates, is included in full as Appendix 1.

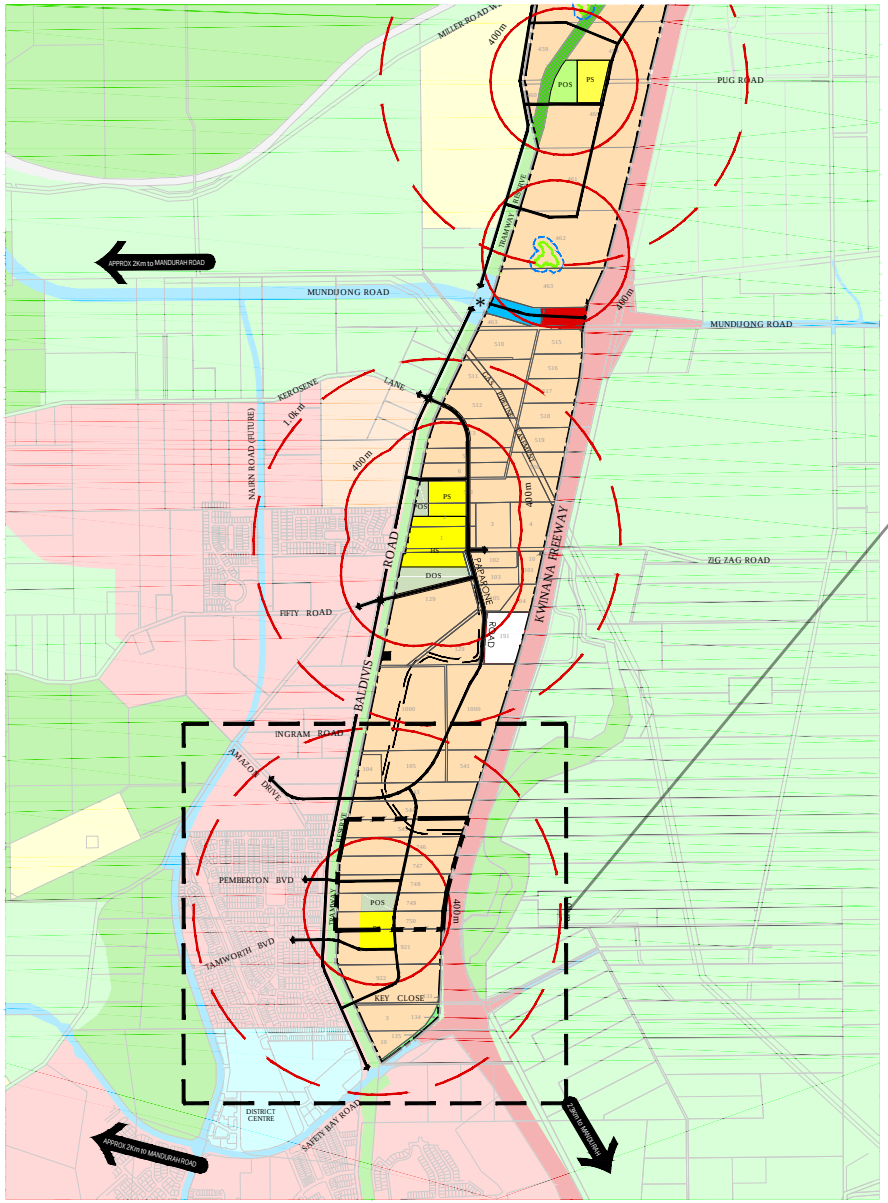
1.3.2 Higher Order Structure Plans

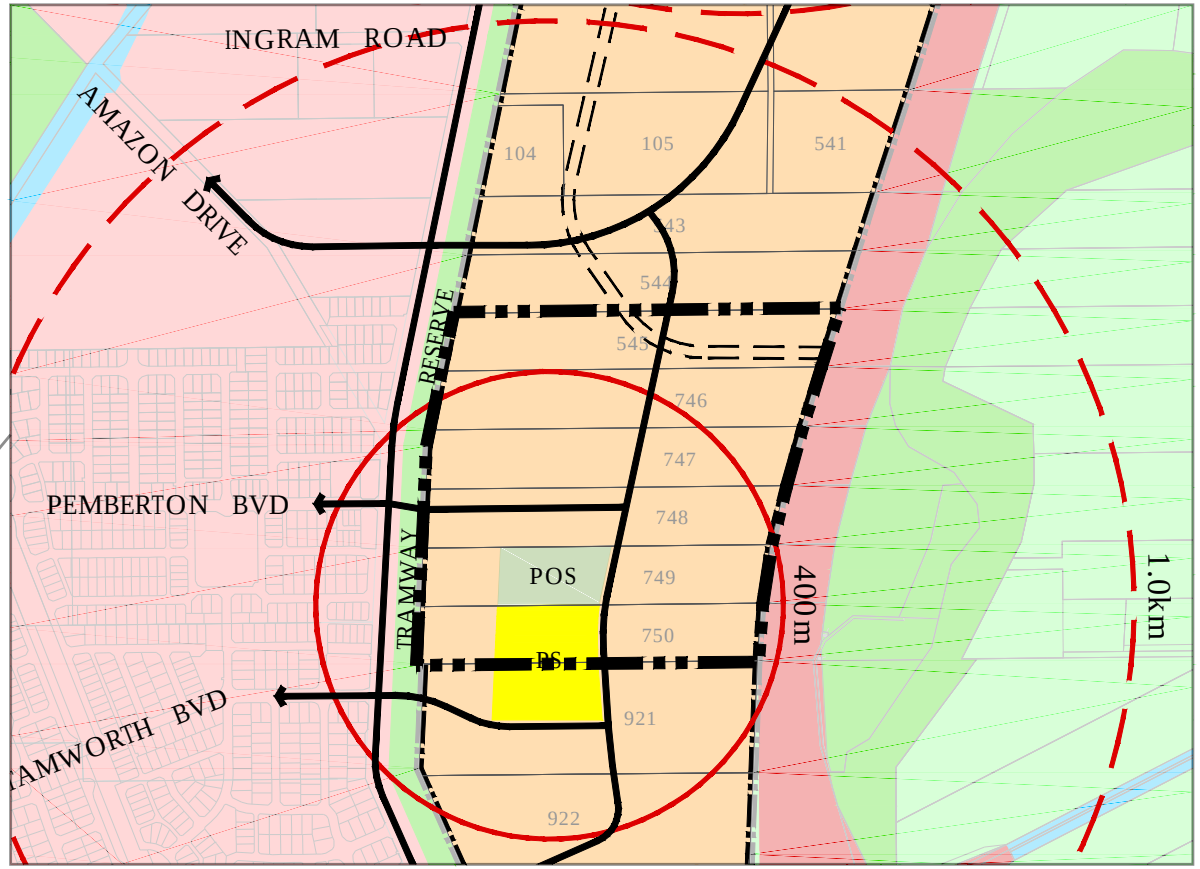
Draft Southern Metropolitan Sub-Regional Structure Plan (2009)

The draft Southern Metropolitan Sub-Regional Structure Plan (the Sub-Regional Structure Plan) was prepared by the WAPC and released for public comment in June 2009. The Sub-Regional Structure Plan is a strategic document that will guide the planning and growth of land within the southern metropolitan and Peel regions.

The Structure Plan area has been identified as being suitable for urban development, being shown as 'Future Urban' under the Sub-Regional Structure Plan.

It is understood that the WAPC is currently reviewing the Sub-Regional Structure Plan in light of the recommendations of Directions 2031 and Beyond and will be re-released as a draft in mid 2014. It is expected that the Sub-Regional Structure Plan will reflect the statutory zoning of the Structure Plan area and surrounding land.





LEGEND

- SUBJECT LAND
- NEIGHBOURHOOD CONNECTOR ROADS
- DRAINAGE ROUTE
- PUMP STATION
- RESIDENTIAL
- FUTURE FREEWAY SERVICE CENTRE
- PRIMARY REGIONAL ROADS
- OTHER REGIONAL ROADS
- PS PRIMARY SCHOOL
- HS HIGH SCHOOL
- KEY PUBLIC OPEN SPACE (Must be shown on Local Structure Plans in this location and provided)
- TRAMWAY RESERVE
- RESOURCE ENHANCEMENT WETLAND (Indicative Buffer)
- * FUTURE STAGGERED T-JUNCTIONS (from Baldivis onto Mundijong Road, with Mundijong Road as the priority route.)

POS DISTRIBUTION

- LOCAL @ 150 - 300m CATCHMENT
- NEIGHBOURHOOD @ 400m CATCHMENT
- DISTRICT @ 600 - 1000m CATCHMENT

EAST BALDIVIS DISTRICT STRUCTURE PLAN

2353-35-01 (15.08.2014), Not to scale

Figure 5

East Baldivis District Structure Plan

The Structure Plan is included within the area covered by the East Baldivis District Structure Plan (EBDSP), a strategic district structure plan prepared by the respective landowners within the East Baldivis corridor. The EBDSP was advertised for public comment by the City of Rockingham in late 2013 and was adopted by the City as a strategic structure plan in February 2014.

The EBDSP broadly identifies the subject land and surrounds as predominantly residential, with a portion of a primary school located on Lot 750 at the southern extent of the Structure Plan. The EBDSP is Figure 5.

The EBDSP is supported by the following technical reports, which assist to define the key land use principles and inform subsequent stages of planning:

- Environmental Assessment Report
- Servicing Report
- Traffic and Transport Report
- Hydrological Report
- Acoustic Report
- Commercial and Community Facilities Report
- Bushfire Hazard Assessment Report

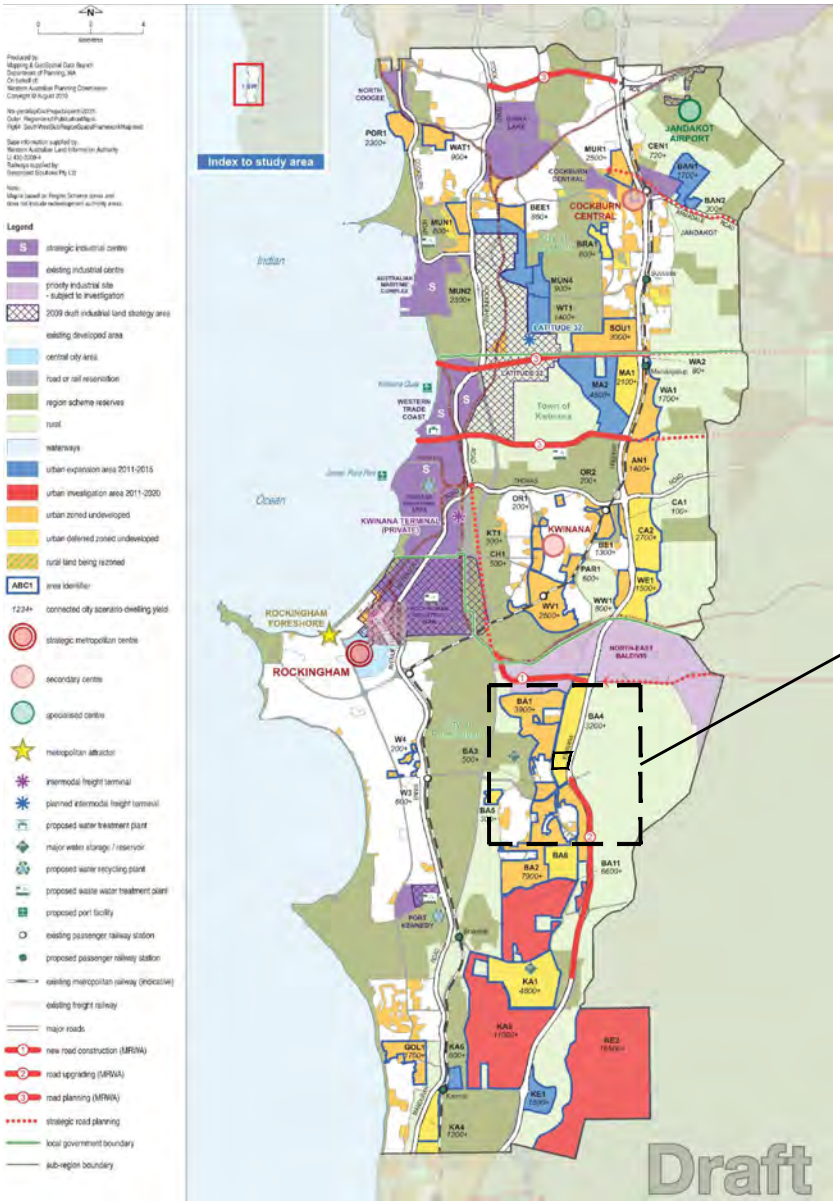
The Structure Plan refines and expands upon the key land use principles of the EBDSP and is entirely consistent with these principles.

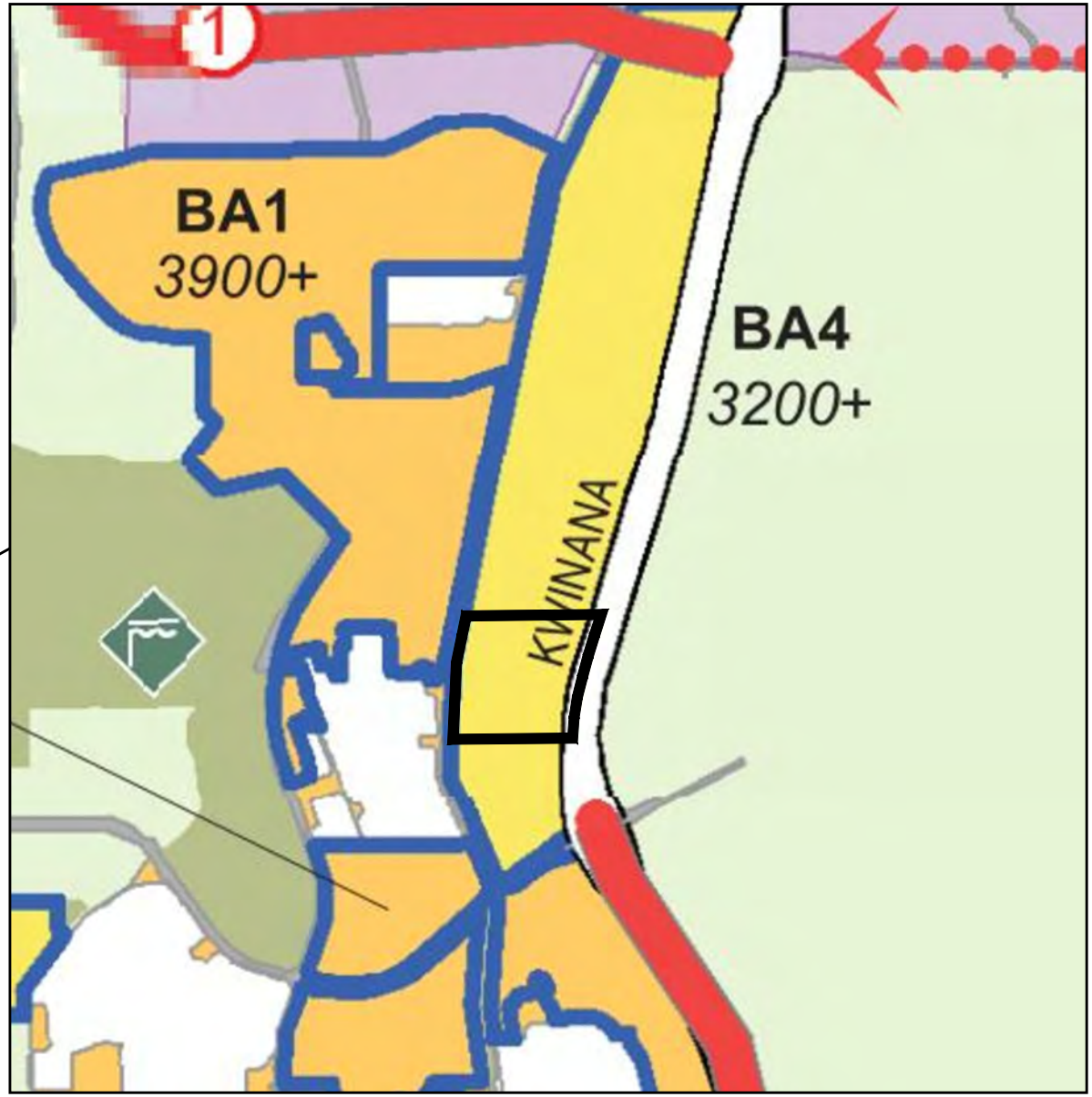
As part of the preparation of this Structure Plan it was identified early in the planning process that there are opportunities to relocate and redistribute the POS adjacent to the Primary School to improve POS distribution and function throughout the Structure Plan area.

This approach was agreed with the City of Rockingham during the preparation stages of the Structure Plan. The single area of POS identified on the EBDSP would have accounted for almost the entire 10% POS requirement for the Structure Plan meaning that drainage could not be accommodated without providing well in excess of the required POS resulting in an increased maintenance burden. Further, the single consolidated area of POS identified by the EBDSP would not have resulted in the equitable distribution of POS within walkable catchments in accordance with Liveable Neighbourhoods. The proposed distribution of POS is more practical and functional and allows for stormwater to be managed efficiently across the estate. It also results in a more equitable distribution of POS as compared to the EBDSP, thereby servicing a wider catchment of potential users.

Baldivis Activity Centre Structure Plan (2012)

The Structure Plan area is approximately 1.5km north of the Baldivis Activity Centre Structure Plan (BACSP) which outlines the high-level objectives and intended growth of the centre. The Structure Plan area is in relative close proximity to the 'Northern' precinct as identified by the BACSP and is well connected to the activity centre by Baldivis Road.





DRAFT SOUTH WEST SUB-REGIONAL SPATIAL FRAMEWORK

1.3.3 Planning Strategies

Directions 2031 and Beyond (August 2010)

Directions 2031 and Beyond is the regional spatial framework and strategic plan that establishes a vision for the future growth of the Perth Metropolitan Region for the delivery of housing, infrastructure and essential services.

Directions 2031 includes the Structure Plan area within the South-West Sub Region. This region is identified as experiencing considerable economic and population growth, with population expected to grow by 34% (278,000 people) by the year 2031. Directions 2031 also recommends a housing density target of 15 dwellings per gross urban zoned hectare. The need for density targets to encourage more efficient and effective housing is acknowledged, however, it is important that the application of these targets recognises the impact of site specific constraints and market conditions on the ability to deliver density.

Directions 2031 is supported at a sub-regional level by the draft Outer Metropolitan Perth and Peel Sub-Regional Strategy.

Draft Outer Metropolitan Perth and Peel Sub-Regional Strategy (2010)

The draft Outer Metropolitan Perth and Peel Sub-Regional Strategy (the Sub-Regional Strategy) provides additional information about the level of expected population growth and highlights development opportunities throughout the metropolitan area and Peel region.

The Structure Plan area is located in the south-west sub-region where the Sub-Regional Strategy identifies 99,260 dwellings being provided through Greenfield development. Consistent with the statutory zoning at the time, the Sub-Regional Strategy identifies the East Baldivis cell, including the Structure Plan area as 'urban deferred zone undeveloped'.

A copy of the Sub-Regional Strategy (South-West Region) is included at Figure 6.

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City of Rockingham Urban Growth Programme (2009)

The City of Rockingham Urban Growth Programme (the Programme) was prepared to assist Council in understanding the likely patterns of urban growth within the City of Rockingham and considered existing population and dwelling statistics, existing structure plans and forecast future urban growth patterns. The programme provides the City with a summary of expected urban development areas to help guide Council in its decision making processes.

The Structure Plan area falls within Precinct 3 of Baldivis North. It identifies this area as being 'Future Development' but with no structure plan in place. The Programme suggests that development of the entire Precinct 3 area is expected to accommodate approximately 5,000 dwellings over the next fifteen years.

The EBDSP and Structure Plan represent the fulfilment of the expected urban growth within Baldivis North, as projected by the Programme.

1.3.4 Policies

The following sections summarise those government policies and strategies that are relevant to the urbanisation and development of the Structure Plan area.

SPP 5.4 – Road and Rail Transport Noise and Freight Considerations in Land Use Planning

The eastern boundary of the Structure Plan abuts the Kwinana Freeway – an existing primary regional road and major transport corridor. As such, the proposal must be considered in the context of SPP 5.4, which guides noise sensitive development in proximity to major transport routes. A Transportation Noise Assessment has been prepared by Lloyd George Acoustics in accordance with SPP 5.4 and the requirements of Schedule 9 of TPS2 - refer Appendix 2.

SPP 2.1 – Peel Harvey Coastal Plain Catchment

The structure plan area falls within the Peel Harvey Coastal Plain, and as such, the provisions of SPP 2.1 apply. The purpose of SPP 2.1 is to ensure that land use changes within the Peel-Harvey estuarine system likely to cause environmental damage to the estuary are brought under planning control and prevented.

The objectives of SPP 2.1 have been addressed previously as part of the rezoning of the East Baldivis cell and the subsequent District Structure Planning process. This Structure Plan is in accordance with SPP 2.1, and the previously endorsed higher order planning framework. There are no direct development implications for the site as a result of this policy. The structure plan incorporates Water Sensitive Urban Design principles and Best Management Practice to prevent excessive nutrient export into the drainage system, will improve social, aesthetic, environmental and recreational potential within the catchment and aims to balance environmental protection with economic viability within the region.

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Planning for Bushfire Protection Guidelines

The WAPC and Department of Fire and Emergency Services (DFES) released the Planning for Bush Fire Protection Guidelines in May 2010 as a means of outlining the matters that need to be addressed through the planning process in order to protect life and property in the event of a bush fire. A draft State Planning Policy and revised draft Guidelines were published by the WAPC for public comment in May 2014 and have also been considered in the context of this Structure Plan.

The Structure Plan includes a Fire Management Plan - refer section 3.3 and Appendix 1, that has been prepared in accordance with the Guidelines and draft State Planning Policy.

Liveable Neighbourhoods

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

The LSP has been prepared in accordance with the principles and specific objectives of Liveable Neighbourhoods.

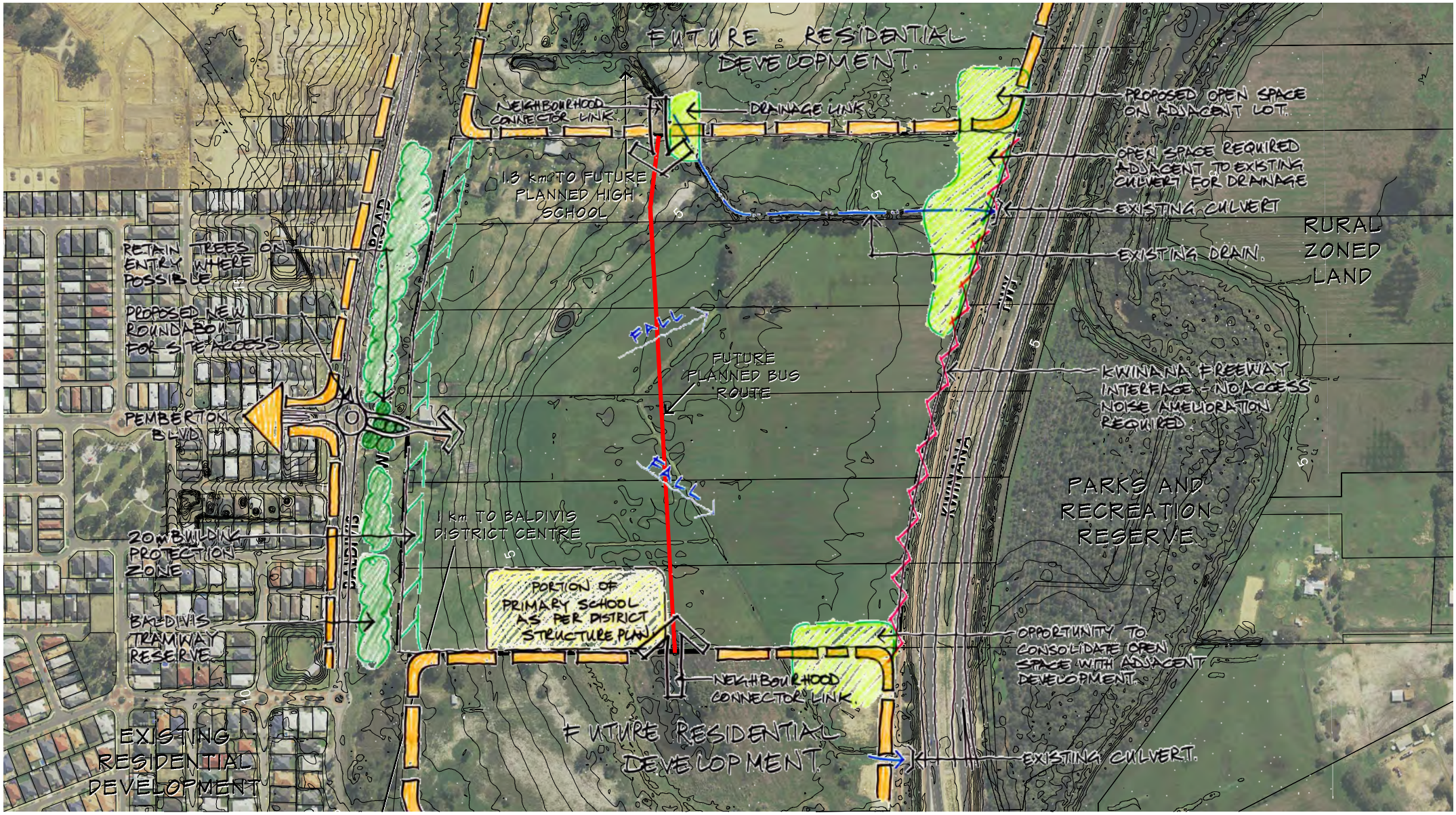
Baldivis Tramway Reserve Master Plan

The Baldivis Tramway Reserve Master Plan (the Master Plan) aims to establish key directions including the use, development and management of the reserve over the next ten years.

The Tramway Reserve abuts the western boundary of the Structure Plan and is located outside of the Structure Plan area. Development of the Structure Plan will not directly impact on the Tramway Reserve but due consideration has been given to the Master Plan with regards to interface treatments between the two sites. The Structure Plan's relationship and interface with the Tramway Reserve is discussed in further detail in Section 3.2 of this report and is consistent with the objectives of the Master Plan.

1.3.5 Other Approvals and Decisions

The recent decision of the WAPC to transfer the land from the Urban Deferred zone to the Urban zone under the MRS was gazetted on 13 May 2014. The area of land the subject of the application to amend the MRS included all of the Structure Plan area.



OPPORTUNITIES AND CONSTRAINTS MAP

2353-40A-01 (09.01.2015), Not to scale

Figure 7

2.0 SITE CONDITIONS AND CONSTRAINTS

The following sections outline the site conditions and constraints apparent within the Structure Plan area. This summary is informed by previous planning undertaken via the EBDSP, the various technical reports prepared in support of the EBDSP and the current technical inputs into the Structure Plan. An opportunities and constraints map that summarises the following sections is Figure 7.

2.1 Biodiversity and Natural Assets

The Local Structure Plan area is relatively unconstrained and the environmental factors affecting the land, including groundwater, drainage, contamination and bushfire management can be adequately managed via standard practices.

An Environmental Assessment Report has been undertaken for the Structure Plan area by RPS and is included in full as Appendix 3.

2.1.1 Flora and Vegetation

The Structure Plan area does not contain any Threatened Ecological Communities (TECs) or Priority Ecological Communities (PECs) and is therefore well suited for urban development.

Due to historical land uses, particularly agricultural activities, the Structure Plan area has been extensively cleared of native vegetation.

The condition of vegetation that remains on site is classified as 'completely degraded' based on the 'Bush forever vegetation condition scale'.

2.1.2 Fauna

The majority of the Structure Plan area has been cleared of vegetation and is in a 'completely degraded' condition. This, combined with a lack of understorey, means that little protected habitat is available to native fauna.

2.2 Landform and Soils

2.2.1 Landform and Topography

The topography and soil types within the Structure Plan area are similar to surrounding urban areas and are not constraints to development. The ultimate earthworks design will respect the current landform through the minimisation of retaining walls and recognition of the general fall of the site from west to east, whilst balancing the need to provide adequate clearance to groundwater and flood protection.

The Structure Plan area slopes gently from west to east with maximum heights ranging from 9m AHD to 3.5m AHD in the north-east corner, with approximately 5 metres of fall across the site. The relatively flat nature of the site ensures that the site can be drained and serviced without the need for substantial earthworks, retaining, or significant changes to the topography / pre-development hydrology.

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2.2.2 Soil Types

Soil types within the Structure Plan area include Guildford Clay and Bassendean Sand and have good drainage capacity overall. These soil types are typical of the East Baldivis precinct and are not constraints to development. Further discussion on soil types and drainage is provided in section 3.7 and the Local Water Management Strategy at Appendix 4.

The Structure Plan is located in an area identified as 'moderate to low risk of ASS occurring within 3m of the natural soils surface (or deeper)' and is therefore suitable for urban development. An ASS Management Plan may be required to be prepared in the usual manner prior to any excavation or dewatering as part of the subdivision, although this will be subject to confirmation of fill levels and detailed design of service infrastructure.

2.3 Groundwater and Surface Water

2.3.1 Existing Conditions

Management of ground and surface water is comprehensively addressed through the Local Water Management Strategy (LWMS) at Appendix 4 and is not a constraint to development. The LWMS is consistent with the DWMS, which was prepared by Parsons Brinkhoff in 2007 (pre-dating the WAPC's Better Urban Water Management Framework) and accepted by the Department of Water.

The Perth Groundwater Atlas (DoW 2014) estimates groundwater levels at approximately 2m below the natural surface. Pre-development observations indicate the site has the potential to become inundated in the winter months.

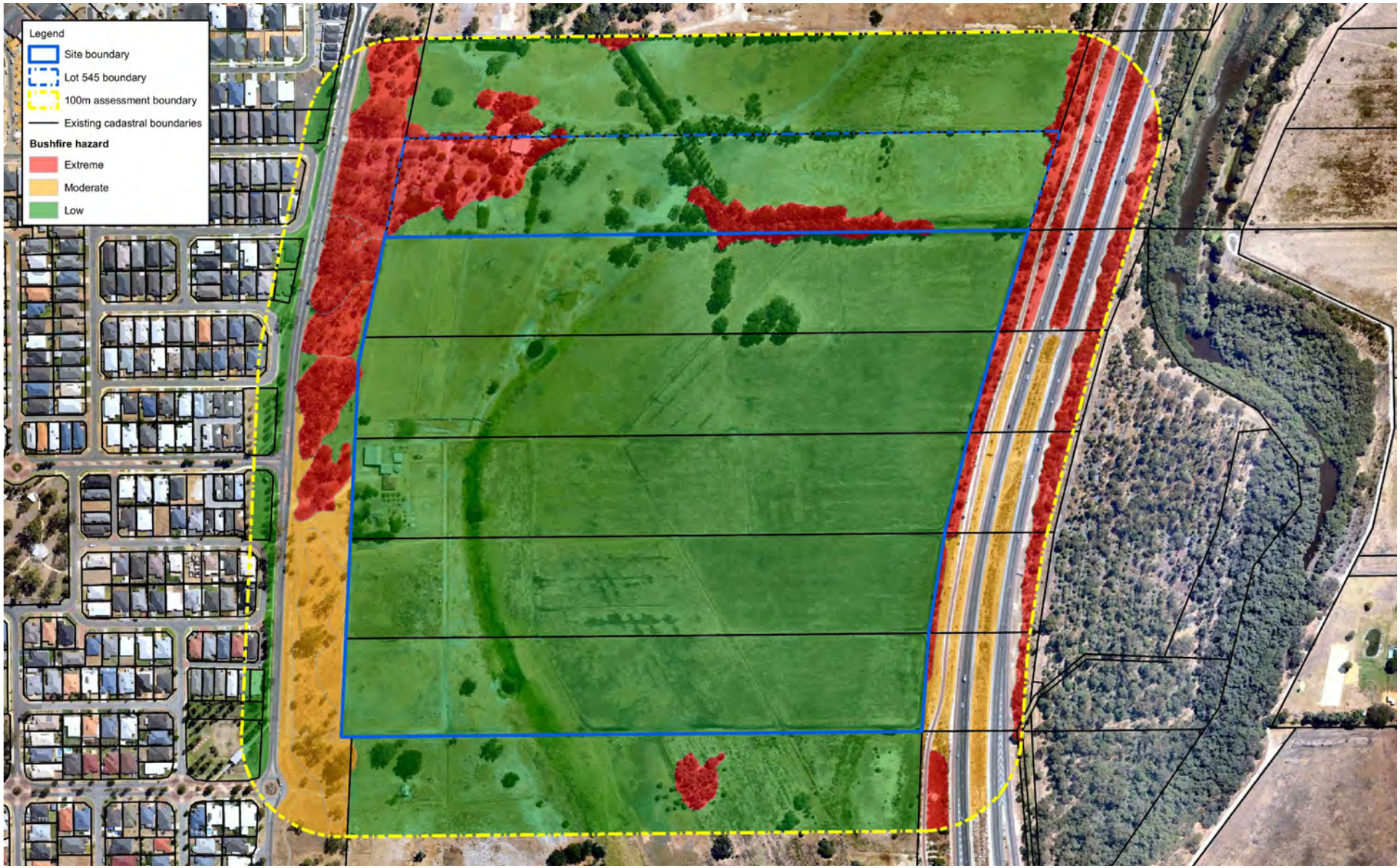
As acknowledged, the depth to groundwater is shallow and levels are expected to rise even further in winter, and further again with urban development due to the increase in shedding surfaces and higher infiltration rates associated with imported sand material. On this basis, groundwater levels will need to be controlled by a combination of fill material and subsurface drainage, which is a typical development strategy for these conditions and is not a constraint to development.

Groundwater monitoring results show groundwater levels range from 3.5 metres Australian Height Datum (m AHD) to 4.4 m AHD. Local groundwater flow is generally towards the Sub H or F drains.

The LWMS and Structure Plan will recognise pre-development flow rates to ensure that water quality and quantity are not adversely affected in downstream areas.

2.3.2 Wetlands and Waterways

There are no mapped 'Conservation' or 'Resource Enhancement' category wetlands within the Structure Plan area. The south east of the Structure Plan area is mapped as 'Multiple Use' meaning that it has few attributes which still provide an important wetland function, with management objectives focused on use, development and management.



Source: Bushfire Safety Consulting / Emerge Associates

2353-42-01 (25.08.2014), Not to scale

BUSHFIRE HAZARD MAP

Figure 8

2.4 Bushfire Hazard

In accordance with the WAPC's 'Planning for Bushfire Protection Guidelines' and Schedule 9 of TPS2, a Fire Management Plan has been prepared by Emerge Associates and is included as Appendix 1. A Bushfire Hazard Map showing pre-development hazards is Figure 8. There are opportunities to remove or reduce some of these hazards as part of the development process.

The Assessment concludes that bushfire is not a constraint to development in the Structure Plan area, subject to appropriate interface treatments and building protection zones being provided adjacent to the hazards identified. The Structure Plan response to the identified bushfire hazards is discussed further in section 3.3.

2.5 Heritage

2.5.1 Aboriginal Heritage

The Department of Indigenous Affairs Aboriginal Heritage Sites database lists no registered Aboriginal heritage sites within the structure plan area.

2.5.2 European Heritage

The State Register of Heritage Places does not contain any heritage listings of European significance within the Structure Plan area.

2.6 Other Land Use Opportunities and Constraints

2.6.1 Traffic Noise

A Transportation Noise Assessment has been prepared by Lloyd George Acoustics in accordance with SPP 5.4. The Assessment identifies that the eastern portion of the Structure Plan area is affected by traffic noise generated by the Kwinana Freeway. The Structure Plan area is no different from other urban development abutting the Kwinana Freeway and other high frequency traffic routes. Whilst noise attenuation is generally required, traffic noise is not a constraint to development and can be addressed via standard noise attenuation measures.

The Transportation Noise Assessment recommends that sound attenuation measures be implemented that include an increased noise wall height of 2.2m – 3m where required, notifications being placed on the titles for lots that are exposed to higher levels of noise and 'quiet house design' for certain lots to assist in alleviating the freeway noise. Noise attenuation is discussed further in section 3.6 and Appendix 2.

2.6.2 Availability of Services and Infrastructure

Civil engineer Development Engineering Consultants (DEC) has been engaged to undertake a preliminary review of infrastructure requirements, including staging and funding requirements. DEC has advised that the land is capable of being provided with essential services in a timely manner. This is reflected in the WAPC's recent decision to lift the 'Urban Deferred' status over the land. A detailed Earthworks and Servicing Strategy has been prepared by DEC, refer section 3.10 for a summary of the servicing strategy, with a full copy provided as Appendix 5.

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2.6.3 Baldivis District Centre

The Baldivis Activity Centre Structure Plan covers a 77.4ha area located approximately 1-1.5km south-west of the Structure Plan area. The immediate proximity of the Activity Centre to the subject land provides an excellent opportunity for residential development in close proximity to essential services and employment opportunities. The Structure Plan area is ideally located to deliver a mix of housing types and densities and will provide the Baldivis District Centre with the necessary population to drive and sustain commercial development.

2.6.4 Baldivis District Open Space

The East Baldivis District Structure Plan identifies an area of district open space adjacent to Zig Zag Road to the north of the Structure Plan area. The district open space will provide an area for active recreation and organised sport which will be easily accessible via a neighbourhood connector road from the Structure Plan area. Residential development of the Structure Plan area and surrounds will provide a catalyst for the development and ongoing use of the district open space which will provide a long-term community benefit.

2.6.5 Dampier-Bunbury Gas Pipeline

The Dampier to Bunbury Gas Pipeline is located 1.3km north of the Structure Plan. The minimum recommended setback as required within the WAPC Planning Bulletin – Pressure Gas Transmission Pipelines in the Perth Metropolitan Region is 70m. The Structure Plan's proximity to the gas pipeline therefore, is not a constraint to development.

2.6.6 Primary School

The EBDSP identifies a public primary school and co-located open space that straddles the southern boundary of the Structure Plan area. This presents an opportunity for the plan to provide an urban form and housing densities that recognise the context of the primary school and respond accordingly. There are also opportunities to increase the size of the school site from 3.5ha to 4ha and to redistribute the public open space.

This plan is an indicative Concept Only and depicts one potential development option for the land and is provided for general information purposes only.
Lot boundaries, building footprints, road networks, land uses and all other detail will be refined as part of the formal structure planning, development application, subdivision application and other processes, and will vary from the detail shown on this plan. This plan remains the property of CLE.

DEVELOPMENT CONCEPT PLAN

2353-41A-01 (25.09.2014), Not to scale

Figure 9

3.0 LAND USE AND SUBDIVISION REQUIREMENTS

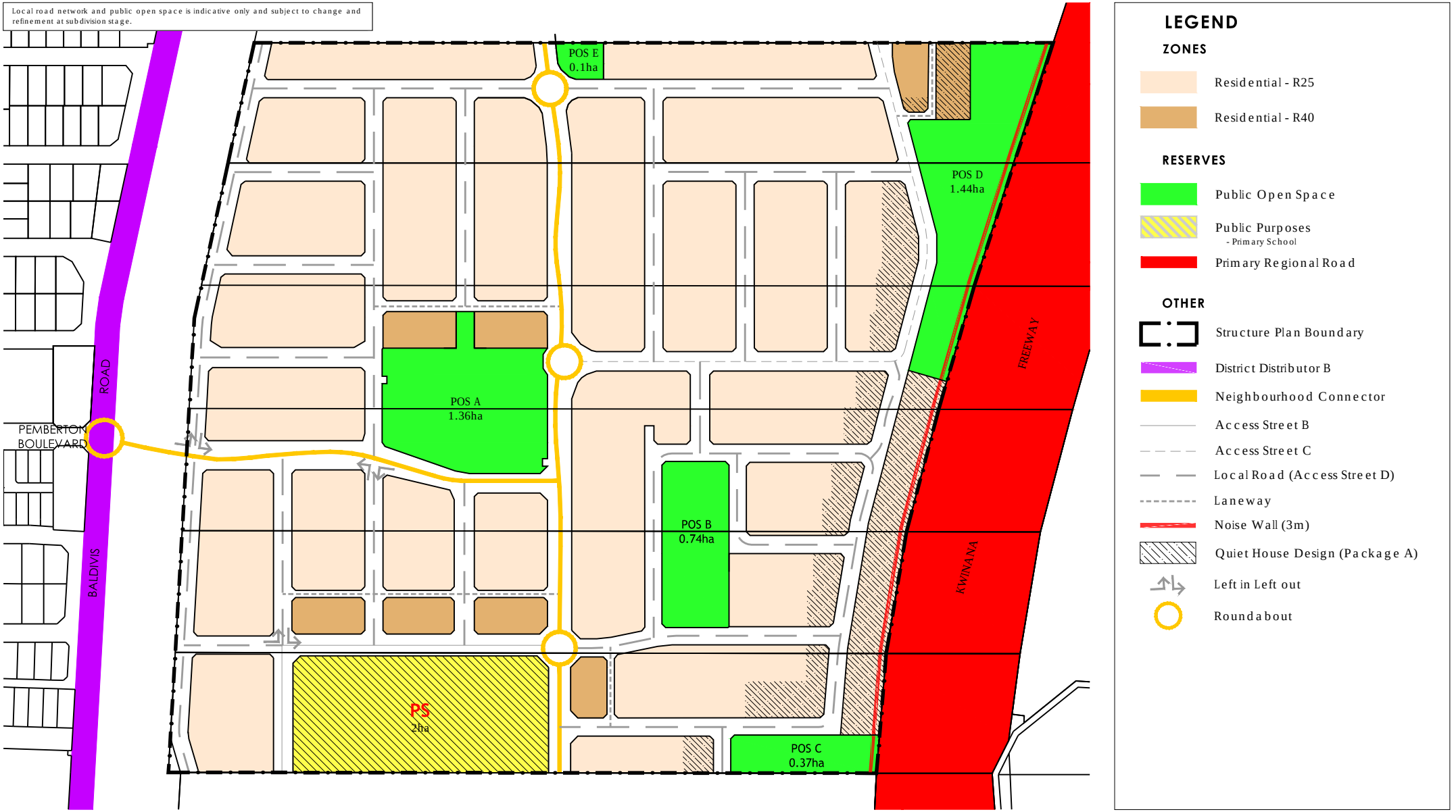
3.1 Plan Overview and Land Use

The Structure Plan delivers a robust and integrated residential development that is responsive to the key environmental and land use considerations outlined in section 2 of this report. The Structure Plan recognises the broader context of the East Baldivis precinct, as well as providing full integration with the planned developments to the north and south of the Structure Plan area.

The Development Concept Plan, shown as Figure 9, demonstrates one way the development could take place on the site, based on the structure plan principles and requirements. The Development Concept Plan demonstrates the coordinated nature of the Structure Plan design, ensuring that developments to the north and south of the Structure Plan area are fully integrated with the Structure Plan area itself. The Structure Plan Map shown as Figure 10 is the statutory framework which will implement the Development Concept Plan. It is important to note that the Development Concept Plan represents only one manner in which development could occur and will be refined further at the time of subdivision.

The key principles of the Structure Plan are to:

- Enable the creation of a diverse range of high quality housing choices that will appeal to a broad range of the market.
- Provide a robust urban form that responds to the site's location within the wider Baldivis locality and integrates with surrounding development.
- Provide accessible, attractive and multi-functional open space that addresses drainage requirements as well as offering a range of recreational opportunities.
- Extend the necessary services and infrastructure in a timely and coordinated manner, to support the future development.
- Ensure an integrated and interconnected road network that facilitates safe and efficient vehicle, cyclist and pedestrian movement throughout the Structure Plan and the broader locality.
- Put in place a framework that allows for the timely delivery of the public primary school in order to ensure that the timing for delivery is consistent with the community demand and the Department of Education's forward planning.


Local road network and public open space is indicative only and subject to change and refinement at subdivision stage.
POS E
0.1ha
POS D
1.44ha
POS A
1.36ha
POS B
0.74ha
PS
2ha
POS C
0.37ha
PEMBERTON
BOULEVARD
BALDIVIS
ROAD
FREEWAY
KWINANA
LEGEND
ZONES
Residential - R25
Residential - R40
RESERVES
Public Open Space
Public Purposes
- Primary School
Primary Regional Road
OTHER
Structure Plan Boundary
District Distributor B
Neighbourhood Connector
Access Street B
Access Street C
Local Road (Access Street D)
Laneway
Noise Wall (3m)
Quiet House Design (Package A)
Left in Left out
Roundabout

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

- Approximately 510-540 dwellings across the structure plan area, with residential densities ranging from R25 to R40. Higher densities are focused around areas of high local amenity and closer to the primary school at the southern end of the Structure Plan area.
- A portion of a public primary school measuring approximately 2ha in area, with the balance (also 2ha) being provided by the landowners to the south – consistent with the EBDSP.
- A permeable network of access roads that are responsive to the existing road networks surrounding the structure plan area, while providing opportunities for future public transport, cyclist and pedestrian networks.
- A centrally located local public open space measuring approximately 1.3 hectares that meets recreational and drainage objectives, as well as providing a high amenity focal point for the future community.
- An evenly distributed network of useable, multi-functional local parks, meeting the requirements of Liveable Neighbourhoods and providing important recreational and drainage functions for the community.
- A landscaping strategy that guides the development of the centrally located public open space, as well as providing an integrated drainage response.
- A preliminary earthworks strategy that recognises the significant landform of the site.
- A managed interface to both the Tramway Reserve and Kwinana Freeway, ensuring that noise and bushfire hazards are adequately addressed.


PLAYFUL


COMFORTABLE


CONSIDERED


CONNECTED

LEGEND

1. ENTRY AREA
2. WIDENED LANDSCAPE VERGE
3. PROPOSED GATHERING SPACE
4. OPEN KICKABOUT SPACE
5. BIO-RETENTION AREAS
6. PRIMARY SCHOOL OVAL
7. DESIGN TO ADJACENT POS

Source: Emerge

2353-51D-01 (15.09.2015), Not to scale

LANDSCAPE MASTER PLAN

Figure 11

3.2 Open Space

The Structure Plan establishes a comprehensive framework for the delivery of a high amenity, integrated open space network. The following sections outline the key principles of the open space network and elaborate on the design intent for each individual open space.

3.2.1 Open Space Provision and Schedules

The Structure Plan makes provision for approximately 4ha of gross public open space across the Structure Plan area. This includes a range of open space types, including areas that enable passive and informal active recreation, as well as providing high amenity community focal points.

In order to demonstrate the distribution and function of the open space areas throughout the Structure Plan, a landscape Master Plan has been prepared by Emerge Associates. This Landscape Master Plan and Public Open Space Concepts can be found in its entirety at Appendix 6, with an overall Master Plan included as Figure 11.

Once Liveable Neighbourhoods credits are applied, the open space provision equates to 10.4% of the gross subdivisible area, satisfying the minimum 10% credit public open space required, as shown in Table 2.

The following outlines the key aspects of public open space provision based on Liveable Neighbourhoods requirements, with the detailed description of each open space type outlined in Section 3.2.2 below.

- Based on a Gross Subdivisible Area (Gross Site Area less 2 ha portion of primary school and 1 in 1 year drainage storage area) of 34.4 ha, the 10% open space requirement is 3.4 ha.
- The Structure Plan provides 4 ha of gross open space, with open space areas serving a shared drainage function, whilst not compromising the active and passive recreational uses.
- Approximately 0.6 ha of open space will receive drainage for events occurring more frequently than the 1 in 1 year (1 hour) event and as such, is a deduction from the Gross Subdivisible Area in accordance with Liveable Neighbourhoods.
- Liveable Neighbourhoods allows up to 2% of the 10% open space requirement to comprise of restricted use open space. The balance of restricted use open space becomes a deduction.
- Based on the requirements of Liveable Neighbourhoods, a maximum of 0.7 ha (2%) can be restricted use open space and a minimum of 2.8 ha (8%) unrestricted open space.
- Approximately 0.07 ha of open space will receive drainage from the 1 in 1 year to 1 in 5 year drainage event in landscaped infiltration basins and bio-retention areas, in accordance with water sensitive urban design principles and the City's policies. The 1 in 1 to 1 in 5 year drainage event is treated as restricted use open space in accordance with Liveable Neighbourhoods.

Table 2 – Public Open Space Schedule (all areas are in hectares)

Site Area		37.0
Deductions		
Primary School	2.0	
Restricted Use (above 2%)	0.0	
Total Deductions	2.0	
Net Site Area		35.0
Other Deductions		
1:1 Drainage within POS	0.6	
Gross Subdivisible Area		34.4
POS @ 10%		3.4
Public Open Space Requirement		
May Comprise:		
Min 8% unrestricted POS	2.8	
Max 2% restricted POS	0.7	
TOTAL POS REQUIRED		3.4
Public Open Space Provided	Unrestricted POS Area	Restricted POS Area
Central Park A	1.18	0.02
Central Park B	0.59	0.02
Local Park South-East	0.30	0.01
Neighbourhood Park North-East	1.23	0.02
Local Park North	0.11	0.00
TOTAL (ha)	3.40	0.07
Additional Deductions		0.0
Restricted Open Space Surplus		
Public Open Space Contribution		
Min 8% unrestricted POS	3.40	9.9%
Max 2% restricted POS	0.07	0.2%
Total Creditable POS Provided	3.5	10.1%

1. Site Area is the total area of the LSP boundary, including all lots and road reserves within the boundary.

2. In accordance with Liveable Neighbourhoods: the area subject to indunation more frequently than a one year average recurrance 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 recurrance interval up to the five year recurrance 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.Drainage areas are based on advice from Development Engineering Consultants - ref BDVMIR01 - L04A (DEC 2014).

4. All POS areas are indicative only and are subject to refinement and detailed design at subdivision stage.

3.2.2 Active Public Open Space

The Structure Plan area is surrounded by existing and planned areas of district open space for formal and organised sporting activities. As such, the Structure Plan does not provide any formal active POS due the sufficient provision of these types of POS within the locality and the competing demands within the Structure Plan area. This approach has been discussed and agreed with City's officers early in the Structure Plan preparation process.

Opportunities for formal recreation and organised sporting activities for residents of the Structure Plan are provided via the following:

- The future sporting oval that will be provided on the primary school site in the south of the Structure Plan, refer Figure 21 – Primary School Concept Plan;
- The future area of district open space as identified on the EBDSP; and
- The existing area of district open space immediately south-west of the Structure Plan that abuts the western boundary of Baldivis Road and is north of Fifty Road.

As demonstrated above, there are ample planned and existing large areas of open space within and in immediate proximity to, the Structure Plan that can accommodate the formal and organised recreational needs of residents.

3.2.3 Description of Open Space Areas

The landscape strategy behind the public open space development is to provide a readily useable, aesthetic and liveable environment for residents from day one, refer Figure 11 – Landscape Master Plan. Landscaped open space areas will incorporate features and facilities to encourage residential growth and provide public, aesthetic and site character building to provide amenities for residents.

The following provides a brief overview and description of the proposed landscape function, distribution and design throughout the Structure Plan area.

POS TYPOLOGY
- Feature Park (A)

SIZE (excluding verges)
- 1.36 Hectares

CONCEPT
- Provide a large active turf space for the broader community
- Large accessible play space with interest for all ages
- Provide safe pedestrian and cycle linkages
- Exercise circuit linking the functions within the POS
- Provide shaded picnic facilities & bbqs
- Community focal area with space for small events/ markets

FUNCTIONS
- Turf - Larger turf areas for informal recreation
- Native waterwise planting with areas of dry gardens
- Maximise shade trees
- Picnic Facilities for family/friend & community gatherings
- Play elements for all age groups
- Path network connecting into broader path network and green-ways.
- Drainage

ENVIRONMENTAL CONSIDERATIONS
- Waterwise native planting
- Planting design to be zoned according to irrigation requirement, with full irrigation requirements to the informal turf playing area
- Dry gardens - gravel mulch, clumping plants & limited irrigation
- Source local materials where possible
- Consider the long term maintenance requirements for all materials

DRAINAGE CONSIDERATIONS
- 1:1 1608 m2 storage required
- 1:5 1830 m2 storage required
- 1:10 1840 m2 storage required
- 1:100 4100 m2 storage required

Note: Drainage figures as per project civil engineering (DEC) drawings dated February 2015.

Source: Emerge

2353-52A-01 (19.02.2015), Not to scale

POS A LANDSCAPE CONCEPT

Figure 12

POS A

POS A is the main community focal point for the Structure Plan area. POS A is located on the main entry road from Baldivis Road and at 1.3 ha, will deliver a high amenity, multi-purpose landscaped park. It is intended that POS A will be delivered in the early stages of the project, ensuring local amenity is delivered upfront.

The northern boundary of POS A is framed by some narrow cottage lots with direct frontage to the open space. It is Mirvac's intention to build out these lots with a customised built form response. This interface will deliver a high quality built form outcome, as well as ensuring passive surveillance over the park.

POS A will be landscaped to a high standard and will include a designated children's play area, shelter, turfed kick-about space, fitness nodes, planted areas and a small, landscaped bio-retention area.

An indicative landscape concept plan for POS A is Figure 12.

POS B

POS B is a local park located centrally within the residential area to the east of the main neighbourhood connector road. At approximately 7,500m², POS B provides an additional focal point for this portion of the estate, as well as enabling passive recreation, children's play, kick-about and provides an important drainage function.

POS B is easily accessible from all sides via a local street network and footpath connections. A row of laneway lots will flank a portion of the eastern edge of POS B, ensuring high quality built form and passive surveillance.

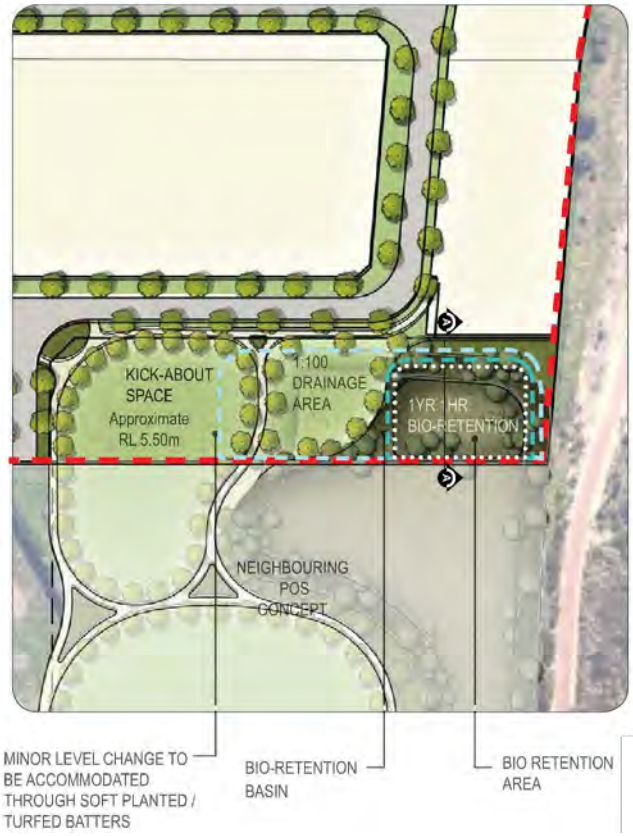
POS B forms part of the structure plan's drainage network, and includes a small bio-retention area in the south eastern corner of the park. This bio-retention area will include high quality, low maintenance landscaping in accordance with the City's standards.

POS C

POS C is approximately 3,700m² and forms a continuation of a 2.1ha area of open space within the landholding to the south, providing a combined park of approximately 2.5ha.

POS C forms an important part of the broader drainage network for the structure plan area and is designed and located to detain stormwater to match pre-development flows, prior to discharging through a culvert under the Kwinana Freeway. Whilst the drainage component of POS C is important, the area required for drainage detention and treatment (up to 1 in 10 year event) makes up only 20% of this open space area, with the remaining open space being fully functional, useable open space.

POS C will be designed and landscaped such that it is fully integrated with the balance of the park to the south. Mirvac is in discussions with the adjoining landowners to confirm specific design levels and requirements. A landscape concept of POS C is Figure 13.



POS TYPOLOGY
- Neighbourhood Informal

SIZE (excluding verges)
- .37 Hectares (Mirvac land holding)
- 2.5 Hectares total area

CONCEPT
- Provide a northern extension of a large neighbourhood park to cater for residents within a 150m-300m catchment
- Deliver a fully integrated design response ensuring that the broader area of open space is seamless in its transition between the two residential estates
- Provide large areas of useable kick-about space that is not compromised by drainage infrastructure
- Create a safe local park which is intended to be heavily planted with shade trees and provides low key picnic facilities, recreational facilities and nodes for exercise.
- Provide safe pedestrian and cycle linkages to broader path network linkages.

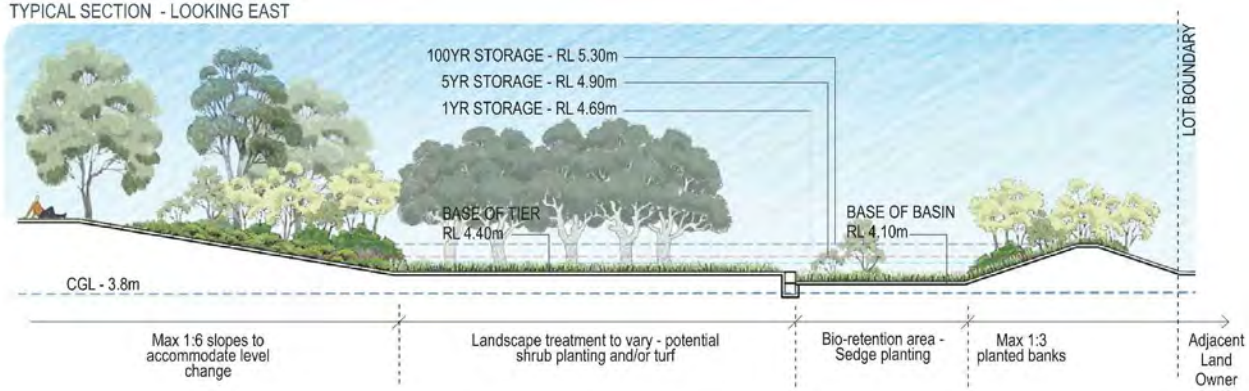
FUNCTIONS
- Connecting expanses of turf
- Native, water wise planting.
- Maximise shade trees with emphasis on native species
- Retain existing vegetation where possible
- Limited picnic facilities
- Internal path network
- Path network connecting into the broader path network

ENVIRONMENTAL CONSIDERATIONS
- Waterwise native planting
- Planting design to be zoned according to irrigation requirements
- Dry gardens with gravel mulch, clumping plants and limited irrigation
- Source local materials where possible
- Consider the long term maintenance requirements for all materials

DRAINAGE CONSIDERATIONS
- 1:1 676 m2 storage required
- 1:5 744 m2 storage required
- 1:10 761 m2 storage required
- 1:100 2028m2 storage required

Note: Drainage figures as per project civil engineering (DEC) drawings dated February 2015.

TYPICAL SECTION - LOOKING EAST



Source: Emerge

2353-53B-01 (19.02.2015), Not to scale

POS C LANDSCAPE CONCEPT

Figure 13

POS D

At approximately 1.4ha, POS D is the largest public open space within the structure plan area and will deliver significant opportunities for functional spaces and passive recreation within a high amenity landscaped setting.

POS D forms a continuation of the planned open space within the 'Baldivis Parks' estate to the north and will be designed so as to fully integrate with the adjoining estate. There are opportunities through the planned development to the north to introduce laneway lots with a direct interface onto the park, encouraging passive surveillance in this area.

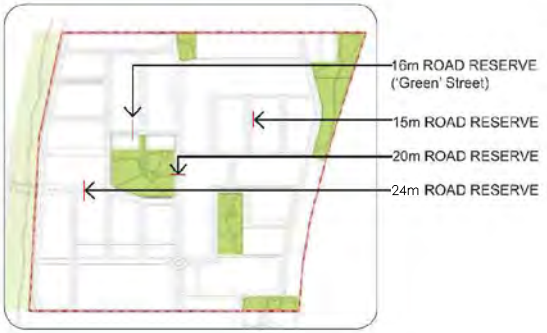
POS D is aligned with an existing culvert that passes under the Kwinana Freeway and drains into the Peel Main Drain on the eastern side of the freeway. It is a requirement of the Department of Water for development to match pre-development flow rates. This park serves an important function in this regard, as outlined further in the LWMS at Appendix 4, by detaining and treating stormwater before allowing it to be discharged into the regional network.

Despite its important role in the broader drainage network, POS D will be a highly useable, high amenity local park that maximises both aesthetic and functional uses. POS D serves a Neighbourhood Park function and is likely to provide a range of play equipment, fitness nodes and turfed areas.

POS E

Located adjacent to the northern boundary of the structure plan area, POS E is a 1,100m² extension of an approved park located within the 'Baldivis Parks' estate. Given its location adjacent to the main north-south neighbourhood connector, POS E provides an important entry feature to the structure plan area for southbound traffic. The landscape design of POS E will be fully integrated with the parkland to the north, ensuring a seamless transition with respect to amenity and maintenance.

This park will provide opportunities for passive recreation and will include extensive landscaping, shade trees, and a low level entry statement to denote arrival within the structure plan area. POS E does not form part of the drainage network and is therefore unrestricted open space in accordance with Liveable Neighbourhoods.



Source: Emerge

2353-54B-01 (12.03.2015), Not to scale

KEY STREETSCAPES LANDSCAPE CONCEPT

Figure 14

3.2.4 Streetscapes

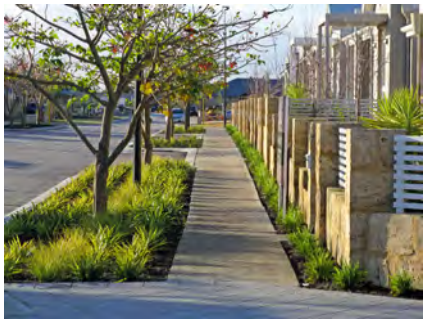
Whilst not usually acknowledged as traditional public open space pursuant to Liveable Neighbourhoods and recognised under Table 2, streetscapes make up an important component of the public realm and the quality of landscaping within key streets that assists to deliver a true sense of place within new urban areas.

The structure plan enables opportunities for a higher standard of landscaping along two key streets:

- The main entry from Baldivis Road, where a combination of retained, mature trees and wider landscaped verges will promote a sense of place upon arrival, as well as forming a key view corridor from the entry road to POS A. Driveways will be designed such that they form a key part of the verge landscaping and promote an attractive, low speed environment.
- The north-south neighbourhood connector road that traverses the centre of the structure plan area provides sufficient width for an off-set carriageway and additional verge landscaping / planting to highlight the importance of the road, whilst also promoting a low speed environment with high quality landscaping throughout.

Indicative cross sections of these key streets, including indicative landscape concepts are depicted at Figure 14, while the detailed engineering design and landscaping schedule will be determined in consultation with the City at subdivision stage.

Further details on the street tree planting strategy are provided in Appendix 6.

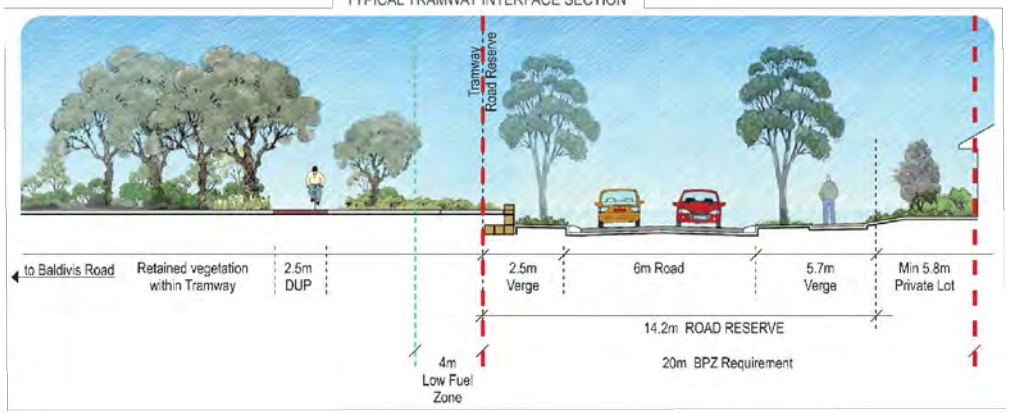


CONCEPT
- Maintain and protect all existing vegetation within tramway reserve
- Meandering dual use path runs the length of the tramway and links to greater tramway path networks.
- Limestone Bridal trail runs adjacent to boundary
- Planting pockets of native re-vegetation

FUNCTIONS
- Native re-vegetation planting
- Crushed limestone bridal path
- Dual use path
- Entry Statement at Baldivis Road
- Provide linkages to pedestrian networks within and outside of the development area

ENVIRONMENTAL CONSIDERATIONS
- No irrigation
- Re-vegetation of native plant communities to strategic nodes. Locations to be determined in detailed design
- Removal of weed species

TYPICAL TRAMWAY INTERFACE SECTION



Source: Emerge

2353-68A-01 (12.03.2015), Not to scale

TRAMWAY INTERFACE

Figure 15

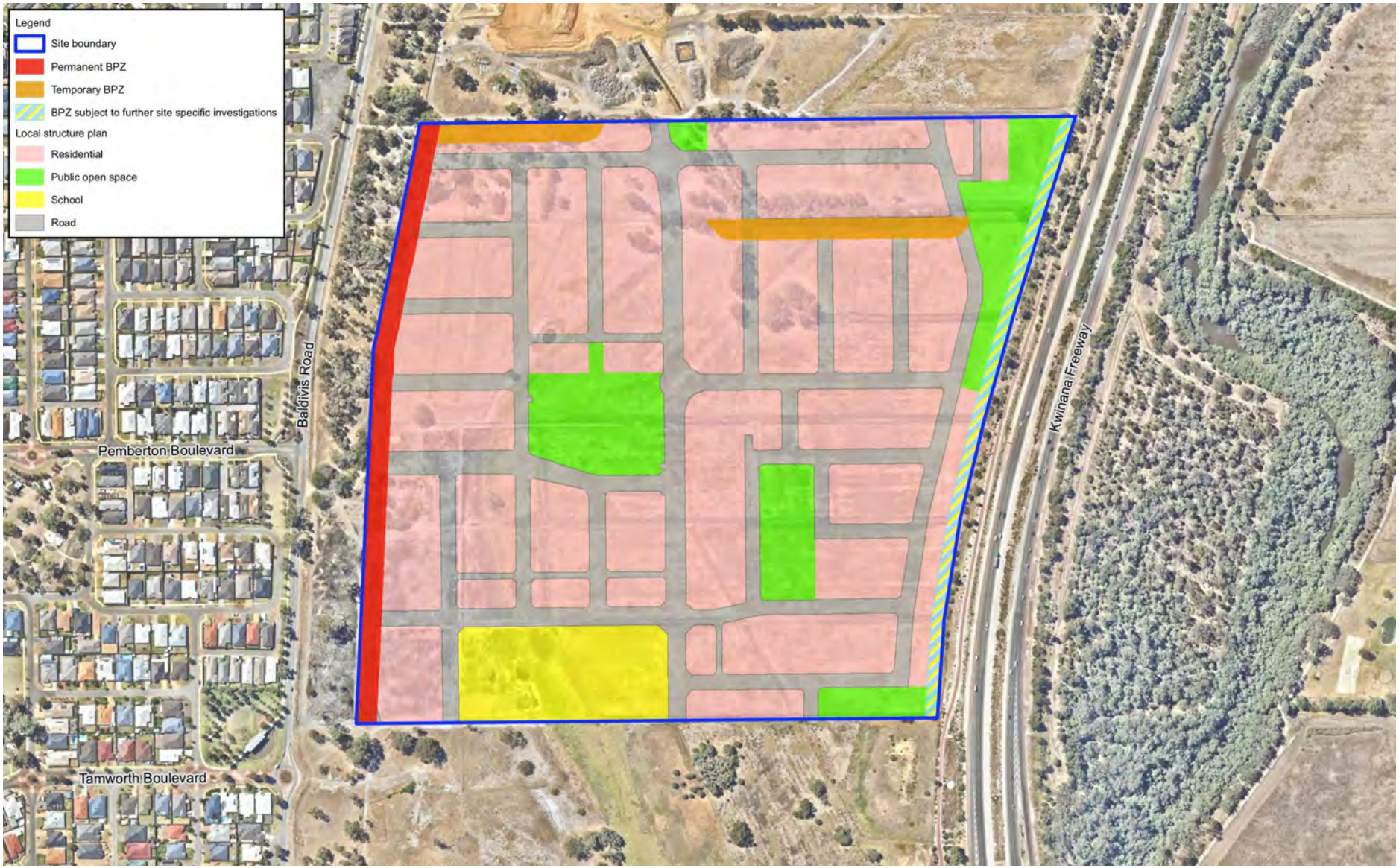
3.2.5 Tramway Interface

With the exception of the entry road from Pemberton Boulevard / Baldivis Road, the structure plan does not propose to undertake any significant works within the adjoining Tramway Reserve. The interface to the Tramway Reserve is an important consideration for the City to ensure that the values of the Tramway Reserve are not impacted upon or compromised by the residential development, and to ensure that the Tramway Reserve remains accessible to the future community.

The structure plan proposes the following interface treatments to the Tramway Reserve in accordance with the City's Tramway Master Plan:

- A road interface with a minimum width of 14.2m for the entire length of the structure plan boundary, ensuring excellent access for recreation, maintenance, and bush fire fighting.
- Where the development level is lower relative to the Tramway, a hard edge retaining wall interface will be provided within the road reserve adjacent to the Tramway boundary.
- Where trees are located on or close to the boundary between the structure plan and the Tramway, localised retaining and other tree retention mechanisms will be implemented to ensure protection of the tree.
- Pedestrian access will be provided in strategic locations along the length of the Tramway, via steps where warranted by level differences.

Figure 15 depicts a typical cross section of the Tramway / development interface. Specific details of the interface treatment will be refined at detailed design stage in consultation with the City of Rockingham.



Source: Emerge

2353-57C-01 (15.09.2015), Not to scale

BUILDING PROTECTION ZONES

Figure 16

3.3 Bushfire Management

The Structure Plan provides a comprehensive statutory and design response to address potential bush fire hazards and demonstrates that bushfire risk over the site can be managed through a combination of dwelling setbacks and construction standards, consistent with the State planning framework.

A Fire Management Plan (FMP) has been prepared by Emerge Associates to support the Structure Plan, refer Appendix 1. The FMP has been prepared in accordance with the WAPC's Planning for Bushfire Protection Guidelines and includes a detailed Bushfire Hazard Assessment. The Hazard Assessment demonstrates that the permanent bushfire threat and hazard will be restricted to vegetation surrounding the perimeter of the site, namely the remnant bushland to the west within the Baldivis Tramway Reserve and to a lesser extent, the intermittent vegetation within the Kwinana Freeway Reserve. Vegetation management and hazard mitigation within the Kwinana Freeway Reserve is being clarified with Main Roads and DFES to determine the long-term hazard implications, however, the current agreed understanding is that Main Roads will reduce and maintain fuel loads at 8 tonnes per hectare of less, and will provide a minimum 3m wide cleared firebreak adjacent to the LSP boundary and within the freeway reserve, in accordance with the current operational policy.

Landholdings in the north only pose temporary hazards that will be removed as development progresses.

The FMP provides an indication of the setback distances required between dwellings and bushfire hazards (Building Protection Zone) to achieve a Bushfire Attack Level (BAL) rating of 29 or lower. The Structure Plan provides a Building Protection Zone (BPZ) of 20 metres from the western boundary of the Structure Plan, adjacent to the identified Tramway Reserve hazard. This 20m BPZ comprises of a combination of a minimum 14.2m wide road interface and building setbacks within the affected lots (to be controlled by Detailed Area Plans), refer Figure 16.

A 6m BPZ is required to the eastern boundary in response to the existing vegetation within the Kwinana Freeway Reserve. This requirement for a 6m BPZ will be subject to further discussions with DFES with regards to managing the fuel load within the Kwinana Freeway Reserve and will be further refined in the future BAL Assessment which will be prepared as a condition of subdivision approval.

The 6m BPZ is informed by the presence of an acoustic wall, which has a significant role in reducing heat flux. As such, the BPZ can be reduced and is limited to management of garden vegetation to reduce the likelihood of ember ignition.

Any dwellings that fall within 100m of the recognised Bushfire Prone areas will be subject to higher construction standards to mitigate any reduced setback distances consistent with Australian Standards. Development within these areas will need to be more closely examined at the subdivision design stage in the form of a BAL Assessment to determine whether higher dwelling construction standards or minor realignment of roads will be the most equitable outcome for the developer and prospective buyers in terms of providing adequate bushfire protection.

All areas of POS will be designed and landscaped to a 'low threat' standard under the Australian Standards and will not pose a bushfire hazard to development within the site.

Bushfire construction standards, including any increased front setback areas will be implemented via DAPs as a condition of subdivision approval.

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3.4 Residential

The Structure Plan provides a structure for the delivery of a diverse range of housing, including a number of innovative and affordable housing types and achieving residential density targets specified under State policy.

The delivery of quality housing is a key objective for Mirvac, ensuring the housing style and character reflects the amenity and attributes of the area. Keys to this are the delivery of housing that addresses and surveys public spaces, incorporation of solar passive design principles for private outdoor living areas and ensuring garages / carports are appropriately located. This will be implemented through Detailed Area Plans, discussed in section 3.4.3, as well as potentially via Design Guidelines (to be determined by the proponent).

3.4.1 Dwelling Yields and Density Targets

The Structure Plan provides the framework to deliver a range of densities, 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 district context.

The Structure Plan has the potential to realise approximately 510-540 residential dwellings (est. population of 1428 – 1512), at densities ranging from R25 to R40, based on the following principles:

- The majority of the Structure Plan area has a density code of R25, providing opportunities to deliver traditional front loaded lots, ranging in size from approximately 300m² – 600m².
- Medium density R40 coded lots are located adjacent to the school precinct and high amenity areas of public open space. This coding provides opportunities to deliver contemporary cottage style housing with front or rear lane access, as well as grouped / multiple housing options in appropriate locations. Single house lot sizes will generally range from 180 m² up to 360 m².

Directions 2031 and Beyond recommends a housing density target of 15 dwellings per gross urban zoned hectare. The need for density targets to encourage more efficient and effective housing is acknowledged. However, it is important that the application of these targets recognises the impact of site specific constraints and geographical context on the ability to actually deliver density.

The Structure Plan recognises the need to deliver specific densities and balances this with the recognition of the site specific land use constraints and in particular, the 2ha portion of the primary school located within the Structure Plan.

Once the school site is taken into consideration, the actual developable residential area is 2ha less than the gross urban area of 37ha.

In addition, consistent with the existing strategic planning framework, the Structure Plan does not include any provision for larger activity centres, rail stations or employment generators which would warrant a higher density response.

Notwithstanding the land use constraints, the Structure Plan delivers the potential for approximately 15 dwellings per gross urban hectare, once the 2ha primary school is deducted from the urban zoned area. This density is commensurate with the broader context in which the site is located.

Table 3 – Typical Lot / Dwelling Types

	Traditional Home Sites	Contemporary Front Loaded Lots	Compact Front Loaded Lots	Rear Loaded Cottage Lots
Typical Lot Width	17m+	10m - 17m	12.5m – 15m	7.5m – 10m
Typical Lot Depth	30m+	30m	20m - 25m	30m
Lot Area	500m²+	300m² - 500m²	250m² – 375m²	225m² - 300m²
Vehicle Access	Street	Street	Street	Rear lane
Typical Location	Mid block, end of block Areas that might require greater setbacks to address specific site constraints e.g. bushfire, traffic noise etc Typically located in areas with no specific density drivers	Mid block, end of block Typically where no specific density drivers Lot frontages are normally 'salt and peppered' along the street block to ensure streetscape amenity and housing diversity	End of street blocks, adjacent to POS, primary schools and other areas of high amenity Where more traditional module depths are not achievable	Adjacent to neighbourhood connectors and boulevards where street access is constrained. Adjacent to , schools and public open space to avoid driveway conflicts Directly abutting, high amenity POS.
Residential Density Code	Residential R25 - R30	Residential R25 - R30	Residential R30 – R40	Residential R40
Built Form Control	Residential Design Codes Design Guidelines (by developer)	Residential Design Codes Detailed Area Plans Design Guidelines (by developer)	Residential Design Codes Detailed Area Plans Design Guidelines (by developer)	Residential Design Codes Detailed Area Plans Design Guidelines (by developer)
Built Form Character and Delivery	Single dwellings Typically sold as land only	Single dwellings Typically sold as land only	Single dwellings Land only or house and land Appearance of traditional front loaded dwelling from the street	Single and grouped dwellings Typically built out and sold as a house and land package

3.4.2 Lot / Dwelling Types

A diverse mix of lot and housing typologies will be achieved. There may be opportunities for the proponent to build out pockets of medium density housing to deliver a range of housing types and amenity. Table 3 provides a brief description of the housing typologies that could be delivered within the Structure Plan area.

Compact Front Loaded (15m x 20m)

Source: ABN

Source: Celebration Homes

Contemporary Front Loaded (10m x 30m)
Source: Plunkett Homes

Contemporary Front Loaded (12.5m x 30m)

Rear Loaded Cottage (7.5m x 30m)

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3.4.3 Detailed Area Plans

Detailed Area Plans (DAPs) will be prepared as a condition of subdivision approval for select lots to ensure appropriate noise and / or bushfire mitigation measures. DAPs will also assist in delivery of quality built form, and will include provisions for:

- Lots directly abutting public open space;
- Lots deemed to be affected by freeway noise; and
- Lots designated as Bushfire Prone.

The DAPs will include specific design provisions for lots that share a rear or side boundary with public open space. These specific design provisions will include:

- A requirement for uniform visually permeable fencing for the full length of a rear boundary and for 2/3 of the length of a side boundary to encourage passive surveillance;
- A requirement for an outdoor living area and/or major openings to habitable rooms to address the open space;
- A restriction on clothes drying areas and external fixtures such as plumbing installations; and
- Mandatory setbacks to POS boundaries to promote an approachable interface.

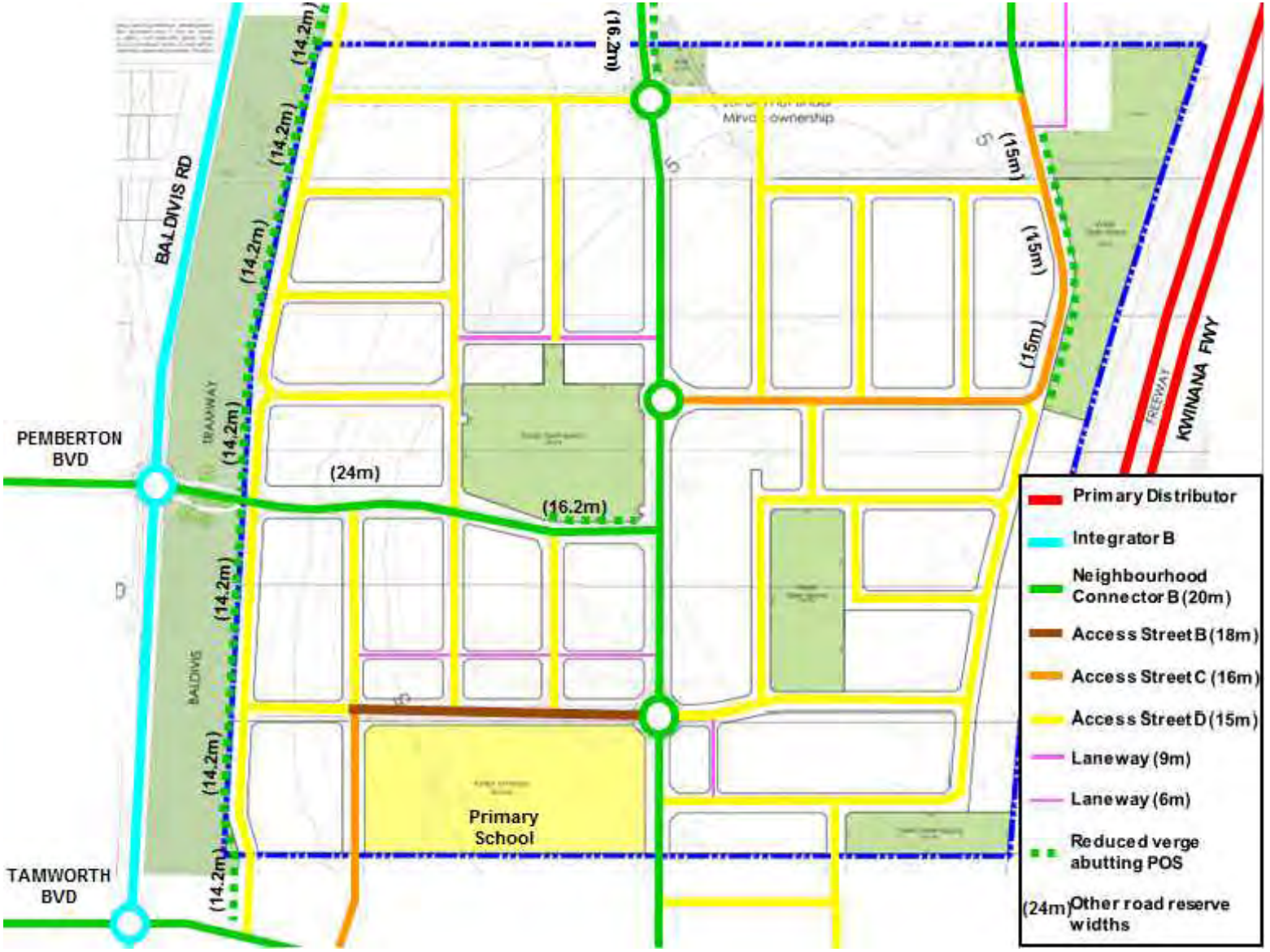
3.4.4 Variations to the Residential Design Codes

On 8 May 2015, the WAPC released Planning Bulleting 112/2015 (PB112/2015) which outlined acceptable residential development standards for medium density single houses in structure plan areas.

PB112/2015 sets out a range of acceptable development standards, indicating that these will be considered as 'deemed to comply' standards subject to being inserted into an operating Structure Plan. The LSP includes the RMD25 and RMD40 within the Part 1 Statutory Report. Table 1 (Residential Medium Density Codes) sets out variations to the Residential Design Codes that are deemed to constitute 'deemed-to-comply' development within the Structure Plan area and which do not therefore, require neighbour consultation and planning approval.

It is intended that the provisions set out in Table 1 (Residential Medium Density Codes) act as a replacement to existing R-Codes standards for building and garage setbacks (Clauses 5.1.2, 5.1.3 and 5.2.1), open space (Clause 5.1.4), parking (Clause 5.3.3), visual privacy (Clause 5.4.1) and solar access (Clause 5.4.2). All other R-Codes standards apply, where relevant to the proposal, including site area (Clause 5.1.1); building height (Clause 5.1.6); street surveillance, walls, fences and sightlines (Clauses 5.2.3 to 5.2.5); parking space design and vehicular access (Clauses 5.3.4 and 5.3.5); site works, retaining walls and stormwater management (Clauses 5.3.7 to 5.3.9); and outbuildings, external fixtures and utilities and facilities (Clauses 5.4.3 to 5.4.5).

The density code numbers shown on the Structure Plan Map are to correspond with the associated RMD Code number within Table 1.



Source: Transcore

ROAD HIERARCHY PLAN

2353-43D-01 (15.09.2015), Not to scale

Figure 17

3.5 Movement Networks

A Transport Assessment has been prepared by traffic consultants, Transcore, to identify projected traffic volumes and suggested road hierarchies in and adjacent to the site, refer Appendix 6.

The Transcore assessment is entirely consistent with the land use and traffic principles established via the EBDSP, as well as the local structure plans for the areas to the north and south of the Structure Plan area and refines these principles to produce a more comprehensive overview of the traffic network. The key findings are summarised in the following sections.

3.5.1 Regional Road Network

The Structure Plan and broader East Baldivis cell is well supported by an existing and planned regional road network, including:

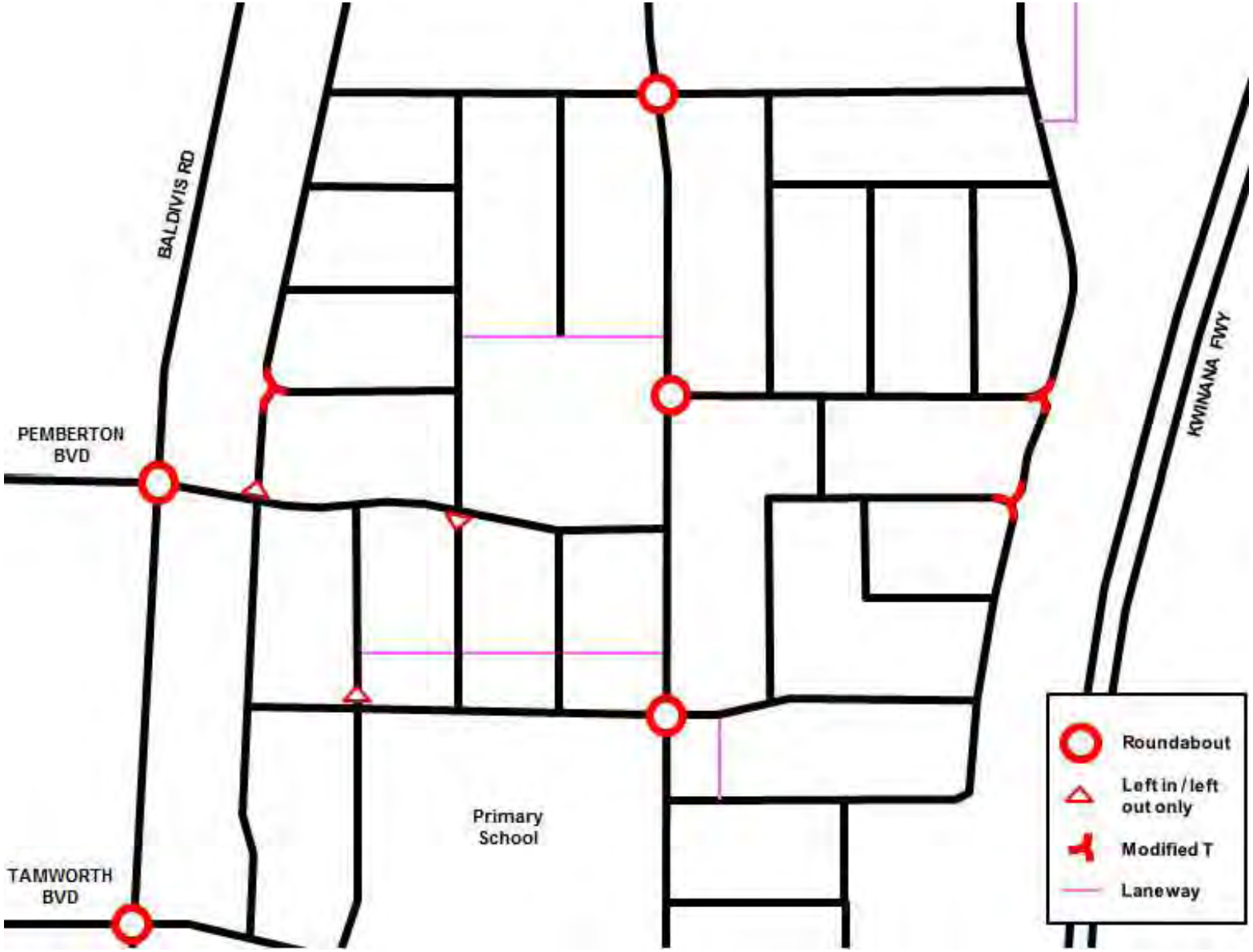
- **Kwinana Freeway** is classified as a Primary Distributor and is reserved as a Primary Regional Road under the MRS. It is currently constructed as dual 2-lane carriageways where it abuts the Structure Plan and has a posted speed limit of 100km/h. The closest freeway interchanges are at Safety Bay Road approximately 500m south of the Structure Plan area and Mundijong Road approximately 2.8km north of the Structure Plan area.
- **Safety Bay Road** and **Mundijong Road** provide key east-west links connecting key employment areas to the Kwinana Freeway. Both roads are reserved as Other Regional Roads under the MRS.
- **Baldivis Road** abuts the western boundary of the Structure Plan area and is constructed as a single carriageway, two-lane, rural road. It provides north south access through Baldivis for connections to the Kwinana Freeway at Mundijong Road, Safety Bay Road and Karnup Road. Baldivis Road currently carries approximately 6,500 vehicles per day. Consistent with the EBDSP, Transcore identifies Baldivis Road as a future Integrator B road, ultimately carrying approximately 10,800-11,100vpd adjacent to the Structure Plan area.
- **Nairn Drive** is planned to form the main north-south district distributor road through Baldivis and Karnup and is reserved as 'Other Regional Road' (also referred to as a blue road) under the MRS.

The Structure Plan recognises and respects the planned regional road network and ensures that its operation will not be unduly compromised through the inclusion of excessive traffic volumes or vehicle access points.

3.5.2 District, Neighbourhood and Local Road Network

The Structure Plan proposes a comprehensive district, neighbourhood and local road network that is consistent with the EBDSP and Liveable Neighbourhoods, refer Figure 17 - Road Hierarchy Plan. The Structure Plan road network is based on the following key principles:

- Identification of Baldivis Road as an Integrator B road, with a forecast daily traffic volume of 10,800-11,100vpd adjacent the Structure Plan area at full development.



Source: Transcore

INTERSECTION TREATMENTS

2353-44C-01 (15.09.2015), Not to scale

Figure 18

- A north-south Neighbourhood Connector B road that connects with the adjoining land to the north and south, serving a key transport linkage within East Baldivis and providing an important connection to the primary school site. This Neighbourhood Connector B road is forecast to carry approximately 1,150 vpd at full development and has an indicative reserve width of 19.1m – 20m consistent with Liveable Neighbourhoods standards.
- A second north-south road that connects to the easternmost Neighbourhood Connector Road identified on the Structure Plan to the north, ensuring good permeability through the Structure Plan area and providing direct connections to the education precinct to the north. This road is forecast to carry relatively low traffic volumes of less than 1,000 vpd and as such, is classified as a local access street C consistent with Liveable Neighbourhoods.
- A single access point to Baldivis Road at Pemberton Boulevard towards the centre of the Structure Plan area. This will form the main access to the Structure Plan area and will be controlled by a four-way roundabout linking in to Pemberton Boulevard. Further intersection analysis is provided in Section 3.7.3 below.
- A permeable grid of local access streets with reserve widths of 15m-18m consistent with Liveable Neighbourhoods, including higher order access streets surrounding the northern and eastern periphery of the planned primary school. The precise location and alignment of local access streets will be determined at subdivision stage as part of further detailed design.

3.5.3 Intersection Analysis

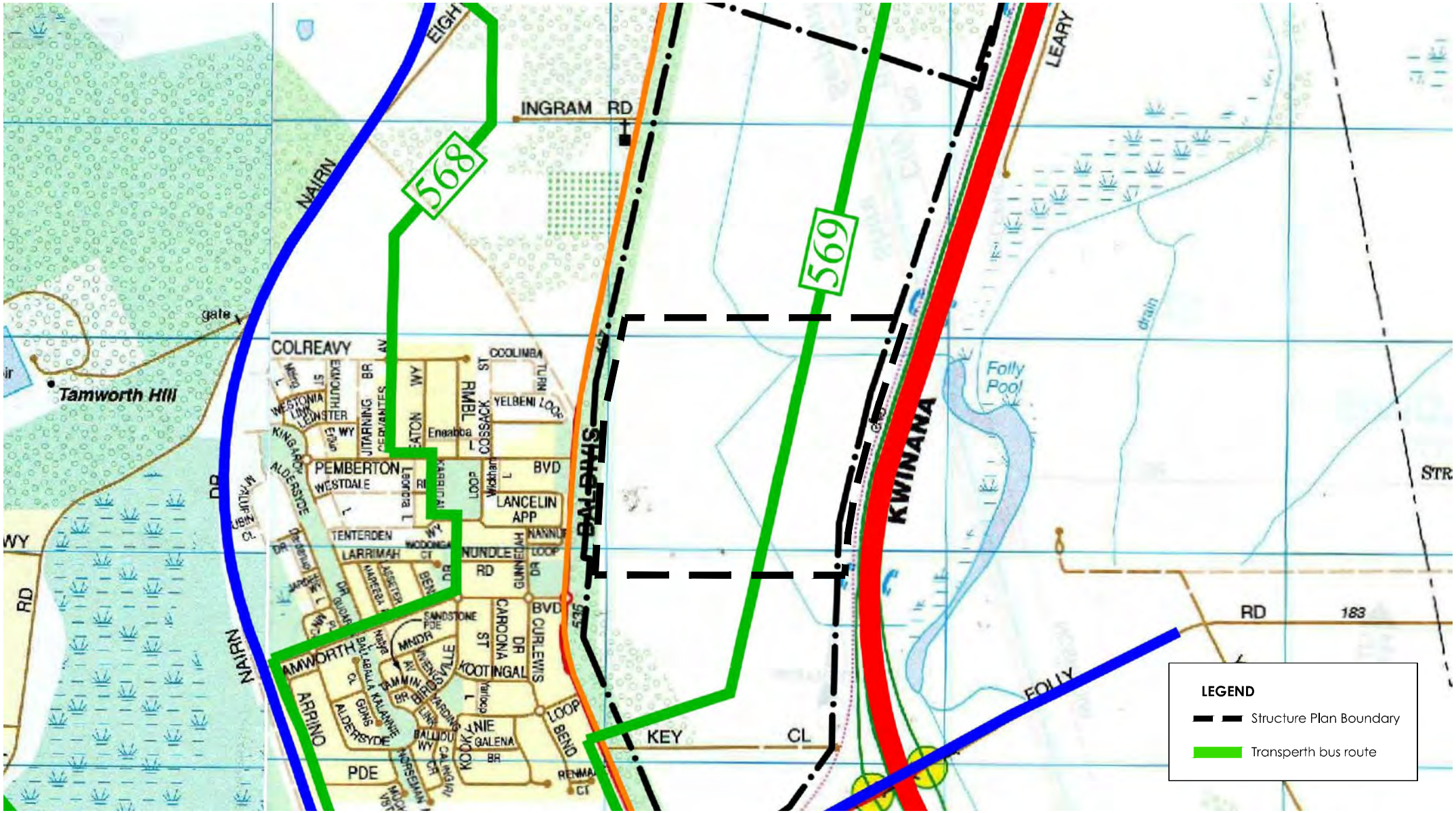
The Transport Assessment at Appendix 7 includes a detailed analysis of each of the key intersections proposed in the Structure Plan. A plan depicting the key intersection treatments is Figure 18, whilst the key recommendations of Transcore's analysis are summarised below.

Baldivis Road Intersections

The Structure Plan provides safe and efficient access to the regional road network via Baldivis Road. Access to the Structure Plan area will be provided by one 4-way intersection with Baldivis Road linking into the existing Pemberton Boulevard – consistent with the access arrangements detailed in the endorsed EBDSP. This intersection will be roundabout controlled, ensuring safe and efficient vehicle movements to and from the Structure Plan area.

Capacity analysis of this intersection has been undertaken by Transcore using the SIDRA computer software package.

The SIDRA analysis indicates that the proposed roundabout at the intersection of Baldivis Road/Pemberton Boulevard will operate satisfactorily in both peak periods upon full development of Baldivis. This roundabout will operate at level of service (LOS) A or B overall (the best possible level of service in this type of analysis) and the through movements on Baldivis Road will all operate efficiently with minimal queuing delays during peak periods.



Source: Baldivis Road Study Update, January 2012

2353-48A-01 (19.02.2015), Not to scale

PLANNED PUBLIC TRANSPORT ROUTE

Figure 19

Internal Intersections

The precise nature and function of all internal intersections will be determined at the detailed design stage once the location and alignment of local roads is determined. At present, roundabouts are proposed at two internal four-way intersections to manage turning traffic flows and assist with speed management adjacent to the primary school.

The use of Pedestrian Access Ways has been avoided as they are not supported by the City of Rockingham,

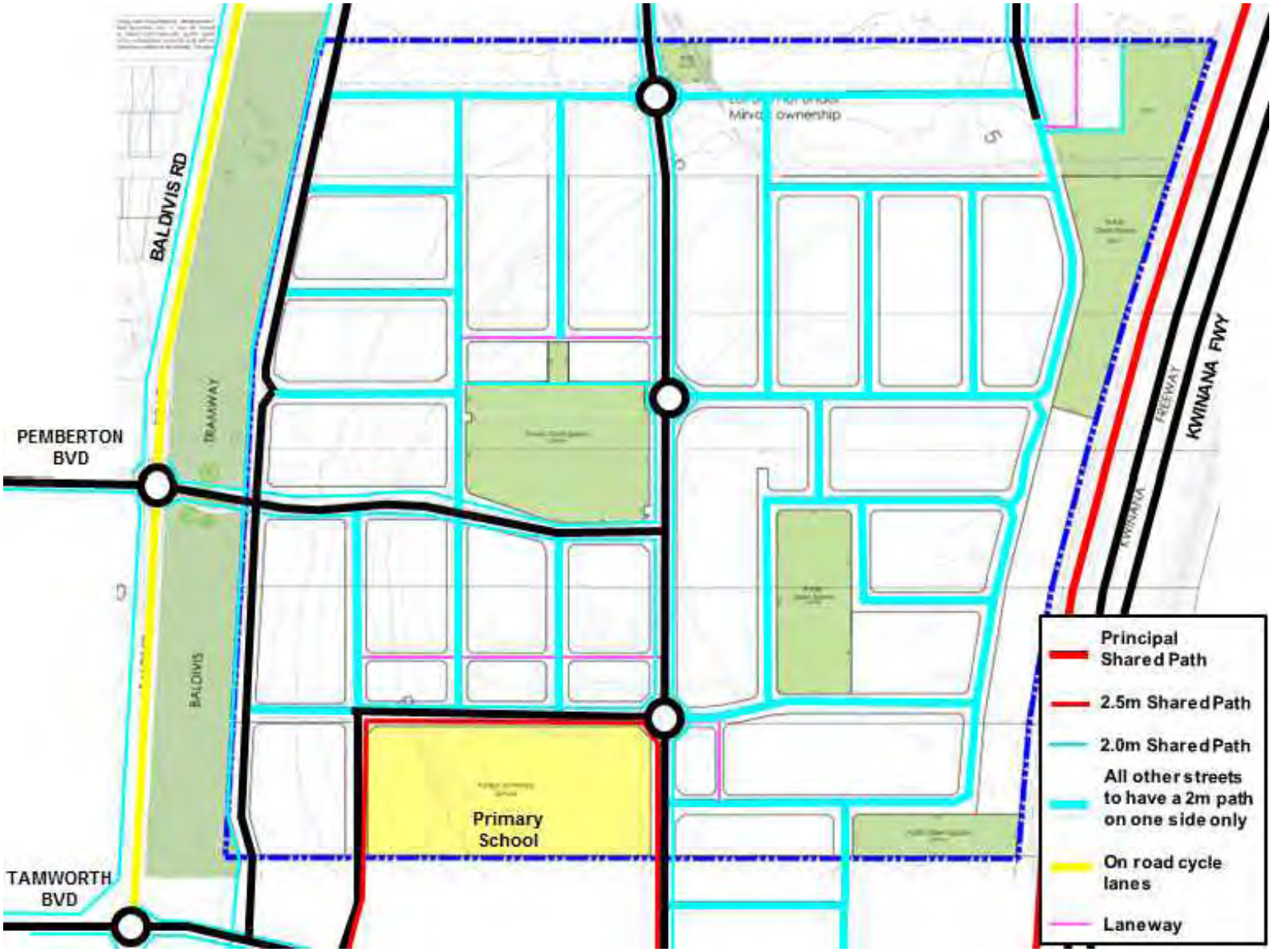
The Structure Plan includes two additional four-way intersections on the east-west entry road to provide a road interface to the Tramway Reserve, and promote pedestrian connectivity to the primary school. It is proposed that one side road at each intersection will be restricted to 'left in – left out' via a 'seagull island' treatment or similar.

All intersection spacings and treatments will be consistent with Liveable Neighbourhoods requirements, with detailed design to be confirmed at subdivision stage.

3.5.4 Public Transport

The Structure Plan road network is capable of supporting an internal bus network consistent with that identified as part of the EBDSP. The planned north-south Neighbourhood Connector B road provides sufficient pavement and reserve width to accommodate future bus-related infrastructure commensurate with the surrounding urban environment.

A future bus route is proposed along the north-south Neighbourhood Connector road as identified in the Transperth Service Development Plan prepared by the Public Transport Authority, refer Figure 19. The bus route is currently shown as terminating immediately south of Zig Zag Road however, this route will need to be extended north through the Structure Plan area and connect with Baldivis Road. Approximately two-thirds of the land area within the Structure Plan will be within a 400m walkable catchment of this future bus route. It is understood that additional bus services in the area will be added once a sufficient population is established and a demand generated that warrants such services.



Source: Transcore

2353-45C-01 (15.09.2015), Not to scale

PEDESTRIAN AND CYCLIST NETWORK

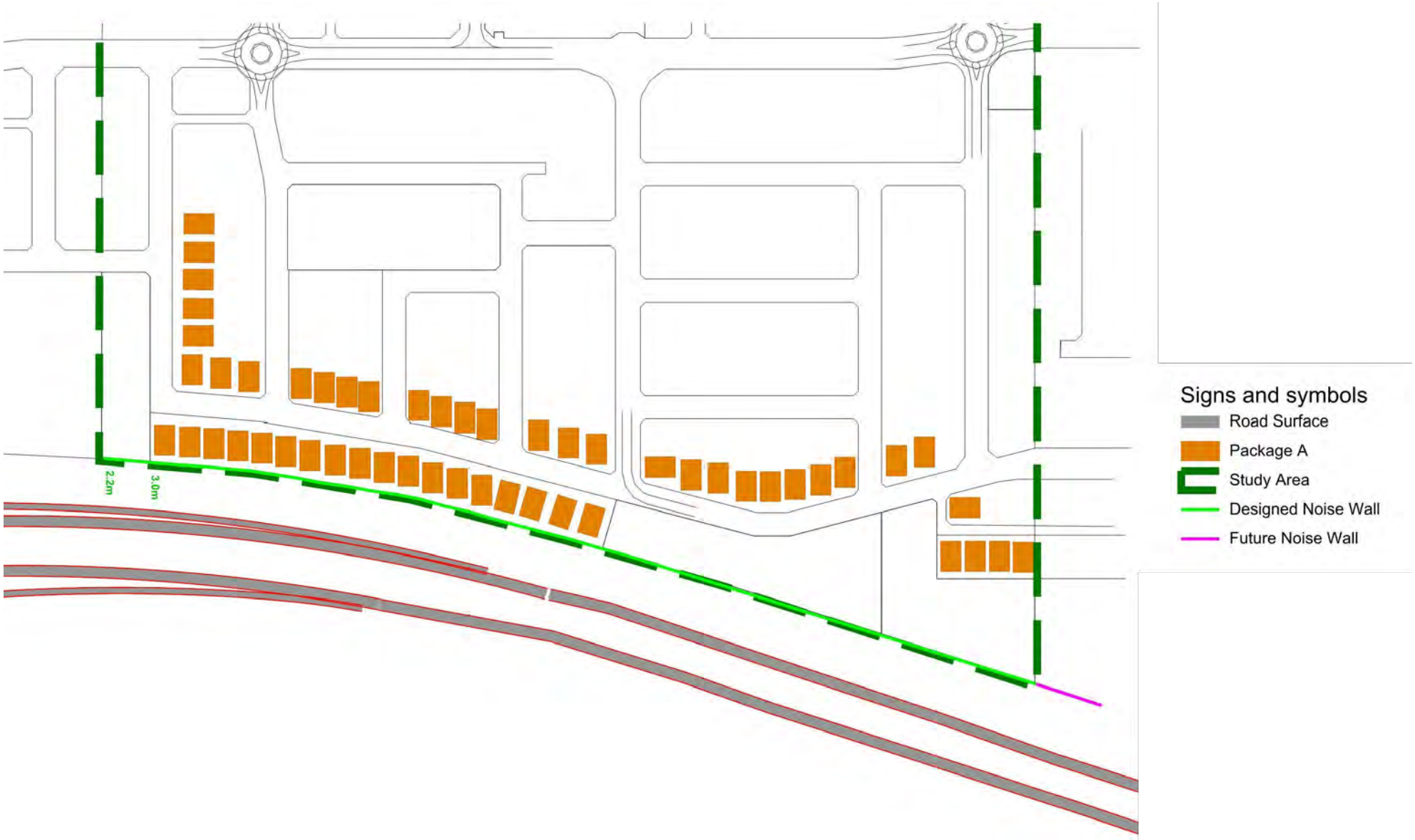
Figure 20

3.5.5 Cycling and Pedestrian Movement

The Structure Plan delivers a highly permeable road network, creating excellent opportunities for the provision of good pedestrian and cyclist facilities that maximise use of non-motorised transport modes. Figure 20 outlines the proposed pedestrian and cyclist network for the Structure Plan area.

The precise location and alignment of footpaths and shared paths will be determined in consultation with the City of Rockingham as part of detailed civil design following subdivision approval and will generally be provided in accordance with the following principles:

- Paths will generally be provided on at least one side of all roads to a minimum width of 2.0m.
- 2.5m wide paths will be provided in high pedestrian traffic locations such as adjacent the proposed schools.
- There will be paths on both sides on Integrator Arterial and Neighbourhood Connector roads.
- A shared path will be provided within the Tramway Reserve parallel to Baldivis Road, and will connect to the development cells to the north and south.
- Consistent with Liveable Neighbourhoods, there are no formalised on-street cycle lanes within the Structure Plan area. On-street cycle lanes are normally included on Integrator A, Integrator B and Neighbourhood Connector A roads – none of which are proposed as part of this Structure Plan.
- Opportunities to connect with the existing principal shared path along the western side of the Kwinana Freeway will be considered at subdivision stage.



Source: Lloyd George Acoustics

2353-46B-01 (15.09.2015), Not to scale

NOISE MITIGATION MEASURES

Figure 21

3.6 Acoustic Considerations

As noted above, the Structure Plan shares a boundary with the Kwinana Freeway to the east which is a Primary Regional Road. The freeway carries significant levels of traffic and, in accordance with State Planning Policy 5.4, the impacts of traffic noise must be taken into consideration.

A Transportation Noise Assessment has been prepared by Lloyd George Acoustics in support of the Structure Plan, a copy of which is included as Appendix 2. The report concludes that traffic noise is not a constraint to development, subject to the inclusion of some noise mitigation treatments as part of the ongoing development of the Structure Plan area. These noise mitigation measures are depicted at Figure 21 and include:

- Construction of a 2.2m – 3.0m high noise wall along the eastern boundary of the Structure Plan abutting the Kwinana Freeway;
- A statutory provision requiring those lots that are deemed to exceed the 'target' noise level to have a notification placed on title at subdivision stage advising of a noise hazard; and
- A statutory provision requiring dwellings located on those lots exceeding the 'target' noise level to incorporate 'Package A' quiet house design treatments, as set out in Appendix 2.

The Package A quiet house design requirements will be implemented via DAPs as a condition of subdivision.

3.7 Water Management

The Structure Plan provides a comprehensive planning and design response to address all aspects of urban water management. A Local Water Management Strategy (LWMS) has been prepared by RPS and is included as Appendix 4 to the Structure Plan. The LWMS addresses the requirements of the WAPC's Better Urban Water Management Guidelines and is a refinement of the existing regional and district level water strategies for this area.

3.7.1 Existing Water and Drainage Strategies

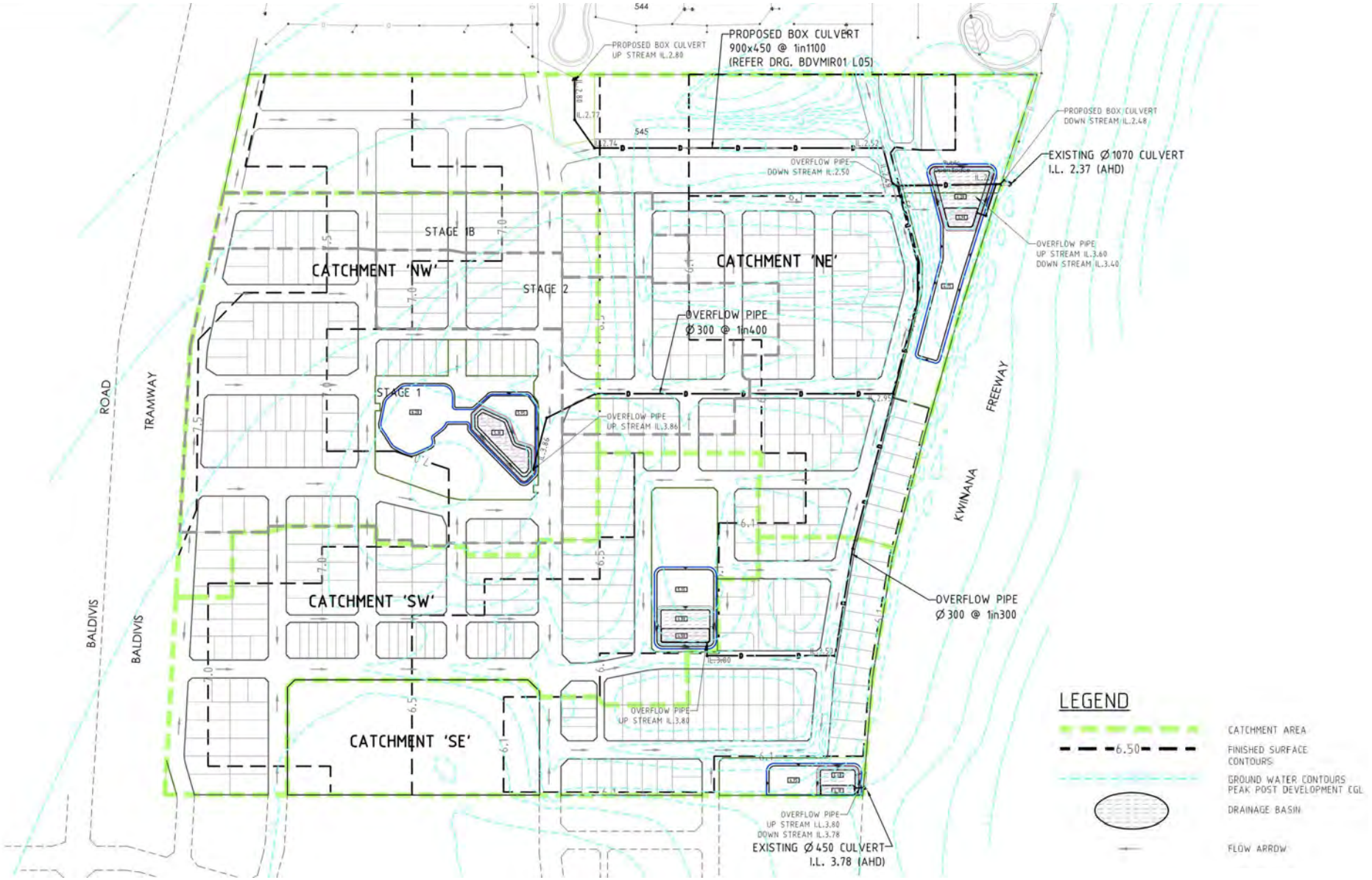
Serpentine River Floodplain Management Strategy (SKM, 2010)

Sinclair Knight Merz was commissioned by the Department of Water to develop a floodplain Management Strategy (FMS) for the Serpentine River in the areas of Serpentine, Baldivis, Karnup and Keralup. The LWMS is consistent with the relevant principles of the FMS.

North East Baldivis District Water Management Strategy (Parsons Brinkerhoff, 2007)

The East Baldivis DWMS was prepared in support of the East Baldivis District Structure Plan and has been endorsed by the Department of Water.

The LWMS has been prepared in accordance with the key objectives and principles of the DWMS and refines these principles to a local scale consistent with the WAPC's Better Urban Water Management Guidelines.



Source: Development Engineering Consultants

2353-49D-01 (15.09.2015), Not to scale

LOCAL WATER MANAGEMENT CATCHMENT PLAN

Figure 22

3.7.2 Predevelopment Conditions

The Structure Plan is located within the Peel Estuary–Serpentine River Catchment and Peel Main Drain Sub-Catchment. The Peel Main Drain (PMD) is situated east of the site which drains stormwater run-off from the catchment into the Serpentine River and ultimately the Peel–Harvey Estuary.

The existing topography of the Structure Plan area is generally flat, with elevations between approximately 9.0m AHD adjacent to Baldivis Road and 3.5 m AHD towards the freeway. The site has one main open drain, the Sub F branch drain, traversing the lower lying central and south-eastern sections of the site. Surface water runoff from the majority of the site is captured by this branch drain and flows through one of two culverts under the Kwinana Freeway.

Adjacent to the northern boundary of the Structure Plan area and within existing Lot 545 is the Sub H branch drain, which conveys drainage from all the existing rural lots north of the site to Zig Zag Road. The Sub H branch drain flows east through the same 1050 mm diameter culvert under the Kwinana Freeway.

The site is affected by the 1 in 100 year flood levels of the Serpentine River/ Peel Main Drain and as such the finished floor level will be set at a minimum of 500mm above this level. Early advice received from the Department of Water indicated flood levels adjacent to the site could be as high as 5.6m AHD, however, recently revised flood modelling has determined more accurate flood levels of around 4.5m AHD in this locality.

3.7.3 Surface Water Management

Surface water management within the Structure Plan area will be consistent with Better Urban Water Management best practice and the City of Rockingham's standards / requirements.

The LWMS proposes to divide the Structure Plan area into a number of internal surface water catchments. Each catchment will maximise opportunities for infiltration where possible with the aim to reduce nutrient export from the site. A street based piped network will convey road generated runoff to POS areas within each internal catchment with the 1 yr ARI events being retained onsite and infiltrated, via bio-retention areas, as close to source as possible. A Local Water Management Catchment Plan is Figure 22.

Events greater than the 1 year ARI will be managed within the greater swales and basins located in each catchment's POS area. Outflow in a major storm event (100yr ARI) via a controlled outlet, will be directed back into the road drainage network before leaving the site by one of two existing culverts that direct water under the freeway and into the Peel Main Drain. One culvert is located in the north eastern corner of the site, where outflows will be firstly directed through a portion of the Sub H drain within the adjacent Lot 545 and the other in the south eastern corner.

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3.7.4 Groundwater Management

Annual Average Maximum Groundwater (AAMGL) levels range from between 3.5 to 4.4m AHD accross the site. The LWMS proposes that a subsoil drainage system will be installed within the imported fill to manage any post development rise in groundwater levels. A groundwater model has been undertaken to demonstrate the performance of the proposed subsoil system and to accurately determine a Controlled Groundwater Level for the site. The Groundwater Model Report has been included as part of the LWMS. The subsoil system will have free flowing outlets into the swales and basins located within the POS areas. As well as incorporating water quality treatment through the use of quality fill materials within the subsoil trenches, subsoil outlets will discharge into the bio-retention areas located within the swales and basins.

3.7.5 Monitoring and Implementation

Consistent with best practice, groundwater monitoring will be undertaken monthly for levels and quarterly for quality for a period of three years post development. The same parameters required during pre-development will be analysed and if possible, existing onsite bores will be retained in the same or very similar locations for post-development use.

The post-development surface water monitoring program will include opportunistic sampling and analysis of water quality at the basin and swale locations throughout the development. Additional detail of the post-development monitoring plan will be provided in future UWMPs for the site.

3.7.6 Water Conservation

The State Water Plan (2007) is a strategic policy and planning framework to meet the State's water demands to the year 2030. One of the key targets is to reduce potable water consumption to 40 KL–60 KL per person per year. In order to meet this target, several water saving initiatives to reduce potable water use will be investigated and implemented where practical within the development. Potential options currently being considered include the following:

- the provision of a waterwise landscaping package for buyers encouraging the use of minimal turfed areas and the use of species with low water requirements
- the provision of educational material to buyers regarding appropriate irrigation operation and hydro-zone planting
- installation of AAA water efficient appliances including but not limited to washing machines, toilets and taps.
- Non-potable groundwater will be utilised for construction management purposes and the irrigation of public open space.

PRIMARY SCHOOL CONCEPT

3.8 Education Facilities

The Structure Plan recognises that education facilities form an important part of the community infrastructure provision within the Structure Plan area and provide a focal point for the surrounding residential community.

The EBDSP establishes the number and distribution of primary and secondary schools throughout the DSP area. This distribution has been confirmed in consultation with the Department of Education, with the school sites being centrally located within the surrounding catchment, consistent with Liveable Neighbourhoods.

3.8.1 High Schools

The EBDSP identifies a 9ha public high school site adjacent to Zig Zag Road, approximately 1.5km - 2km north of the Structure Plan area. It is intended that this high school will service the Structure Plan area at ultimate development. In the interim period until this high school is developed, residents of the Structure Plan area have convenient access to the existing public high school to the south of Safety Bay Road within the 'Rivergums' estate.

3.8.2 Primary Schools

The EBDSP identifies three public primary schools within the DSP area, distributed evenly along a north-south axis. A portion of the southernmost primary school site is shown within the Structure Plan area, with the balance of the site shared within the landholding to the south of the Structure Plan.

Consistent with the EBDSP and as agreed with the City of Rockingham and Department of Education, the Structure Plan provides a 2ha portion of the 4ha primary school site, with the balance to be provided by the landowners to the south, refer Figure 23 – Primary School Concept.

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3.9 Activity Centres and Employment

The Structure Plan area has excellent access to nearby activity centres and employment opportunities, as recognised by the EBDSP.

The Structure Plan is located approximately 1km from the Baldivis Town Centre – a 'District Centre' as designated via State Planning Policy 4.2 – Activity Centres for Perth and Peel. The Baldivis District Centre will provide for the day to day retail and community needs of future residents of the Structure Plan area, as well as providing employment opportunities for a small proportion of the population. The Rockingham Strategic Metropolitan Centre and Kwinana Secondary Centre are also easily accessible to the Structure Plan area and will provide for a wider range of commercial, community and employment opportunities.

There are a number of major existing employment nodes in the Rockingham and Kwinana areas including the Western Trade Coast, Kwinana Industrial Area, Australian Marine Complex and Jandakot airport. In addition, there are expansive areas of planned industrial development including Latitude 32 industrial area, North-East Baldivis and East Rockingham. Development of the Structure Plan area is a logical solution to increasing the local employment catchment, which is critical to achieving the employment self sufficiency targets set by Directions 2031 and Beyond.

Given the proximity to and accessibility of the Baldivis District Centre, along with the limited residential catchment provided by the Structure Plan, there is little forecast demand for any local retail / commercial facilities within the Structure Plan area. This is recognised in the EBDSP, which does not allow for any local activity centres in the southern portions of the DSP area.

PRELIMINARY STAGING PLAN

3.10 Infrastructure Coordination, Servicing and Staging

Civil engineering consultants Development Engineering Consultants have prepared a detailed earthworks and servicing strategy (the Strategy) demonstrating the availability of service infrastructure to the Structure Plan area. The Strategy is summarised below and is provided in full as Appendix 5. The Strategy demonstrates that essential services are readily available and the provision of services to the Structure Plan area is not a constraint to development.

Further detailed infrastructure planning and design will occur in consultation with appropriate agencies as the planning and development of the land progresses. A Preliminary Staging Plan is included as Figure 24.

3.10.1 Earthworks

Like the rest of the East Baldivis cell, the final earthworks levels for the site are determined via a detailed combination of geotechnical, hydrological, planning, environmental, engineering design and market factors.

The site currently slopes from 9m AHD on the western boundary down to approximately 4m AHD over a transition distance of approximately 150m. The site then levels off with the 4m AHD height continuing to the eastern boundary. It has previously been understood that the Structure Plan area is affected by the 1 in 100 year flood level (5.6m AHD) adjacent the Peel Main Drain. Accordingly it has previously been determined that the site is required to be filled to a level of approximately 6.1m AHD so that development levels are set 500mm above the 1 in 100 year flood level. The Department of Water has recently produced a revised flood study which reduces the 1 in 100 year flood level by approximately 1.1m. Due to the advanced nature of gravity sewer planning and construction in the broader area, it is not feasible to reduce the finished fill levels. The Structure Plan area will therefore continue to be filled to a level of 6.1m AHD at certain points to facilitate drainage requirements and sewer construction. The Structure Plan area will be relatively flat with minor level differences resulting from road, sewer and drainage design.

Given the low-lying nature of certain portions of the Structure Plan area, remedial works are required to be undertaken prior to importing fill onto the site to address the presence of Acid Sulphate Soils (ASS). Importantly, the remediation works proposed are not uncommon and will involve a process of deep dynamic compaction to stabilise the soils which involves minimal disturbance of the soil and remediation of the ASS. The Structure Plan area is expected to achieve an 'A' soil classification and the presence of ASS is not an impediment to development.

Market forces also presently dictate the provision of flat building sites with retaining walls to accommodate level differences with low retaining walls to be installed where necessary. Slightly higher retaining walls (up to 1.5m) may be required abutting POS however, where this does occur, DAP's will be implemented to ensure visually permeable uniform fencing on top of the retaining walls and surveillance of the POS.

The City has previously expressed concerns about stormwater runoff from the Structure Plan area entering the adjacent Tramway Reserve. The earthworks concept ensures that the finished levels will grade away from the Tramway Reserve, and runoff will therefore not impact on the Tramway Reserve.

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3.10.2 Electrical Supply

Existing overhead high voltage infrastructure located in Baldivis Road will be utilised to provide a high voltage power supply to the Structure Plan area.

All internal power reticulation lines and transformer installations will be constructed at the cost of the developer. Transformer and switch station sites will be determined at the detailed subdivision design stage to Western Power's satisfaction.

3.10.3 Water Supply

Water supply to the structure plan area will be obtained from an existing 300mm water main within the Baldivis Road reserve.

Internal reticulation mains will be designed to Water Corporation standards to complete links through the site to the adjoining developments to the north and south.

3.10.4 Wastewater

The Structure Plan area is included within the Water Corporation's current waste water planning for the Baldivis area, with the Water Corporation recently confirming that they are prepared to support urban development within East Baldivis on the understanding that the new Waste Water Treatment Plant (WWTP) in East Rockingham will be operational by the end of 2015, which is commensurate with the timing of development of the Structure Plan area.

The Structure Plan area falls within two sewer catchments, each discharging to a wastewater pump station. The northern half of the site will be serviced by the Baldivis North pump station "I" north of the adjoining Australand development. Arrangements have been made with Australand to extend the sewer to their southern boundary to allow for a connection to Mirvac's land that will service the northern portion of the Structure Plan area. Based on the timing of this connection, the northern portion of the Structure Plan area will be the first stage of development.

The southern portion of the Structure Plan area, which will most likely form the latter stages of development, will be serviced by a pump station located immediately south on the adjoining land, which is currently being developed by Perron Developments Pty Ltd and is subject to a separate structure plan. The pump station on the Perron land will ultimately extend into a 225mm sewer extended north through the Structure Plan area to the Australand site.

3.10.5 Telecommunications

The structure plan area is expected to be serviced by the National Broadband Network for internet and telephone services. Capacity to provide these services exists from Baldivis Road and adjacent development which may require minor extensions to facilitate a connection.

3.10.6 Gas

Gas services are located within the Baldivis Road reserve and the adjacent development will have sufficient capacity to serve the area with minimum augmentation.