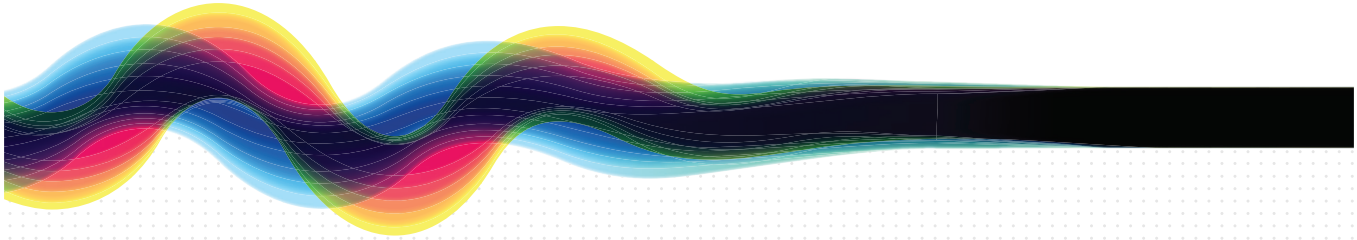
High Wycombe South Transit Oriented Development Precinct – Activity Centre Plan

Activity Centre Plan

Prepared for City of Kalamunda
October 2021 | 17-527



element.
the art and science of place

We acknowledge the custodians of this land, the Whadjuk Nyoongar and their Elders past, present and emerging. We wish to acknowledge and respect their continuing culture and the contribution they make to the life of this city and this region.

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Issue	Date	Status	Prepared by	Approved by
1	30.09.21	Draft	Malcolm Somers	Murray Casselton
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Endorsement Page

This Activity Centre Plan is prepared under the provisions of the Metropolitan Redevelopment Authority Act 2011.

IT IS CERTIFIED THAT THIS ACTIVITY CENTRE PLAN WAS APPROVED BY RESOLUTION OF THE METROPOLITAN DEVELOPMENT AUTHORITY LAND REDEVELOPMENT COMMITTEE ON:

_____Date

Signed for and on behalf of the Metropolitan Redevelopment Authority Land Redevelopment Committee:

_____

an officer of the AUTHORITY duly authorised by the AUTHORITY pursuant to section 14 of the *Metropolitan Redevelopment Authority Act 2011* for that purpose, in the presence of:

_____Witness

_____Date

_____Date of Expiry

v

Table of Amendments

Amendment No.	Summary of the Amendment	Amendment type	Date approved by MRA

element.

Executive Summary

This Activity Centre Plan has been prepared to facilitate the coordinated development of the High Wycombe South (formerly known as Forrestfield North) Transit Oriented Development and Activity Centre Precincts as identified under the Forrestfield North District Structure Plan. For the purposes of the Activity Centre Plan the area is referred to holistically as the High Wycombe South Transit Oriented Development Precinct.

The Activity Centre Plan area encompasses the land generally bounded by Dundas Road and the Forrestfield Freight Yard, Access Park bulk grain depot and Mainline Freight Rail to the west, Poison Gully Creek and Maida Vale Road to the north and Milner Road to the east and southeast.

The Activity Centre Plan area covers 84 landholdings including Bush Forever site 45 and is located within the municipality of the City of Kalamunda. The total site area for the Activity Centre Plan is 61.7958 hectares.

The High Wycombe South Transit Oriented Development Precinct currently consists primarily of industrial land uses, as well as a number of single houses and associated outbuildings, including some pre-existing rural residential developments. The precinct includes an established sealed road network to service existing properties. The area also features remnant vegetation and pockets of significant tree canopy, particularly around Poison Gully Creek and within some pre-existing rural residential properties.

The Activity Centre Plan is a considered response to the opportunities and constraints presented by the High Wycombe South Transit Oriented Development Precinct. Considerations have included the following:

- The retention and enhancement of the significant environmental values of the area to the greatest extent practical. This includes the preservation of an Ecological Conservation (Resource Enhancement Wetland) as a central feature of the precinct.
- The protection and enhancement of the ecological and Aboriginal heritage values of Poison Gully Creek.
- A proposed central park, utilising an area with substantial pre-existing trees and providing both passive and active recreational opportunities in a central location in close proximity to High Wycombe Train Station.
- Where possible, existing roads have been re-purposed as part of the new development. The Activity Centre Plan seeks to utilise the existing road network with a new TOD Connector Road to ultimately connect High Wycombe South with Maida Vale South across Roe Highway.
- The provision of an integrated cycle and pedestrian network throughout the precinct connecting to the High Wycombe Train Station via the central park.
- Co-location of drainage areas with public open space and in some instances the use of underground storage due to size limitations and the need to manage potential impacts on the future urban form.
- Responding appropriately to noise and vibration from road traffic, Perth Airport, High Wycombe Train Station and nearby freight rail with treatments and notification requirements identified for implementation.
- The delivery of an appropriate interface to the High Wycombe South Residential Precinct to the south-east, particularly across Milner Road. The design of Milner Road is to be conducive to allowing movement between the precincts and to the new train station. Associated built form within the two precincts is to be compatible and complementary in terms of scale and street relationship to present as a coordinated urban environment.

The Activity Centre Plan comprises the following key elements:

- The Forrestfield Station Precinct and Residential Precinct.
- The Forrestfield Station Precinct comprises the following five (5) sub precincts:
  - 1A – Eureka Sub-Precinct
  - 1B – Core Sub-Precinct
  - 1C – Conservation Sub-Precinct
  - 1D – Station Sub-Precinct
  - 1E – Maida Vale Sub-Precinct

- Four (4) public open space areas.
- One (1) environmental conservation area.
- Four (4) designated drainage areas forming part of the public open space network.
- A new TOD Connector road to provide access to the High Wycombe South Residential Precinct to the south-east and ultimately Maida Vale via a future overpass at Roe Highway.
- A community purpose facility is proposed to be located immediately south of the conservation precinct and High Wycombe Train Station.
- Residential development with densities increasing as you move west through the precinct towards the High Wycombe Train Station.

It is intended that the Activity Centre Plan will promote a high amenity urban environment, with a variety of residential typologies in close proximity to the High Wycombe Train Station and the proposed community purpose facility. It will provide a walkable, pedestrian friendly environment whilst conserving areas of environmental significance. The Activity Centre Plan provides for over 11 hectares of open space in the form of local open space, environmental conservation areas and pre-existing Bush Forever areas.

Table 1 – Activity Centre Plan Summary

Item	Data		Activity Centre Plan Ref (section no.)
Total area covered by the activity centre plan	61.7958 hectares		1.2.1
Area of each land use proposed	Hectares	Lot Yield	3.1.2
• Environmental Conservation	3.4960 ha	1	
• Local Open Space (POS incl. drainage)	5.2308 ha	8	
• Residential High Density (RAC-0) (Total cell area irrespective of use)	30.8724 ha	457	
• Public Purposes: Community Purpose	2.1871 ha	1	
Total estimated lot yield	467		3.1.2
Estimated number of dwellings	743		3.1.2
Estimated residential site density	24.06 dwellings per hectare		3.1.3
Estimated population	1,133		3.1.2
Estimated commercial floor space	Up to 11,310 sqm		3.1.3
Estimated light industrial floor space	Up to 30,000 sqm net lettable area		3.1.3
Estimated area and percentage of public open space given over to:			3.2.2
• Environmental Conservation	• 3.4960 hectares (5.7 %)		
• Local Open Space (POS incl. drainage)	• 5.2308 hectares (8.5 %)		
Estimated percentage of natural areas (Env. Conservation and Bush Forever)	6.0283 hectares (9.8 %)		3.2.2

*It is noted that the lot yield, dwelling and population estimates provide an indication of future development potential only and may vary.

element.

Part One – Implementation

Part One – Implementation

1. Activity Centre Plan Area

This Activity Centre Plan (TOD ACP) applies to the High Wycombe South Transit Oriented Development and Activity Centre Precincts (TOD ACP area) as identified under the Forrestfield North District Structure Plan (DSP). The TOD ACP area is generally bound by Milner Road to the south and east, Poison Gully Creek to the east and north and a Railways reserve (including the Forrestfield Freight Yard, Access Park bulk grain depot and Mainline Freight Rail) to the west, being the land contained within the inner edge of the line denoting the TOD ACP boundary as shown on the High Wycombe South Transit Oriented Development Precinct ACP Map.

Refer to High Wycombe South Transit Oriented Development Precinct ACP – Activity Centre Plan Map (Plan 1)

The ACP Map outlines the proposed road network and intended land uses within the activity centre plan area and aligns generally with the METRONET East Redevelopment Scheme, the City of Kalamunda (the City) Local Planning Scheme No. 3 (LPS3) and the DSP.

2. Operation

This ACP commences operation on the date it is approved by the Metropolitan Redevelopment Authority (MRA).

3. Staging

The approach to future land assembly has been a key focus of the preparation of the TOD ACP. Five distinct sub-precincts have been established in order to facilitate future development, as follows:

- 1A – Eureka Sub-Precinct
- 1B – Core Sub-Precinct
- 1C – Conservation Sub-Precinct
- 1D – Station Sub-Precinct
- 1E – Maida Vale Sub-Precinct

The development of each precinct independently of each other will be facilitated by the completion and implementation of the comprehensive planning framework for the area by Development WA, including design guidelines, and the provision of key infrastructure under the development contribution arrangements for the precinct. These are expected to provide a wider range of future development options for existing landowners within the precinct.

The development of the TOD ACP area is likely to be implemented in multiple stages due to the fragmented land ownership and the significant size of the future development area. Final development staging and composition will also be dependent upon a number of factors, including initiatives to provide early community purpose and commercial amenities to the area to support the new transit node, market demand, servicing and infrastructure considerations.

Staging of development will also be based on short term services availability, pre-existing road access and prevailing market conditions at the time of the delivery.

Table 2: Staging Triggers

Staging Triggers
Completion of High Wycombe Train Station
Commencement of operation of transit node including public transport routes
Development and completion of community purpose facilities
Development and completion of supporting retail and commercial services
Sewer, water and power upgrades

element.

4. Subdivision and Development Requirements

4.1 Land Use Permissibility

The ACP Map (Plan 1) outlines the proposed road network and broad intended land use arrangements within the TOD ACP area. Specific land use permissibility within the TOD ACP area shall be in accordance with the requirements of the METRONET East Redevelopment Scheme.

4.2 Land Uses / Reserves

The TOD ACP comprises the following land use designations and reserves:

METRONET East Redevelopment Scheme

- Project Area: High Wycombe South (RAC-0)
- Ecological Conservation (Resource Enhancement Wetland)
- Bush Forever

Metropolitan Region Scheme Reserves

- Railway

Local Scheme Reserves and Environmental Conservation

- Local Open Space
- Public Purposes: Community Purpose
- Environmental Conservation

The objectives of each of these land use designations and reserves, where applicable, are consistent with those provided within the METRONET East Redevelopment Scheme. General development requirements, preferred land uses and built form development standards are outlined within the METRONET East Redevelopment Scheme and supporting design guidelines prepared by DevelopmentWA.

5. Local Development Plans

There is not anticipated to be any need for the preparation of Local Development Plans (LDPs) to support future subdivision and/or development.

Relevant built form considerations will be addressed via the requirements of the METRONET East Redevelopment Scheme, DevelopmentWA planning policies as well as the proposed METRONET East High Wycombe Project Area Design Guidelines and Strategy prepared by DevelopmentWA.

6. Other Requirements

6.1 Public Open Space

A minimum of 10% public open space of the gross subdivisible area is to be provided subject to the general requirements of Liveable Neighbourhoods and to the satisfaction of DevelopmentWA and the WAPC. Public open space is generally to be provided in accordance with the ACP Map and the Public Open Space Schedule included in Part 2, with an updated Public Open Space Schedule to be provided at the time of subdivision for determination by the WAPC.

The TOD ACP adjoins the High Wycombe South Residential Precinct development area which has an oversupply of public open space. The strategic positioning of the Town Park towards the western edge of that precinct makes it easily accessible by future residents of the TOD Precinct via the TOD Connector.

6.2 Structure Plan Normalisation

Ultimately, the TOD ACP will be normalised into LPS3 as set out in Table 3.

Table 3 – Activity Centre Plan Normalisation into Local Planning Scheme No. 3

Land Use and Residential Density	Local Planning Scheme No. 3 Modification
Project Area: High Wycombe South (RAC-0)	Appropriate LPS3 zoning based on land use with RAC-0 density code for Residential, Centre, Commercial and Mixed Use Zone
Ecological Conservation (Resource Enhancement Wetland) and Environmental Conservation	'Parks and Recreation' under the Metropolitan Region Scheme with this reservation purpose being shown on LPS3 maps / Conservation Zone under LPS3
Local Open Space	'Local Open Space' Reserve
Public Purposes: Community Purpose	'Public Purposes: Community Purpose' Reserve
Railway Reserve	'Railway' under the Metropolitan Region Scheme with this reservation purpose being shown on LPS3 maps

element.

LEGEND

Activity Centre Plan Boundary

EXISTING PLANNING FRAMEWORK

Metronet East Redevelopment Area

Project Area: Forrestfield North (RAC-0)

Ecological Conservation (Conservation Category Wetland)

Bush Forever

PROPOSED PLANNING FRAMEWORK

Region Scheme Reserves

Railway

Local Scheme Reserves and Environmental Conservation

Local Open Space

Public Purposes: Community Purpose

Environmental Conservation

Other Categories

District Integrator A (Existing / Proposed)

District Integrator B (Existing / Proposed)

Neighbourhood Connector (Existing / Proposed)

Local Street (Existing / Proposed)

Proposed Roundabout

Proposed Signalised Intersection

A Cul de Sac Head

B No Right Out Intersection

Strategic Site

Hazard seperation required at subsequent planning stages to ensure that no residential land is affected by BAL-40 or BAL-FZ

Indicative Drainage Corridor

Notes

1 Final road widths and indicative cross sections to be determined following a traffic assessment

Precincts

1 Forrestfield Station Precinct

2 Residential Precinct

Sub-Precincts

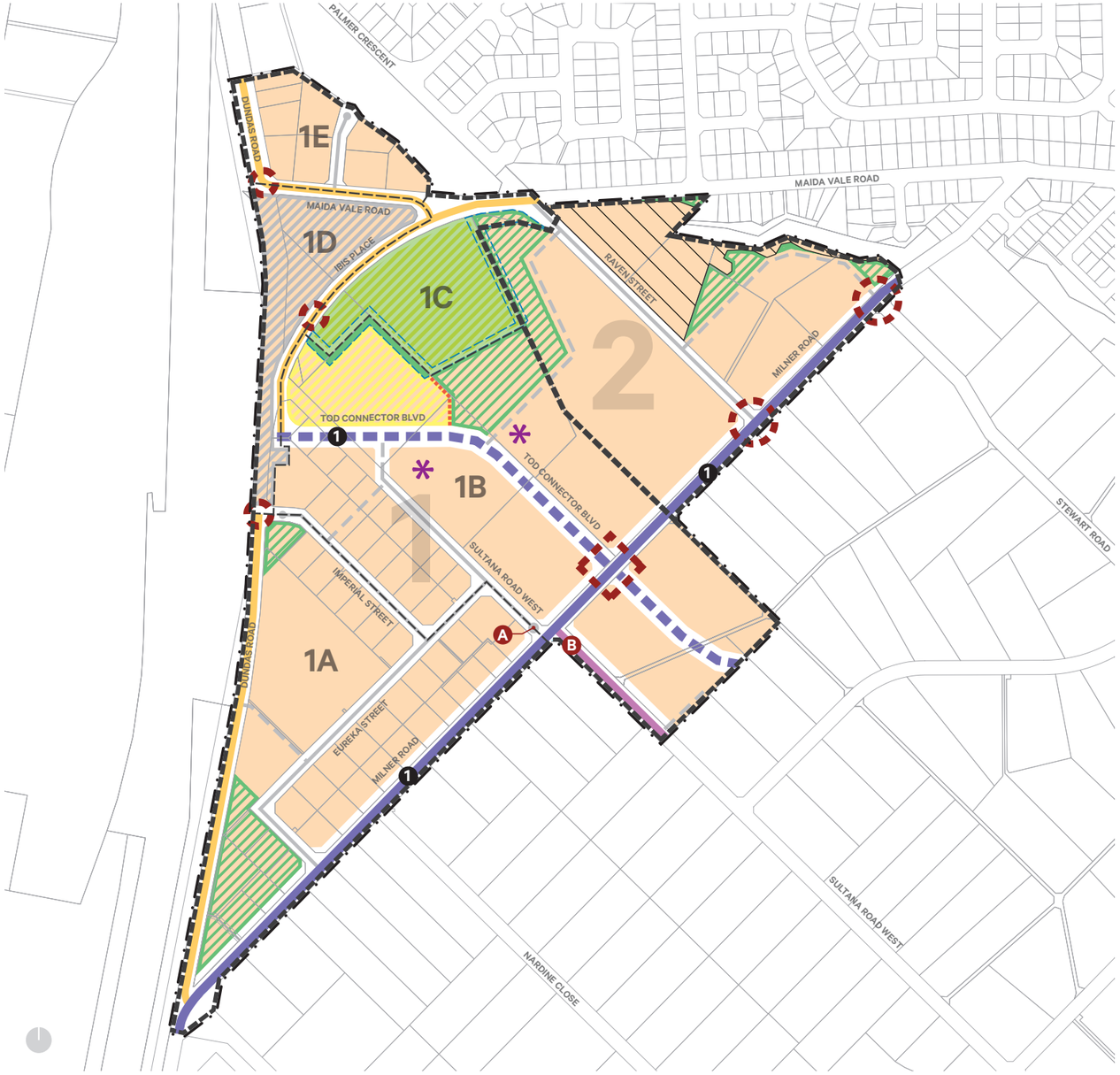
1A Eureka Sub-Precinct

1B Core Sub-Precinct

1C Conservation Sub-Precinct

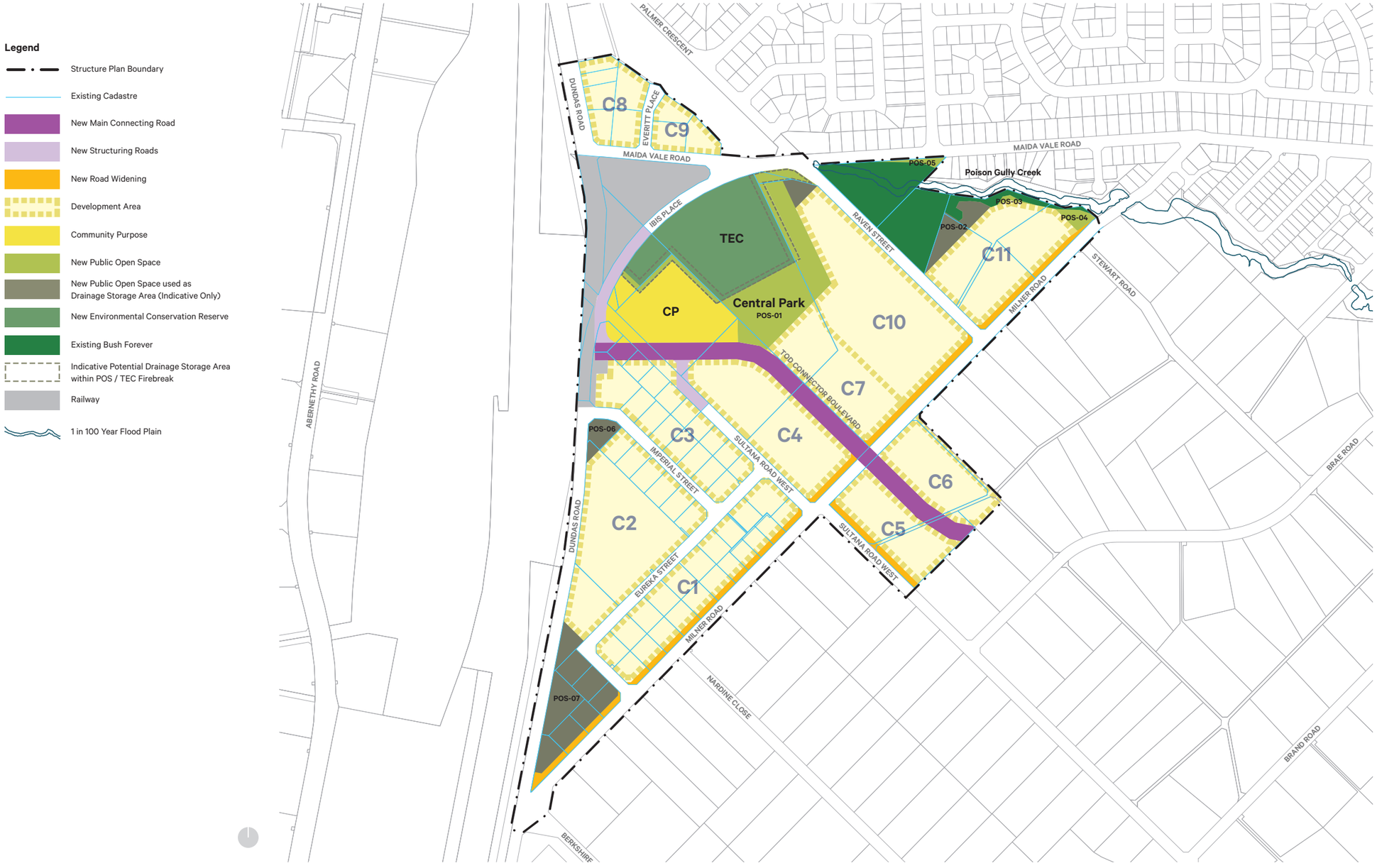
1D Station Sub-Precinct

1E Maida Vale Sub-Precinct



PLAN 1 – ACTIVITY CENTRE PLAN

High Wycombe South Transit Oriented Development Precinct Activity Centre Plan



PLAN 2 – DEVELOPMENT PLAN

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Part Two – Explanatory Report and Technical Appendices

element.

1. Planning Background

1.1 Introduction and Purpose

This ACP report has been prepared in accordance with the WAPC Structure Plan Framework (August 2015) and is equivalent to a Precinct Structure Plan as defined under State Planning Policy 7.2 – Precinct Design. This ACP represents the High Wycombe South TOD Precinct as identified by the Forrestfield North District Structure Plan (DSP) as approved by the WAPC on the 29 September 2016. It encapsulates both the Transit Oriented Development and Activity Centre Precincts as identified under the DSP.

The TOD ACP has been prepared in collaboration with a team of specialist consultants, who have provided technical input in relation to the various opportunities and constraints within the TOD Precinct. The consultant team details are set out in Table 4 below.

Table 4 – High Wycombe South TOD Precinct Project Team

Company	Project Role
element	Planning and Urban Design
Strategen - JBS&G	Environmental Management, Water Management, Bushfire Hazard Assessment and Management
KCTT	Transport Analysis, Civil Engineering and Servicing
CCS Strategic	Community Infrastructure Assessment
Lloyd George Acoustics	Transport Noise Assessment
AEC and Location IQ	Economic, Employment and Retail Strategy
Woodsome Management and HillPDA	Land Assembly and Preliminary Development Contribution Considerations
Norman Disney & Young	Sustainability and Innovation
Place Laboratory	Landscaping Concept and Public Realm Assessment
Deicke Richards	Urban Design and Private Realm Assessment

It should also be noted that this ACP has been prepared in consultation with a Technical Advisory Group (TAG) comprising key State Government Agencies with an interest in the progression of the project. The TAG membership includes the following:

- City of Kalamunda
- Department of Planning, Lands and Heritage (DPLH)
- Department of Biodiversity, Conservation and Attractions (DBCA)
- Department of Water and Environmental Regulation (DWER)
- Office of the Environmental Protection Authority (OEPA)
- Department of Fire and Emergency Services (DFES)
- METRONET / DevelopmentWA
- Public Transport Authority (PTA)
- Main Roads WA (MRWA)
- Water Corporation (WC)
- Freight and Logistics Council (FLC)
- Perth Airport

1.2 Land Description

1.2.1 Location

The TOD ACP area covers 84 landholdings and is located within the municipality of the City of Kalamunda. The combined site area for the TOD ACP is 61.7958 hectares. The TOD ACP area is bound by Milner Road to the south and east, Poison Gully Creek to the east and north and a Railways reserve (including the Forrestfield Freight Yard, Access Park bulk grain depot and Mainline Freight Rail) to the west. The new High Wycombe Train Station is located to the west of the precinct.

The TOD ACP area is also strategically located within:

- Two kilometres of Perth Airport;
- Two kilometres of Forrestfield District Centre;
- Four kilometres of the Kewdale Industrial Area; and
- Five kilometres of Kalamunda District Centre.

Refer to Figure 1 – Location Plan

Refer to Figure 2 – Site Plan

1.2.2 Area and Land Use

The TOD ACP comprises the High Wycombe South Transit Oriented Development and Activity Centre Precincts as identified under the Forrestfield North District Structure Plan. For the purposes of the Activity Centre Plan the area is referred to holistically as the High Wycombe South Transit Oriented Development Precinct.

The TOD ACP area currently consists primarily of industrial land uses, as well as a number of single houses and associated outbuildings, including some pre-existing rural residential developments. It includes an established sealed road network to service existing properties. The area also features Aboriginal heritage features around Poison Gully Creek as well as remnant vegetation and significant tree canopy, particularly around Poison Gully Creek and within some pre-existing rural residential properties.

Land immediately north of the TOD ACP area includes Poison Gully Creek and the High Wycombe residential area. Existing light industrial uses and the initial Stage 1 of the Forrestfield / High Wycombe Industrial area are located to the south, which provide a buffer to nearby general industrial land uses.

The High Wycombe South Residential Precinct is located to the south-east of the TOD ACP area. A Local Structure Plan has been prepared over this Precinct, identifying areas of local open space, district level sporting facilities, a primary school and residential development at various densities.

Refer to Figure 3 – Aerial Plan

Refer to Figure 4 – Local Context Plan

Refer to Figure 5 – Regional Context Plan

1.2.3 Legal Description and Ownership

The land within the TOD ACP area is described in Table 5 below and includes 84 individual properties, comprising a variety of lot sizes and configurations. Traditionally subject to highly fragmented land ownership, a significant portion of the TOD ACP area has been acquired by the State to help facilitate the construction of the High Wycombe Train Station.

Table 5 – Property Details

Lot Number	Road
0, 781, 780, 765, 764, 763, 762, 761, 760, 756, 755, 754, 753, 752, 7, 1, 102, 103, 12579	Milner Road
783, 552, 9000, 757, 5, 101, 100	Dundas Road
779, 778, 777, 766, 767, 768, 769, 770, 771, 748, 749, 750, 751	Eureka Street
747, 746, 745, 744, 743, 742, 516, 741, 740, 739, 738, 737, 736, 735	Imperial Street
734, 733, 732, 731, 730, 729, 728, 727, 725, 724, 377, 5, 6	Sultana Road West
104, 101, 100, 7	Raven Street
11, 2, 1353	Maida Vale Road
9, 12, 4, 11	Ibis Place
12, 4, 3, 13	Everitt Place
Part Lot 15531, part Lot 13571, part Lot 13925	Railway Reserve

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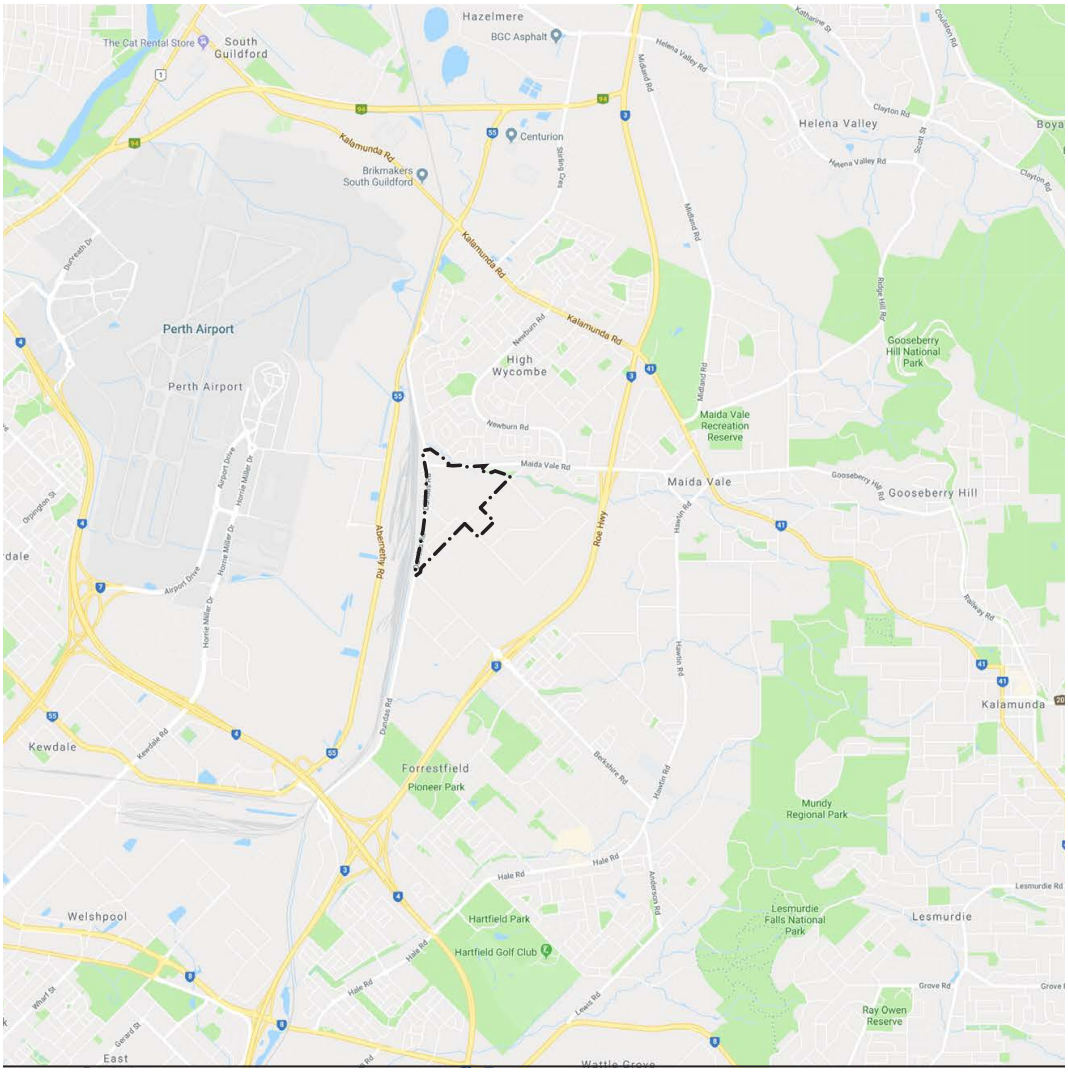

Figure 1. Location Plan

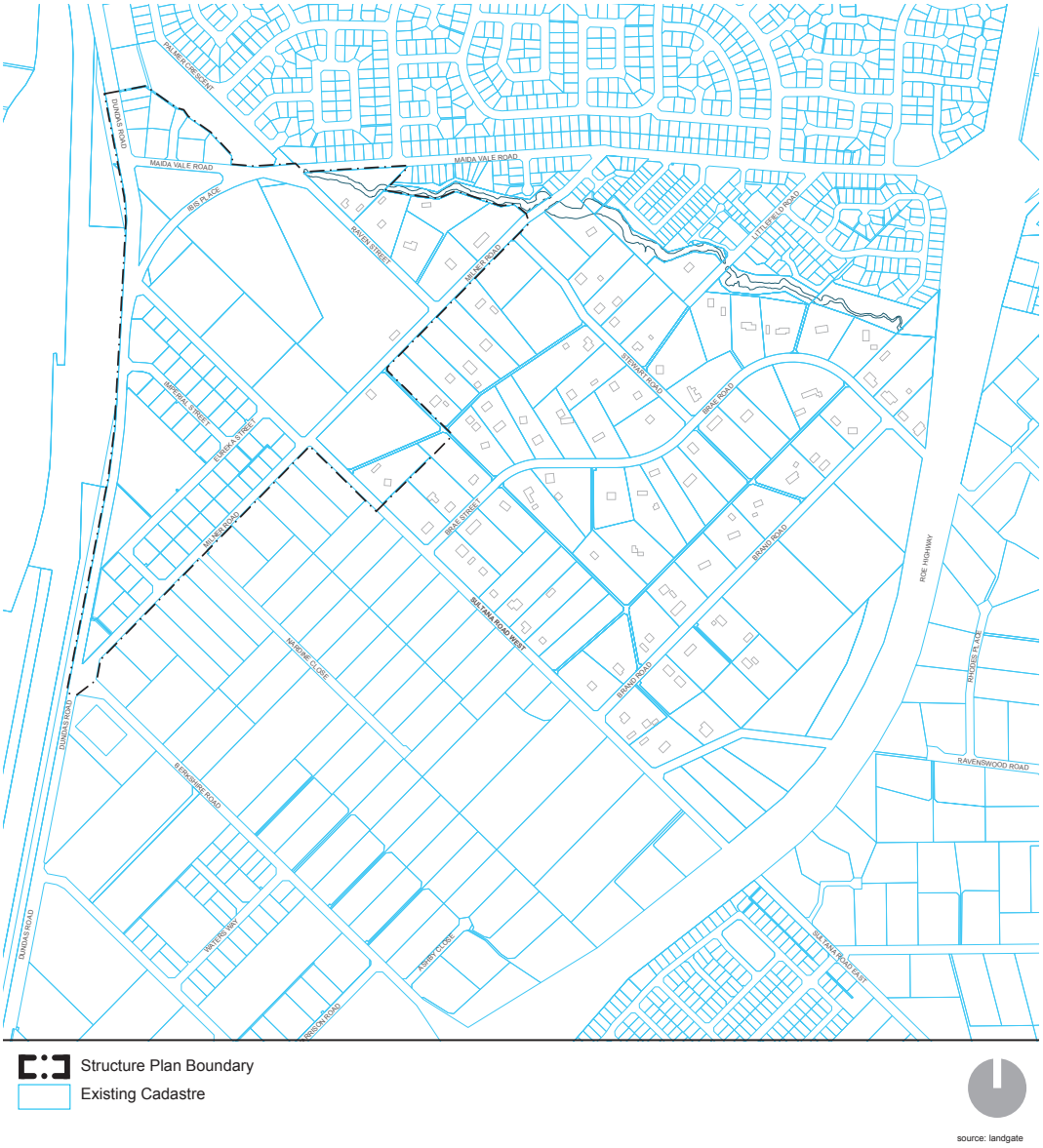

Figure 2. Site Plan

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Figure 3. Aerial Plan

Figure 4. Local Context Plan

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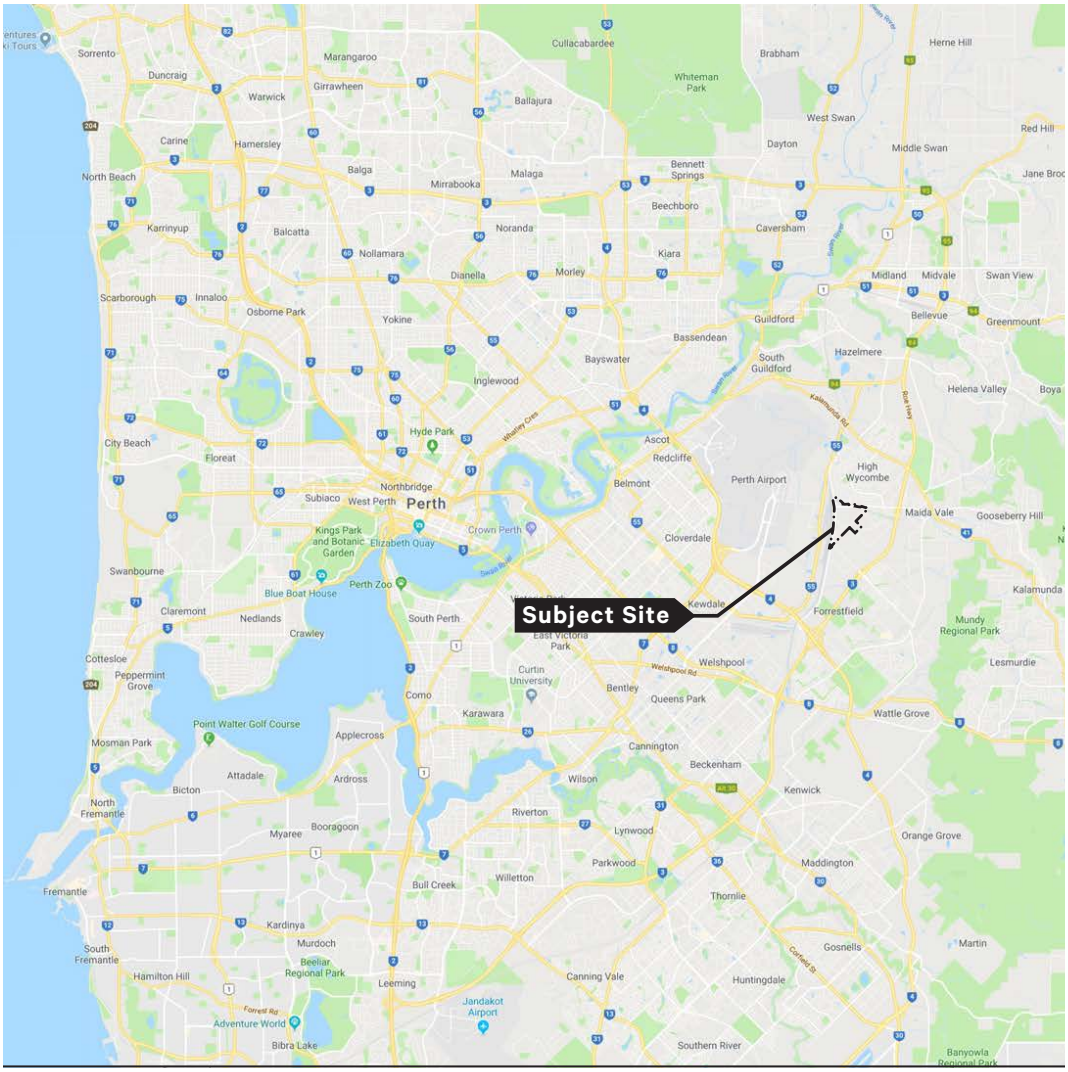

Figure 5. Regional Context Plan

1.3 Planning Framework

1.3.1 Zoning and Reservations

1.3.1.1 Metropolitan Region Scheme

The TOD Precinct is depicted as a 'Redevelopment scheme/act area' within the Metropolitan Region Scheme (MRS). The TOD Precinct is located entirely within the METRONET East Redevelopment Scheme area.

In accordance with section 51 of the Metropolitan Redevelopment Authority Act (MRA Act), the Metropolitan Region Scheme does not apply to the Scheme Area as long as the METRONET East Redevelopment Scheme is the operative Scheme.

Refer to Figure 6 – Metropolitan Region Scheme mapping

1.3.1.2 METRONET East Redevelopment Scheme

The TOD Precinct is located within and is subject to the provisions of the METRONET East Redevelopment Scheme. The METRONET East Redevelopment Scheme references Activity Centre Plans, which are equivalent to Precinct Structure Plans as defined under the WAPC's State Planning Policy 7.2 – Precinct Design.

The METRONET East Redevelopment Scheme is a legislative document which sets out the provisions for the development and use of land within the Redevelopment Scheme Area. The METRONET East Redevelopment Scheme sets out a range of planning tools, including Activity Centre Plans which are intended to set out the proposed structure and layout of a defined area that is proposed for future development.

For the purposes of the METRONET East Redevelopment Scheme, DevelopmentWA is acting through the Metropolitan Redevelopment Authority under the powers of the *Metropolitan Redevelopment Authority Act 2011*.

The proposed Activity Centre Plan is consistent with the Vision for the METRONET East Redevelopment Scheme area which is to:

> *continue to promote the proud history of each Metronet East project area and realise its exciting future. This will be enabled by promoting urban efficiency by introducing a critical mass of people to the existing communities, increasing housing diversity and supporting greater economic opportunities and wellbeing, while forging a connection with the past and the existing characteristics of the area. A key component of this will be to link the area's Aboriginal history and stories to the new life being created and to celebrate local ecology.*
>
> *The Scheme Area will include vibrant mixed use station precincts supported by community infrastructure that connects communities, complements the surrounding local areas and provides opportunities for a diverse range of people to socialise and foster community identity.*

The TOD Precinct is located within the High Wycombe Project Area which seeks to promote:

- A high quality employment focused hub centred on High Wycombe Station, which enhances environmental integrity through celebrating the biodiversity of the area including Poison Gully Creek, remnant vegetation and local fauna.
- Medium to high density around the High Wycombe Station with commercial, retail and community based development.
- High quality design and innovative solutions to mitigate noise and vibration impacts associated with the High Wycombe Freight Yard, Mainline Freight Rail and Perth Airport.
- Delivery of an integrated and connected movement network that promotes the efficient operation of the road network while delivering a safe pedestrian environment.

1.3.1.3 City of Kalamunda Local Planning Scheme No. 3

The City of Kalamunda Local Planning Scheme No. 3 (LPS3) is a statutory document that generally forms the basis for assessing and determining proposals for the use and development of land within the municipality.

In accordance with section 51 of the MRA Act, LPS3 does not apply to the Scheme Area as long as the METRONET East Redevelopment Scheme is the operative Scheme. In that regard, the TOD ACP area does not form part of LPS3, with the Scheme Maps stating 'refer to METRONET East Redevelopment Scheme'.

Refer to Figure 7 – City of Kalamunda Local Planning Scheme No. 3

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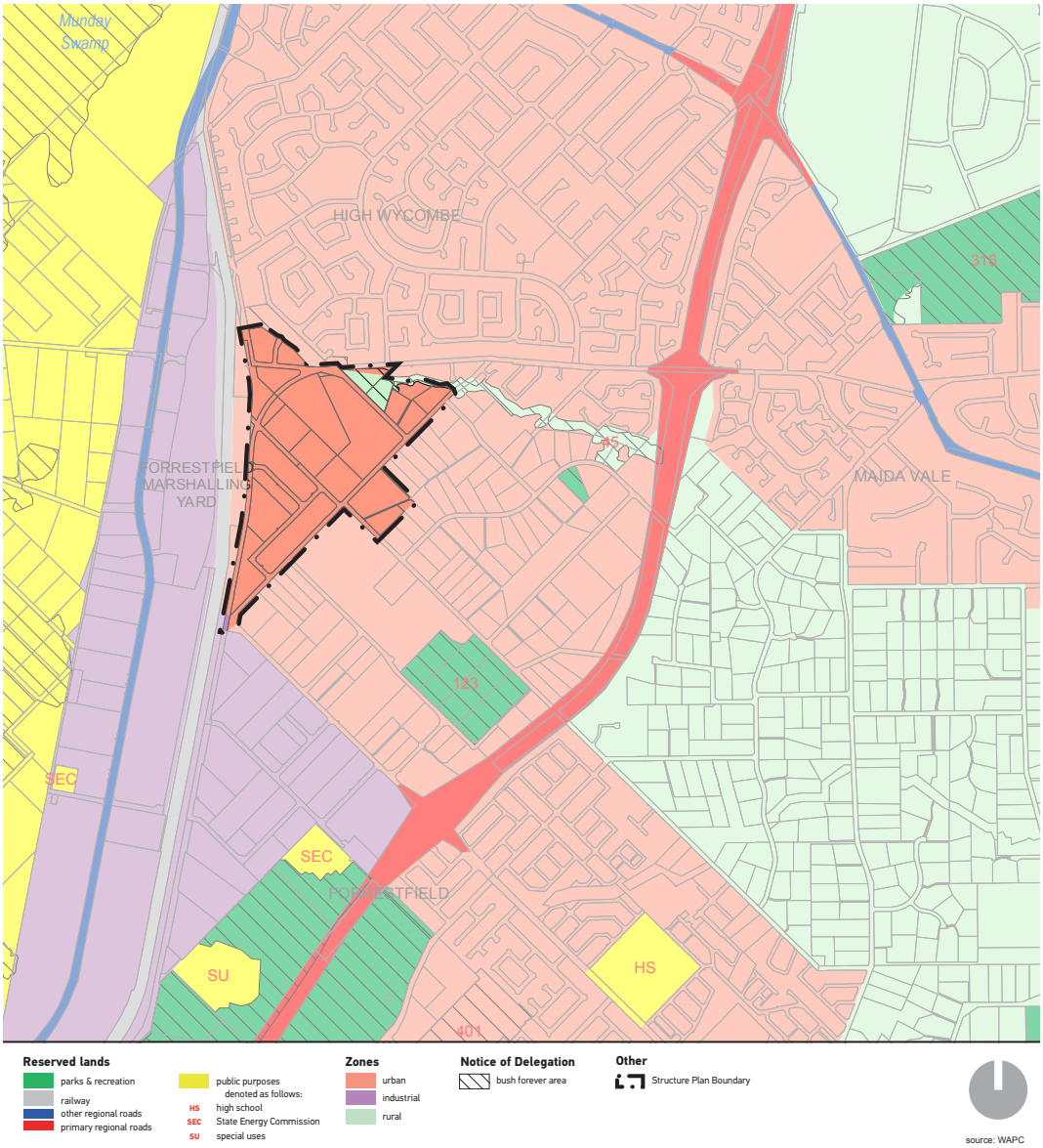


Figure 6. Metropolitan Region Scheme mapping

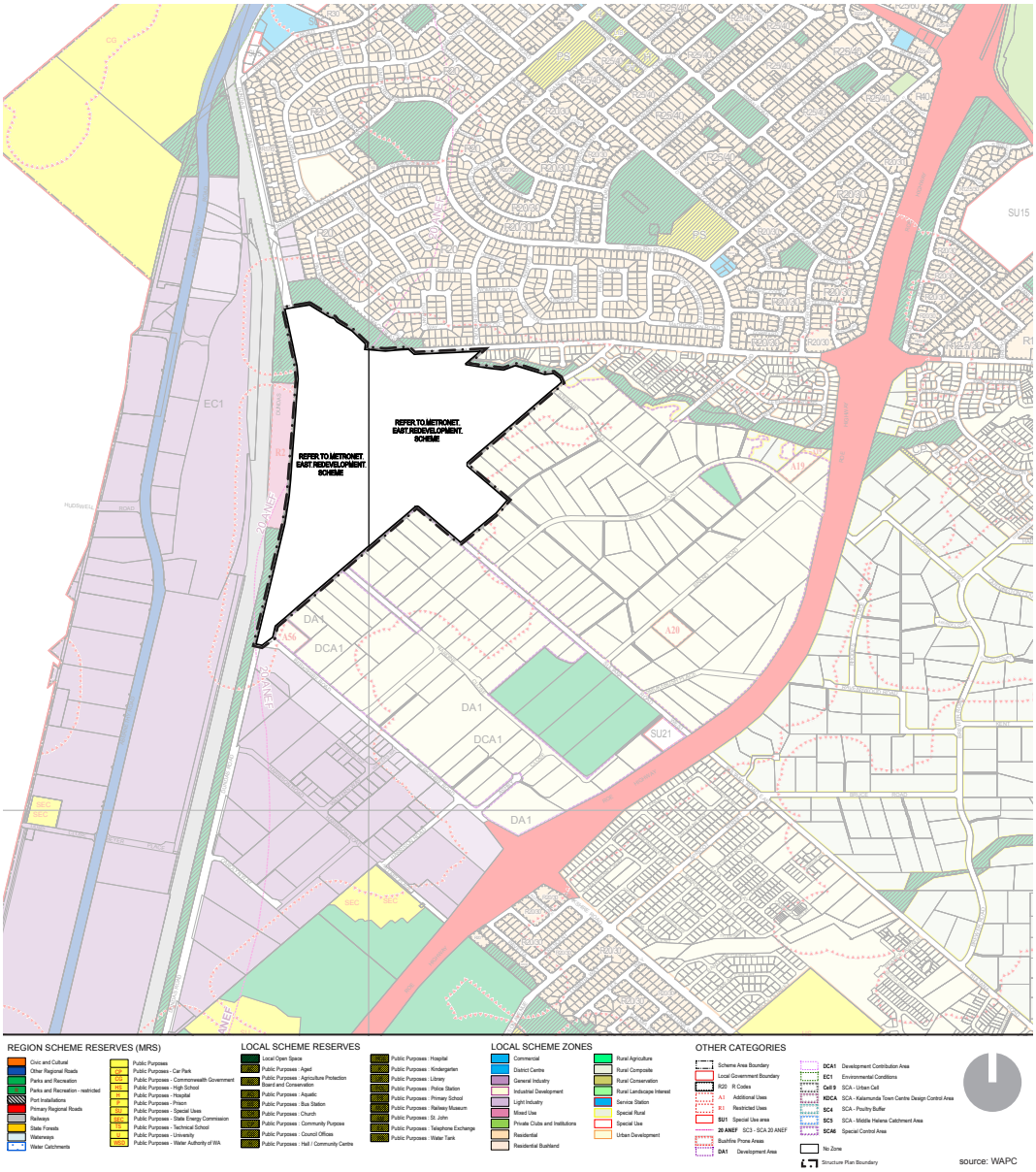


Figure 7. City of Kalamunda Local Planning Scheme No. 3

1.3.2 Planning Strategies

1.3.2.1 Directions 2031

Directions 2031 was released by the WAPC in August 2010 as a land use strategy for the Perth Metropolitan and Peel Regions. The plan built upon the previous metropolitan strategy Network City (2004) and encourages a polycentric city model with development concentrated in a number of activity centres across the metropolitan region. The Strategy states its vision as "by 2031, Perth and Peel people will have created a world class liveable city; green, vibrant, more compact and accessible with a unique sense of place'.

Directions 2031 identified the connected city model as the preferred medium-density future growth scenario for the Perth Metropolitan and Peel Regions. Key characteristics of a connected city pattern of urban growth are:

- Promoting a better balance between greenfield and infill development;
- Protecting and enhancing the natural environment, agricultural land, open spaces and heritage and community wellbeing;
- Reducing energy dependency and greenhouse gas emissions;
- Developing and revitalising activity centres as attractive places in which to invest, live and work;
- Ensuring that economic development and accessibility to employment inform urban expansion;
- Planning for an adequate supply of housing and land in response to population growth and changing community needs;
- Facilitating increased housing diversity, adaptability, affordability and choice;
- Planning and developing key public transport corridors, urban corridors and transit orientated developments to accommodate increased housing needs and encourage reduced vehicle use;
- Creating and enhancing transport and freight movement network between activity centres and industrial centres; and
- Maximising essential service infrastructure efficiency and equity and identifying and prioritising the coordination of projects to support future growth.

Whilst not specifically recognised in Directions 2031, the High Wycombe South area represents a significant opportunity to reinforce connected city objectives with housing diversity and employment opportunities proposed to be provided within an established urban context supported by excellent accessibility to public transport and the broader transport network.

Importantly, the TOD ACP supports the aspirations of Directions 2031 in that it will closely align the existing and emerging transport system with a land use pattern that will optimise accessibility and amenity.

1.3.2.2 Perth and Peel @ 3.5 million

Released by the WAPC in March 2018, the latest strategic document for the Perth Metropolitan Region is Perth and Peel @ 3.5 million which includes a range of land use planning and infrastructure frameworks that will prepare Perth to accommodate a population of 3.5 million by 2050.

The plan builds upon the concept of a 'connected city' identified in Directions 2031, identifying an integrated land use and movement network to achieve the objectives. The plan divides the metropolitan area into four sub-regions with the TOD ACP being categorised into the North-East Sub-region. In each sub-region, the plan manages urban growth and provides certainty about the amount of available land, whilst guiding infill and improving the urban environment.

Refer to Figure 8 – Perth and Peel @ 3.5 million Spatial Plan Extract

The plan sets out seven overarching objectives which will be key to achieving a truly connected city. These objectives are detailed as follows:

- Consolidating urban areas to use land more efficiently and improve access to infrastructure;
- Providing more and improving current community and social infrastructure to improve the wellbeing of the community;
- Improving the service infrastructure in urban areas by focusing on the timely, efficient and cost-effective delivery of utilities;
- Promoting employment in the region by creating areas of economic activity and subsequent employment within the sub-regions;
- Connecting the sub-regions to the Perth CBD and the rest of the State through an effective and efficient transport and freight network;
- Focusing on the retention and protection of the environment within the sub-regions; and
- Managing natural resources to achieve the objectives of the land use whilst considering the future land uses in the sub-region.

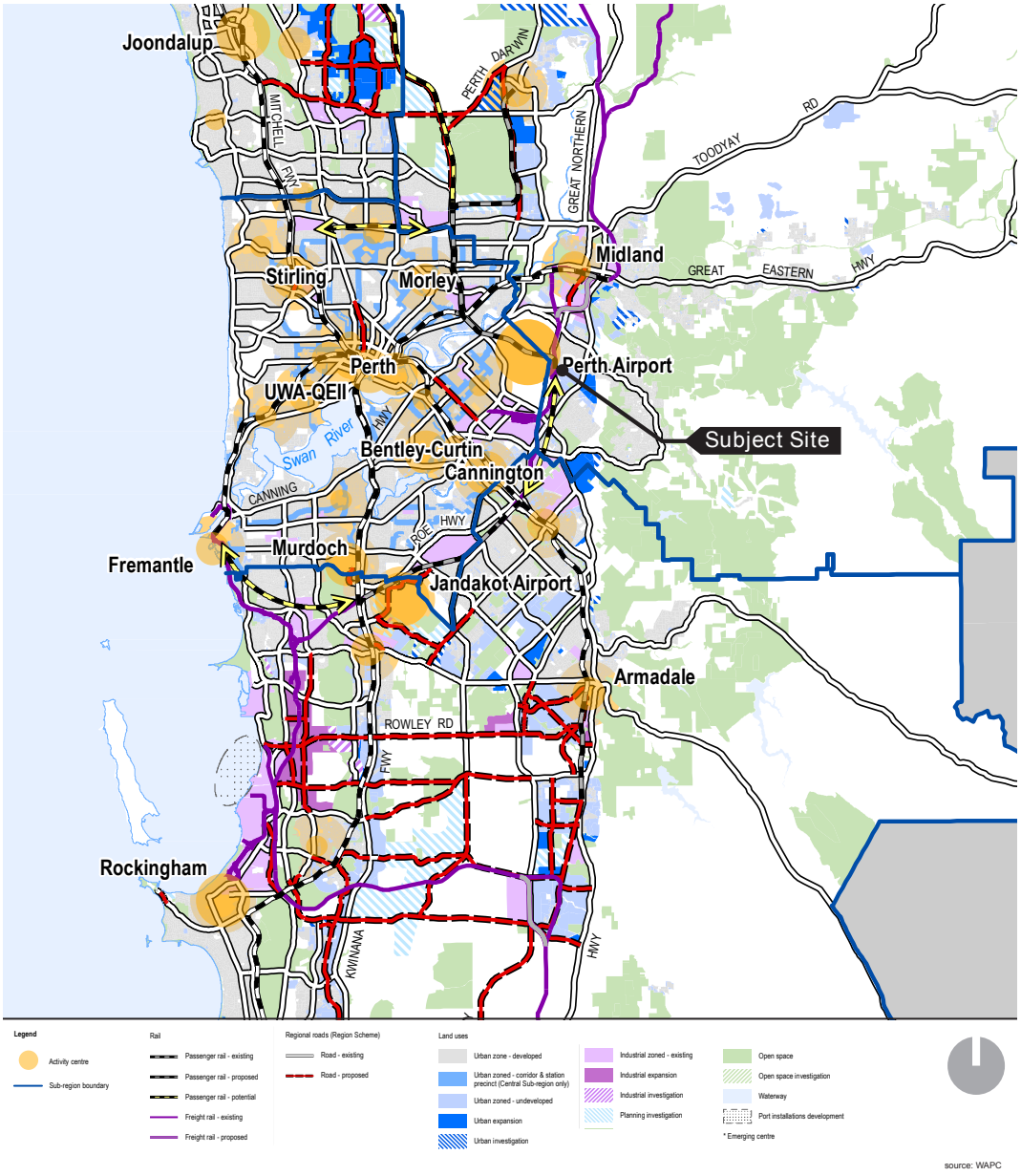


Figure 8. Perth and Peel @ 3.5 million Spatial Plan Extract

The integrated land use and movement network model produced identifies the need to plan land use around the movement network and prioritise infill development in these areas. The TOD ACP area is a prime example of a location which can be successfully planned and developed around a new train station to provide urban infill and fulfil objectives of the Plan.

1.3.2.3 North-East Sub-regional Planning Framework (March 2018)

The North-East Sub-regional Planning Framework (the Framework) is one of three frameworks prepared for the outer sub-regions of Perth and Peel that, combined with the draft Central Sub-regional Planning Framework, establish a long-term and integrated planning framework for land and infrastructure. The frameworks build upon the principles of Perth and Peel @ 3.5million and are key instruments for achieving a more consolidated urban form that will reduce dependence on new urban greenfield developments to accommodate the anticipated population growth by increasing residential density and urban infill development targets.

The frameworks are sub-regional structure plans that will provide guidance for:

- The preparation of amendments to the MRS and Peel Region Scheme, local planning strategies/schemes and district, local and activity centre plans; and
- The staging and sequencing of urban development to inform public investment in regional community, social and service infrastructure.

The framework identifies High Wycombe South, inclusive of the TOD ACP area as a proposed urban expansion area and indicates that the location immediately east of a train station represents an opportunity to achieve more intensive TOD.

Refer to Figure 9 – North East Sub-regional Planning Framework

The framework targets Kalamunda to gain an additional 11,450 infill dwellings and 25,190 new residents from those infill dwellings by 2050. A large amount of the infill will be occurring in and around station precincts and the urban corridors that come with the transport network. Under the framework, the classification of the centre surrounding Forrestfield Station is yet to be determined but it has been identified as having significant potential and is in close proximity to the Forrestfield District Centre.

1.3.2.4 Forrestfield North District Structure Plan

The Forrestfield North District Structure Plan (DSP) sets out the dominant land uses to be included in the area within and surrounding the TOD Precinct. The DSP is intended to be used by both State and local government as the basis for the preparation of precinct based local structure plans and to inform planning and development decisions across the Forrestfield North (now known as High Wycombe South) area. The TOD ACP includes both the Transit Oriented Development and Activity Centre Precincts as identified in the DSP.

Refer to Figure 10 – Forrestfield North District Structure Plan

The principal objectives of the DSP are to:

- Place Forrestfield North in its emerging regional context and identify any factors that might influence the future planning and development of the area;
- Confirm the role and function of Forrestfield North in the context of the State Government's metropolitan planning strategy, Directions 2031 and the North-East Sub-regional Planning Framework;
- Develop a spatial plan that defines planning and development precincts based on projected land use, and informs the preparation of local structure plans, planning scheme amendments, and statutory planning and development proposals;
- Identify existing environmental assets and district level water management considerations applicable to the area and to confirm what additional studies and investigations are necessary to support planning and development decisions;
- Consider the impacts of future development in Forrestfield North on the established transport network and identify what modifications may need to be made as part of a future staged development process to meet future development requirements; and
- Identify any key services and infrastructure constraints, and options for the coordinated delivery of additional capacity to the area.

The DSP reflects the State Governments announcement in 2014 regarding the development of the Forrestfield Airport Rail Link, including the High Wycombe Train Station at the western edge of the Forrestfield North area. This resulted in the Forrestfield North area being focused on the delivery of higher density forms of residential development not currently well represented in the City, a new activity centre to meet the needs of an expanding local population, and a commercially focused TOD Precinct based around the new High Wycombe Train Station.

The TOD ACP is a direct response to and intends to build upon the land use planning initiatives incorporated into the DSP, which will ensure that ongoing planning processes for the area are consistent with the intent and requirements of the DSP.

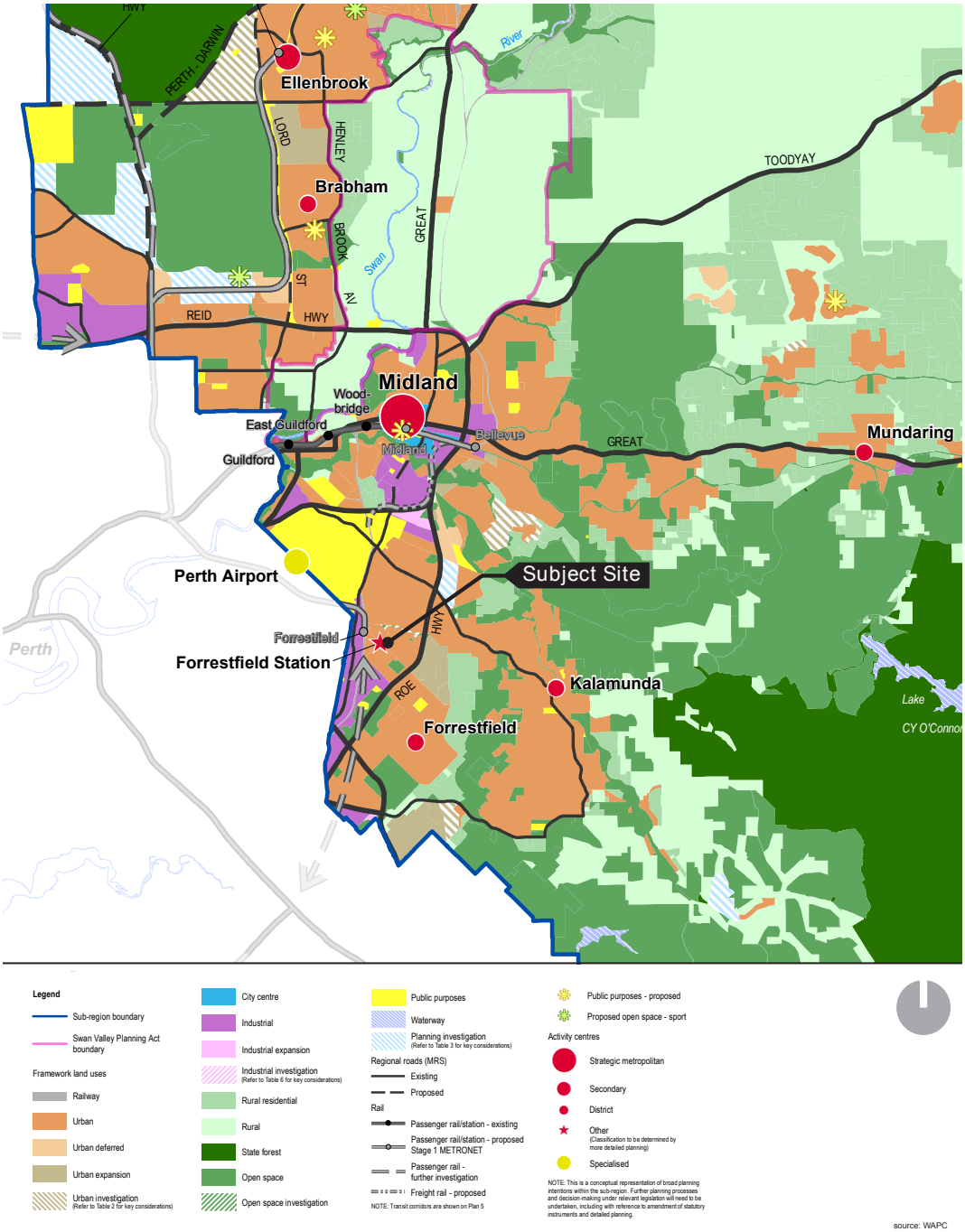


Figure 9. North East Sub-regional Planning Framework

element.

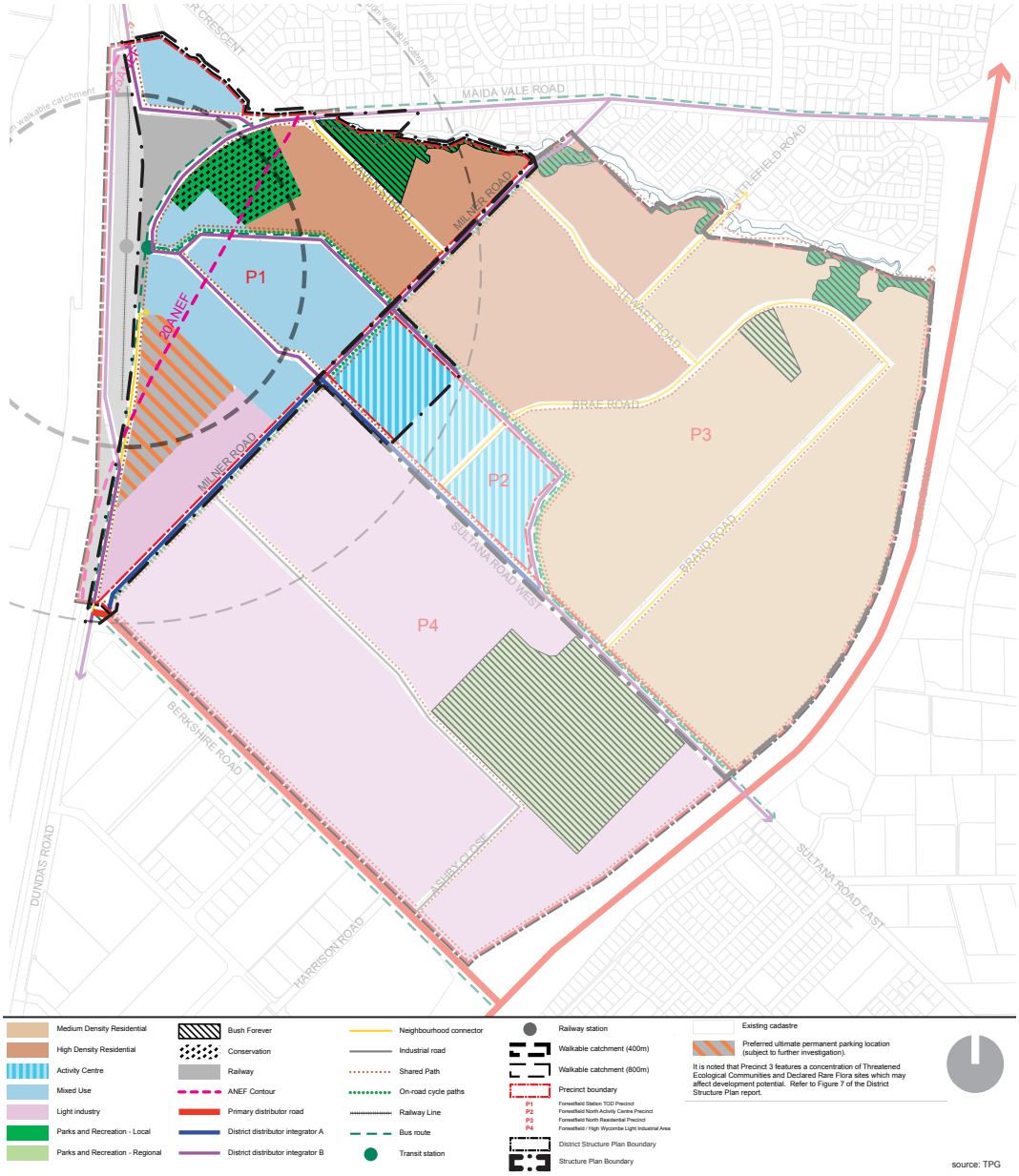


Figure 10. Forrestfield North District Structure Plan

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

The WAPC's Draft Outer Metropolitan Perth and Peel Sub-Regional Strategy formed an integral part of the Directions 2031 vision and was intended to provide guidance to assist with the application of Directions 2031 at the local level. It addresses issues that extend beyond local government boundaries and that require a regional response, as well as commonly shared issues such as the provision of housing choice, affordability and employment.

It identifies a strategic plan of actions, agency responsibilities and delivery timeframes and links State and local government strategic planning to guide the preparation and review of local planning strategies. The draft strategy informed the preparation of the City's Local Planning Strategy and will ultimately assist in the formulation of a new local planning scheme as outlined in the key planning actions required for the North-East Sub-region.

The development of High Wycombe South as envisaged under the TOD ACP will support achieving the housing targets as identified in Directions 2031 and associated planning and delivery of land for employment growth and economic development.

1.3.3 Planning Policies

As the proposed TOD ACP is subject to the requirements of the MRA Act and the METRONET East Redevelopment Scheme, State Planning Policies do not apply. Nevertheless the TOD ACP has been prepared with due regard for the following:

1.3.3.1 Western Australian Planning Commission State Planning Policy No. 2 – Environment and Natural Resources Policy

The WAPC's State Planning Policy No. 2 – Environment and Natural Resources Policy (SPP 2) acts as a broad overarching sectoral policy for environmental and natural resource planning in Western Australia and includes measures that identify those areas of high biodiversity and conservation value, such as Bush Forever sites. The protection of environmental assets in the TOD ACP area have been identified in accordance with SPP 2 requirements and have been a key consideration in the evolution of the design and management framework proposed in the TOD ACP.

Refer to the EAMS provided at Technical Appendix A for additional information.

1.3.3.2 Western Australian Planning Commission State Planning Policy No. 2.8 – Bushland Policy for the Perth Metropolitan Region

The WAPC's *State Planning Policy No 2.8 – Bushland Policy for the Perth Metropolitan Region* (SPP 2.8) provides an implementation framework for the protection and management of regionally significant bushland within the Perth Metropolitan Region, identified as Bush Forever sites. These areas are intended to secure the long-term protection of biodiversity and associated environmental values within the Perth Metropolitan Region.

The ACP identifies the Bush Forever sites within the area and seeks to integrate these within future development through the creation of dedicated environmental conservation areas and local open space. The preservation of Bush Forever sites and other environmentally significant sites has been a key consideration in the design and development of the ACP.

Refer to the EAMS provided at Technical Appendix A for additional information.

1.3.3.3 Western Australian Planning Commission Draft State Planning Policy 2.9 – Planning for Water

The WAPC's Draft *State Planning Policy 2.9 – Planning for Water* (SPP 2.9) aims to streamline and simplify the current water related policy framework. Once gazetted draft SPP 2.9 will supersede a range of existing water policies and guidelines. The intent of draft SPP 2.9 is to deliver greater clarity around how water related provisions are implemented. The TOD ACP aligns with draft SPP 2.9 through the consideration of appropriate water management design measures.

Refer to the EAMS provided at Technical Appendix A for additional information.

1.3.3.4 Western Australian Planning Commission State Planning Policy No. 3 – Urban Growth and Settlement

The WAPC's *State Planning Policy No. 3 – Urban Growth and Settlement (*SPP 3) applies throughout Western Australia and seeks to promote a sustainable and well planned pattern of settlement across the State, with sufficient and suitable land to provide for a wide variety of housing, employment, recreation facilities and open space.

The TOD ACP strategically locates areas of high density housing as well as commercial and mixed use areas in close proximity to the High Wycombe Train Station and represents an appropriate response to SPP 3 objectives. This includes:

- Locating higher density residential development in locations accessible to transport and services.
- Concentrating commercial and employment focussed uses in and around activity centres and corridors with good access to public transport.
- Protecting biodiversity.
- Clustering retail, employment and other activities that attract large numbers of people at major transport nodes.
- Directing urban expansion in a manner that will be well serviced by employment and public transport.
- Proposing an urban structure of walkable neighbourhoods clustered to reduce car dependence for access to employment, retail and community facilities.

1.3.3.5 Western Australian Planning Commission State Planning Policy 3.6 – Infrastructure Contributions

In WA, as in other Australian states, local governments face increasing pressures on the services they provide. These pressures arise from population and economic growth and increasing expectations of the community for new and upgraded infrastructure.

The WAPC's State Planning Policy 3.6 – Infrastructure Contributions (SPP 3.6) sets out the requirements and considerations for establishing development contributions for infrastructure that are required to support the orderly development of an area. It also aims to provide a consistent, accountable and transparent system for local governments to plan and charge for development contributions over and above the standard provisions through Development Contribution Plans (DCP's).

Requirements for and implementation of development contributions for the TOD ACP area have been specifically considered as part of the structure planning process for the TOD Precinct. Options include:

- The State prefunding items to enable future stages to proceed; and/or
- DevelopmentWA formulating this information into a detailed DCP with associated costings and apportionment arrangements set out for a designated DCA established under the METRONET East Redevelopment Scheme and which will ultimately be normalised into the City's LPS3.

1.3.3.6 Western Australian Planning Commission State Planning Policy No. 3.7 – Planning in Bushfire Prone Areas

SPP 3.7 intends to assist in reducing the risk of bushfire to people, property and infrastructure by taking a risk minimisation approach to development proposed in bushfire-prone areas.

A Bushfire Management Plan (BMP) has been prepared to support the TOD ACP design and has ensured an appropriate response to the associated risk of bushfire in the precinct through the careful design and layout of the area.

Refer to the BMP provided at Technical Appendix B for additional information.

1.3.3.7 Western Australian Planning Commission State Planning Policy No. 4.1. State Industrial Buffer

The purpose of the WAPC's State Planning Policy No.4.1 – State Industrial Buffer Policy (SPP 4.1) is to provide a consistent Statewide approach for the protection and long-term security of industrial zones, transport terminals (including ports) other utilities and special uses. The policy is intended to provide for the safety and amenity of surrounding land uses while having regard to the rights of landowners who may be affected by residual emissions and risk.

Based on current market indicators, projected demand and supporting locational factors, a portion of land in the southern part of the TOD ACP area is likely to be developed for light industrial purposes. This area has been placed adjacent to proposed commercial land to the north and existing light industrial development east of Milner Road. This is intended to provide a suitable land use buffer and transitional built form interface between the two land use types. This land use planning solution will ameliorate the impact of the industrial area to the mixed use and residential components of the TOD ACP area using commercial development as a buffer. Specific development provisions in Part One of the TOD ACP

stipulate specific siting requirements for the residential component of the development and when read in conjunction with the METRONET East Redevelopment Scheme, supporting design guidelines and the City's Local Planning Framework will ensure that any potential uses that could cause adverse amenity impacts on the remainder of the precinct are avoided.

1.3.3.8 Western Australian Planning Commission State Planning Policy No. 4.2 – Activity Centres for Perth and Peel

The WAPC's *State Planning Policy No. 4.2 – Activity Centres for Perth and Peel* (SPP 4.2) specifies the broad planning requirements for the planning and development of new activity centres and the redevelopment of existing centres in the Perth and Peel Regions. It mainly concerns the distribution, function, broad land use, urban design criteria and coordination of land use and infrastructure.

The TOD ACP reflects the aims of SPP 4.2 through locating high and medium density residential development along with mixed use, commercial and community purpose land uses immediately adjacent to the High Wycombe Train Station to the west. The TOD ACP actively encourages connection to the High Wycombe Train Station and with the development of the new activity centre will form a new component of the City's activity centres hierarchy to meet current and future population needs in terms of access to services, facilities and employment.

1.3.3.9 Western Australian Planning Commission State Planning Policy No. 5.1 – Land Use Planning in the Vicinity of Perth Airport

The general intent of the WAPC's *State Planning Policy No. 5.1 – Land Use Planning in the Vicinity of Perth Airport* (SPP 5.1) is to consider the planning of areas in close proximity of Perth Airport having regard to the impacts of aircraft noise with reference to the Australian Noise Exposure Forecast (ANEF).

The TOD ACP area is located two and a half kilometres to the west of Perth Airport. The northwest portion of the TOD ACP area is located between the 20 and 25 ANEF contour whilst the remainder of the TOD ACP area is outside of the ANEF 20 contour. Development within the 20 ANEF is subject to restrictions whilst that outside of the ANEF has no restriction on zoning or development.

In response to the ANEF contour and given that residents within the area are likely to be unaccustomed to aircraft noise, the Transportation Noise Assessment prepared in support of the ACP recommends as a minimum, all developments (residential and commercial) incorporate 6mm thick glass in external facades.

Any development containing noise sensitive parts, located west of the 20 ANEF, is to have an individual assessment undertaken by a suitably qualified acoustical consultant ensuring compliance with the internal design levels specified within AS2021.

Furthermore, any noise sensitive premises shall incorporate a notification on title as follows:

> *The property is situated in the vicinity of Perth Airport and is currently affected, or may be affected in the future by aircraft noise. Noise exposure levels are likely to increase in the future as a result of an increase in aircraft using the airport, changes in aircraft type or other operational changes.*

Refer to Transportation Noise Assessment provided at Technical Appendix C for additional information.

1.3.3.10 Western Australian Planning Commission State Planning Policy No. 5.4 – Road and Rail Noise

State Planning Policy No. 5.4 Road and Rail Noise (SPP 5.4) is produced by the WAPC and sets out the criteria relevant to road and rail noise. The objectives in SPP 5.4 are to:

- Protect the community from unreasonable levels of transport noise;
- Protect strategic and other significant freight corridors from incompatible urban encroachment;
- Ensure transport infrastructure and land-use can mutually exist within urban corridors;
- Ensure that noise impacts are addressed as early as possible in the planning process;
- Encourage best practice noise mitigation design and construction standards.

SPP 5.4 sets out criteria for the objective and permitted levels of outdoor noise in the vicinity of outdoor living areas. These criteria are detailed to achieve:

- acceptable indoor noise levels in noise - sensitive areas (e.g. bedrooms and living rooms of houses); and
- a 'reasonable' degree of acoustic amenity in at least one outdoor living area on each residential lot.

If a noise sensitive development takes place in an area where outdoor noise levels will meet the *target*, no further measures are required under SPP 5.4.

In areas where the *target* is exceeded, customised noise mitigation measures should be implemented with a view to achieving the *target* in at least one outdoor living area on each residential lot, or if this is not practicable, within the *margin* detailed in SPP 5.4. Where indoor spaces are planned to be facing outdoor areas that are above the *target*, mitigation measures should be implemented to achieve acceptable indoor noise levels in those spaces.

The Transportation Noise Assessment notes that the TOD ACP area will be affected by freight train noise, with some parts expected to be located within Exposure D. Where a noise sensitive development is shown to be within Exposure D, these will require an individual assessment undertaken by a suitably qualified acoustical consultant ensuring compliance with SPP 5.4.

Where a noise sensitive development is shown to be within Exposure A, A+, B+ or C+, the Quiet House Packages of SPP 5.4 Guidelines can be adopted or alternatively, an individual assessment undertaken by a suitably qualified acoustical consultant ensuring compliance with SPP 5.4.

Any noise sensitive premises shall incorporate a notification on title as follows:

> *This lot is in the vicinity of a transport corridor and is affected, or may in the future be affected, by road and rail transport noise. Road and transport noise levels may rise or fall over time depending on the type and volume of traffic.*

In relation to road traffic noise, whilst no parts of the TOD ACP area will be significantly affected by Roe Highway, where residences are located in close proximity (first row) to a road carrying reasonable volumes in 2050 (Dundas Road and Milner Road) a notification on title is required.

1.3.3.11 Development Control Policy No. 4.1 – Industrial Subdivision

The WAPC's *Development Control Policy No. 4.1 - Industrial Subdivision* (DC 4.1) is a State-wide policy that applies to the subdivision of industrial land and provides guidance on matters the WAPC considers when determining applications for industrial subdivision. There are a number of policy measures that are potentially relevant to future subdivision within the TOD Precinct including access and road layout, the provision of adequate infrastructure services, and the supply of appropriately sized and shaped lots.

As indicated previously, a portion of land in the southern portion of the TOD ACP area is likely to be developed for light industrial purposes to provide a suitable land use buffer and built form interface to future commercial uses to the north and residential and mixed-use development beyond. This land use planning solution is intended to ameliorate the impact of the proposed and existing industrial land use.

1.3.3.12 Western Australian Planning Commission State Planning Policy No. 7.2 – Precinct Design

The WAPC's *State Planning Policy 7.2 – Precinct Design* (SPP 7.2) provides a guide to the preparation and assessment of planning proposals for areas (such as TOD Activity Centre Precincts) that require a high level of planning and design. Read in conjunction with the draft Medium Density Codes and Design WA, SPP 7.2 requires a site specific, performance based approach to precinct design, supported by design review and a high level of community participation.

1.3.3.13 Western Australian Planning Commission State Planning Policy No. 7.3 – Residential Design Codes Volume 1

The WAPC's *State Planning Policy 7.3 – Residential Design Codes* (R-Codes) provide a comprehensive basis for the control of low and medium density residential development throughout Western Australia. The R-Codes aims to address emerging design trends, promote sustainability, improve clarity and highlight assessment pathways to facilitate better residential design outcomes. The TOD ACP has responded to the residential development opportunities and constraints that are associated with the area.

1.3.3.14 Western Australian Planning Commission State Planning Policy No. 7.3 – Residential Design Codes Volume 2 – Apartments

The WAPC's State Planning Policy No. 7.3 (SPP 7.3) Residential Design Codes Volume 2 – Apartments, is a policy for apartments and mixed-use developments coded R40 or higher. SPP 7.3 focuses on improved design outcomes for apartments. Policy objectives include providing residential development of an appropriate design for the intended residential purpose, land tenure, density, place context and scheme objectives.

Higher density residential development forms are proposed to locate within close proximity of and be well connected to the High Wycombe Train Station. Additional built form guidance is also being provided under the proposed METRONET East High Wycombe Project Area Design Guidelines to ensure positive outcomes.

1.3.3.15 Development Control Policy No. 1.6 – Planning to Support Transit Use and Transit Oriented Development

The WAPC's Development Control Policy DC1.6 – Planning to Support Transit Use and Transit Oriented Development (DC 1.6) seeks to maximise the benefits to the community of an effective and well used public transit system by promoting planning and development outcomes that will support and sustain public transport use.

This policy applies to all areas of the State, within transit precincts as defined under the policy, and is intended to inform government agencies, local government, landowners and prospective developers of the policy approach which will be applied by the WAPC.

The TOD ACP is intended to support future development at higher residential densities which is vital to the success of the overall TOD development. High density residential development has been strategically positioned to capitalise on the future public transport rail network which is set to service the area. This density, combined with the road structure, mixed use and commercial zones as well as likely light industrial development and uses, supports the objectives of DC 1.6, creating an active TOD outcome.

1.3.3.16 Operational Policy – Liveable Neighbourhoods

Liveable Neighbourhoods (LN) is the WAPC's operational policy guiding the design and approval of structure plans for green field sites. The objective of LN is the delivery of new developments that provide high quality living, working and recreational environments, thereby contributing to the successful implementation of State planning and sustainability targets. The TOD ACP is a direct response to the aspirational requirements of LN, and meets all of its principal aims.

1.3.4 Development Guidelines

1.3.4.1 Guidelines – Better Urban Water Management

The WAPC's planning guidelines for Better Urban Water Management have been prepared to facilitate the better management of our urban water resources by ensuring an appropriate level of consideration is given to the total water cycle at each stage of the planning system.

A detailed Local Water Management Strategy (LWMS) has been prepared for the TOD ACP area by Urbaqua and to support the preparation of the TOD ACP.

Refer to LWMS provided at Technical Appendix D for additional information.

1.3.4.2 Guidelines – Acid Sulfate Soils Planning Guidelines

The WAPC's planning guidelines for Acid Sulfate Soils (ASS) outline a range of matters to be addressed at various stages of the planning process to ensure that the development of land containing ASS is planned and managed to avoid potential adverse effects on the natural and built environment.

There is the potential that ASS may occur within the TOD ACP area, with the entire site being classified as having a 'moderate to low' risk of ASS. The impacts associated with ASS can be associated with the increase in acidity and/ or the release of heavy metals into the environment, resulting in a number of detrimental impacts. The impacts of ASS can be avoided through a number of methods that deal with the issue, which, if identified as being necessary, would be addressed in an ASS Management Plan at the time of development.

1.3.4.3 Guidelines for Planning in Bushfire Prone Areas

Prepared pursuant to SPP 3.7, the Guidelines for Planning in Bushfire Prone Areas set out a range of matters that need to be addressed at various stages of the planning process, to provide an appropriate level of protection to life and property from bush fires, and avoid inappropriately located or designed land use, subdivision and development on land where a bush fire risk is identified.

Bushfire considerations form an integral part of the TOD ACP design, particularly the use of roads and other design features to mitigate bushfire risk.

Refer to the BMP provided at Technical Appendix B for additional information.

1.3.4.4 Guidance – Assessment and Management of Contaminated Sites

The Department of Environment Regulation (DER) has prepared guidelines to assist with the assessment and management of contaminated sites in Western Australia within the legislative framework provided by the *Contaminated Sites Act 2003* and the *Contaminated Sites Regulations 2006.* Section 2.4 of this ACP provides details of potentially contaminating activities within the TOD ACP area.

1.3.4.5 Environmental Protection Authority Guidance

The Environmental Protection Authority (EPA) have prepared EPA Environmental Protection Bulletin 20 (EPB20) and EPA Guidance Statement 33 – Environmental Guidance for Planning and Development (GS33).

The main purpose of GS33 is to provide information and advice to assist participants in land use planning and development processes to protect, conserve and enhance the environment. EPB20 sets out the views of the EPA relating to the design of urban and peri-urban proposals in order to protect naturally vegetated areas.

1.3.5 Local Planning Framework

1.3.5.1 City of Kalamunda Local Planning Strategy

The City has developed a comprehensive local planning strategy to guide the future evolution of the district. The Local Planning Strategy was endorsed by the WAPC in February 2013.

In response to WAPC strategic planning direction at the time including the Kewdale Hazelmere Integrated Masterplan (KHIM) and Economic and Employment Lands Strategy (EELS), a key element of the Local Planning Strategy was the identification of additional industrial lands for further investigation in High Wycombe South as part of the Forrestfield/ High Wycombe Light Industrial Area.

This thinking pre-dated the announcement of the Forrestfield Airport Rail Link, which necessitated the re-thinking of the optimal planning outcomes for this area, resulting in the preparation of the DSP and ultimately the TOD ACP for the TOD and Activity Precincts as identified under the DSP.

1.3.5.2 City of Kalamunda draft Local Biodiversity Strategy

The City's draft Local Biodiversity Strategy has been developed in anticipation of future development encroaching into natural assets. The strategy aims to strategically plan natural area protection so that biodiversity conservation is incorporated into the City's planning and decision-making processes. At the time of writing, the City of Kalamunda is in the process of updating their Local Biodiversity Strategy.

The Local Biodiversity Strategy identifies ecological linkages within or adjacent to the High Wycombe South area running east-west along Poison Gully Creek. It also states that there are opportunities to protect natural areas in public open space contributions within High Wycombe South.

The environmental outcomes depicted in the TOD ACP are an appropriate response to the objectives of the City's Local Biodiversity Strategy.

1.3.5.3 City of Kalamunda Environmental Land Use Planning Strategy

The City's Environmental Land Use Planning Strategy was adopted by the City in July 2019. The aim of the strategy is to report on the status of current natural environmental factors and influences in the City and to develop strategies to enhance and improve biodiversity and promote sustainable planning practices which are sensitive and complementary to the existing natural ecosystem.

Objectives include:

- To manage natural resources, land use, and development proposals to maintain the health and viability of geological soil systems in coordination with other ecosystem functions.
- To adapt to predicted climate change effects and maintain and improve the safety of residents from bushfire events.
- To protect and enhance waterways, wetlands and the groundwater and ensure sustainable use and management of water resources.
- To preserve, enhance, connect, and rehabilitate natural areas and protect biodiversity values.
- To improve the connectivity of existing green spaces and maintain and enhance urban soil, air and water quality.
- To identify and protect natural areas of Aboriginal cultural significance and local heritage value.

The strategy acknowledges the Forrestfield Airport Link project and that the area surrounding the future High Wycombe Train Station is designated to become a transit oriented development and key activity centre for the City. The TOD ACP area and adjacent Residential Precinct are bordered by Poison Gully Creek, Roe Highway, and Berkshire Road and contain some areas of high natural significance including Bush Forever sites and managed local reserves and some environmentally sensitive areas.

The activity centre plan preparation process has considered the significant environmental challenges in protecting the ecological values of the area, particularly the conservation of existing Wavy-leaved Smoke Bush.

1.3.5.4 City of Kalamunda draft Urban Forest Strategy

The City of Kalamunda has prepared a draft Urban Forest Strategy which has been developed in response to the annual loss of tree canopy resulting from residential and industrial development. The draft Urban Forest Strategy sets targets for both retention and improvements in tree canopy coverage within the City by 2028, via a series of agreed actions.

1.3.5.5 High Wycombe South Residential Precinct Local Structure Plan

The High Wycombe South Residential Precinct Local Structure Plan area encompasses the land generally bound by Poison Gully Creek, Roe Highway, Sultana Road West and Milner Road. The LSP area is located to the south east of the TOD ACP area and High Wycombe Train Station. The LSP is a considered response to the constraints presented by the Residential Precinct. The LSP comprises the following key elements:

- Seven separate development cells to assist with land assembly and project delivery, defined by key road infrastructure and a public open space network delivered under a development contribution plan.
- Nine public open space areas, including the town park and sporting precinct.
- Thirteen environmental conservation areas.
- Seven designated drainage areas forming part of the public open space network.
- New connecting roads (TOD connector) and structuring roads to assist future land assembly and project delivery.
- A future overpass across Roe Highway.
- A primary school site co-located with district open space as part of a combined education and sporting precinct.
- Residential development ranging in density from Residential R40 to Residential R100 with densities increasing as you move west through the precinct towards the High Wycombe Train Station.

1.3.5.6 City of Kalamunda Local Planning Policies

A number of the City's policies and/or procedures were considered in the preparation of the TOD ACP. The City's operational policies and procedures can be accessed via the following link: kalamunda.wa.gov.au/council/governance/local-policy.

2. Site Conditions and Constraints

2.1 Biodiversity and Natural Area Assets

A detailed Environmental Assessment and Management Strategy (EAMS) has been prepared for the TOD ACP area by Strategen–JBS&G. The objectives of the EAMS is to:

- Describe the environmental and heritage values within the precinct and surroundings based on existing information.
- Identify potential opportunities to secure, protect and manage the significant environmental values on site and present management requirements.

To ensure that an integrated approach is developed for the precinct area the EAMS has been prepared in parallel with the LWMS and BMP.

Refer to EAMS provided at Technical Appendix A and BMP provided at Technical Appendix B

Key issues highlighted by the EAMS include:

- Protection of remnant vegetation and the creek and foreshore between Dundas Road and Milner Road, in particular the open space adjacent to the Dundas Road crossing;
- Improvement and restoration of water flow and water quality within Poison Gully Creek to reflect the waterways original state;
- Poison Gully Creek as a place of significant value and its relationship to other significant areas such as Munday Swamp and Allawah Grove.
- Maintaining continuing access to and control of the land by its traditional owners and custodians; and
- Providing linkages between the Forrestfield North DSP area and the surrounding landscape.

The EAMS incorporates a Management Strategy which sets out a range of management actions in order to achieve objectives related to landform, hydrology, biodiversity and natural assets, bushfire risk, heritage and culture as well as the associated timing and responsibility for each action.

Refer to Figure 11 – Opportunities and Constraints

Refer to EAMS provided at Technical Appendix A for additional information.

2.1.1 Flora and Vegetation

Vegetation occurring within the region was initially mapped at a broad scale (1:1 000 000) by Beard during the 1970s. This dataset has formed the basis of several regional mapping systems, including physiographic regions defined by Beard (1981) which led to the delineation of botanical districts as described in Beard (1990): the biogeographical region dataset (Interim Biogeographic Regionalisation for Australia, IBRA) for Western Australia and System 6 Vegetation Complex mapping undertaken by Heddle et al. (1980). The site is located within the Swan Coastal Plan 2 (SWA2) bioregion.

Beard (1980) vegetation association mapping indicates that the precinct resides within Bassendean 1001 (medium, very sparse woodland or low woodland of Jarrah, Banksia, and Casuarina) and Bassendean 1018 (medium forest, low forest, or low woodland comprised of Jarrah/Marri, Banksia, Teatree, and Casuarina obesa). An estimated 22.05% of the pre-European extent of Bassendean 1001 currently remains within the Swan Coastal Plain IBRA region (GoWA 2019a). This is estimated at 17.39% for the Bassendean 1018 association (GoWA 2019b).

Heddle et al (1980) broadly mapped vegetation complexes across the Swan Coastal Plain. The TOD Precinct comprises the Southern River Complex and is described as 'open woodland of Eucalyptus calophylla (now *Corymbia calophylla*) – *E. marginata – Banksia spp.* with fringing woodland of *E. rudis – M. rhaphiophylla* along creek beds' (Heddle et al 1980).

Refer to Figure 12 – Flora and Vegetation (JBSG)

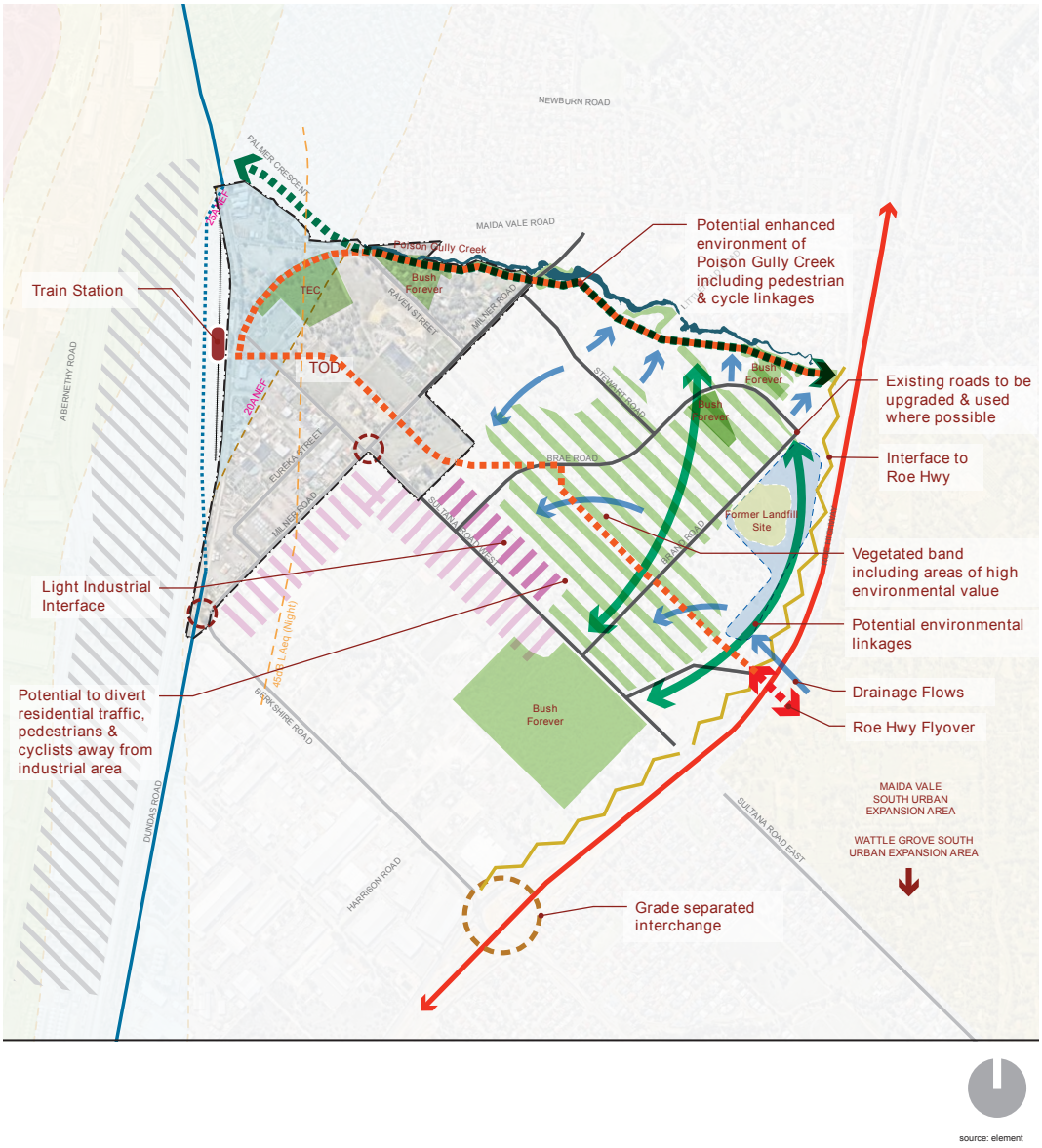


Figure 11. Opportunities and Constraints Mapping

element.

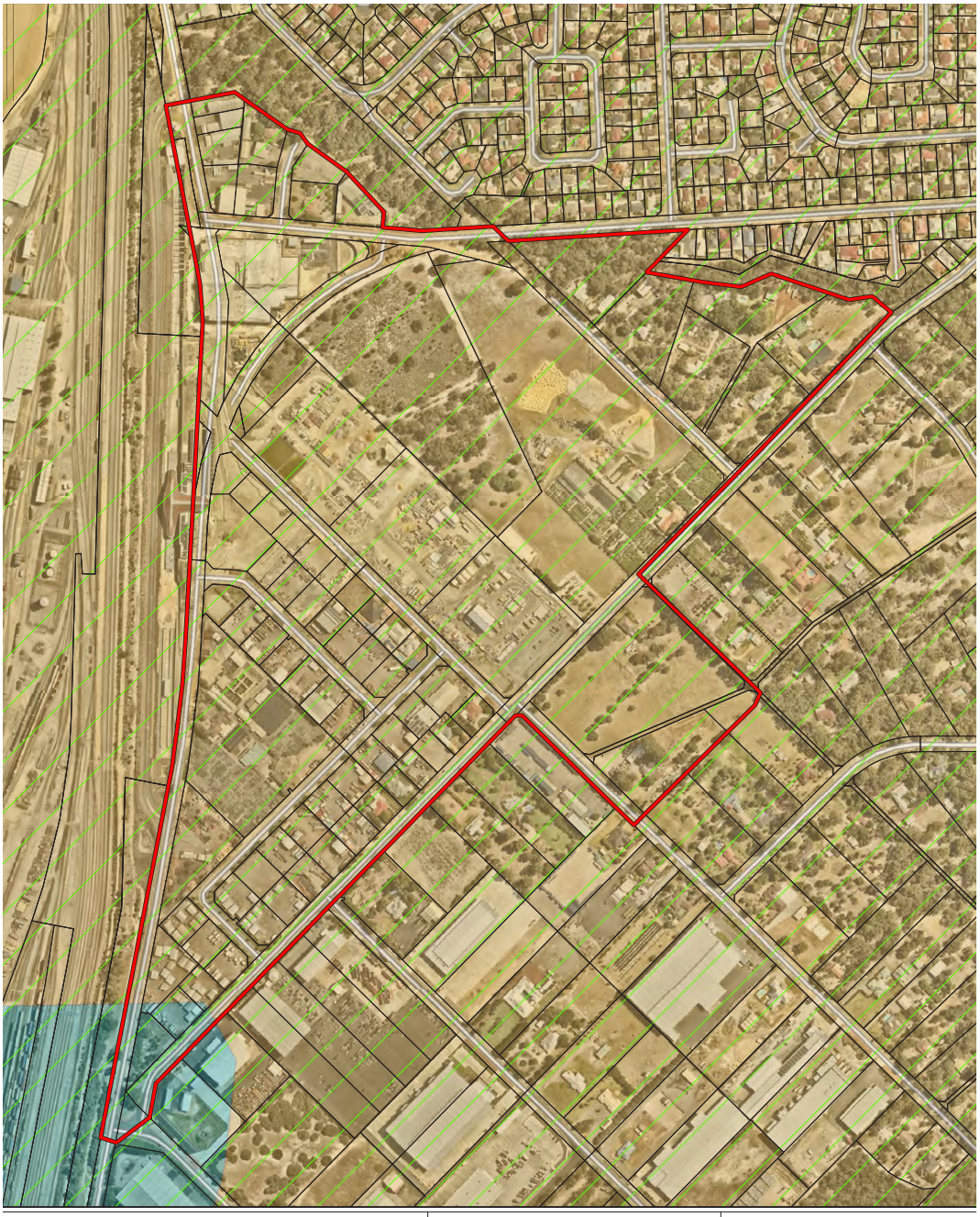


Figure 12. Flora and Vegetation (JBSG)

2.1.1.1 Vegetation Communities, Condition and Flora

The TOD ACP areas comprises three vegetation types (AfXpHh, CcVdHa and trees) as depicted on Figure 13.

Refer to Figure 13 – Vegetation Units (JBSG)

The vegetation condition within the project area ranges from 'Completely degraded' (1.12ha; 28.53%) to 'Excellent' (1.17ha; 29.75%).

Refer to Figure 14 – Vegetation Condition (JBSG)

2.1.1.2 Threatened Ecological Communities

PGV Environmental (2021) describe the vegetation type of CcVdHa as being representative of FCT 20a *'Banksia attenuata* woodlands over species rich dense shrublands' which is a State Listed Threatened Ecological Community (TEC). The TOD ACP area is identified as containing 2.67 hectares of State Listed TEC (FCT 20a).

Refer to EAMS provided at Technical Appendix A for additional information.

2.1.1.3 Weed (Introduced) Taxa

AECOM (2017) recorded two locations of *Zantedeschia aethiopica* within the TOD Precinct. *Z. aethiopica* is listed as a Declared Pest plant species in Western Australia pursuant to section 22 of the *Biosecurity and Agriculture Management Act 2007* (BAM Act). These locations are within and immediately south of Poison Gully Creek at the north of the TOD Precinct.

2.1.1.4 Dieback

A Dieback *(Phytophthora cinnamomic)* survey has not been completed for the precinct. It was noted during the AECOM (2017) survey that no visual evidence of dieback existed within the DSP area (based on the health of Xanthorrhoea, Banksia and Eucalyptus species).

2.1.2 Fauna

A Level 1 Fauna Assessment conducted in accordance with EPA Guidance Statement No. 56 (EPA 2004b) was completed by AECOM (2017) for the DSP area. Within the TOD Precinct, AECOM (2017) identified the site as containing foraging habitat for Quenda (State listed Priority 4 species), Carnaby's Cockatoo (State and Commonwealth listed Threatened species) and Forest Red-tailed Black Cockatoo (State and Commonwealth listed Threathened species). RPS Environmental (2021) also consider the site suitable for foraging by Baudin's Cockatoo. The site may also provide habitat for additional native fauna.

AECOM (2017) recorded evidence of Forest Red-tailed Black Cockatoo as well as Quenda.

2.1.2.1 Black cockatoo habitat

Carnaby's Cockatoos feed on the seeds, nuts, and flowers of a variety of native and introduced plant species and insect larvae (DEE 2017b). Food plants generally occur within proteaceous genera such as Banksia, Dryandra, Hakea and Grevillea, though are known to forage on Eucalypt species in woodland areas. Carnaby's Cockatoo have also adapted to feeding on exotic species such as pines and cape lilac and weeds such as wild radish and wild geranium (DEE 2017b).

Breeding hollows utilised by the species are usually a minimum of two metres above ground level, with a hollow depth of at least 0.25 metres (DEE 2017b). Distribution mapping for the species is available through DSEWPaC (2012) which outlines the likely breeding and non-breeding range. Based on this mapping, the TOD Precinct is within the Carnaby's Cockatoo breeding range.

Forest Red-tailed Black Cockatoos, listed as Vulnerable under the EPBC Act, depend primarily on Marri and Jarrah trees for both foraging and nesting. The seeds of both eucalypts are the favoured food source of the birds, and they will nest within the hollows or alive or dead individual trees (Johnstone and Kirkby 1999).

2.1.2.2 Quenda

The preferred habitat for the Quenda (*Isoodon obesulus*) usually consists of a combination of sandy soils and dense heathy vegetation (AECOM 2017). The species was recorded via scats and diggings within the TOD Precinct area, with observations constrained to within the 'Heath' fauna habitat type of Lot 12 (AECOM 2017). Based on this, 2.78 ha of Quenda habitat exists within the TOD Precinct.

element.

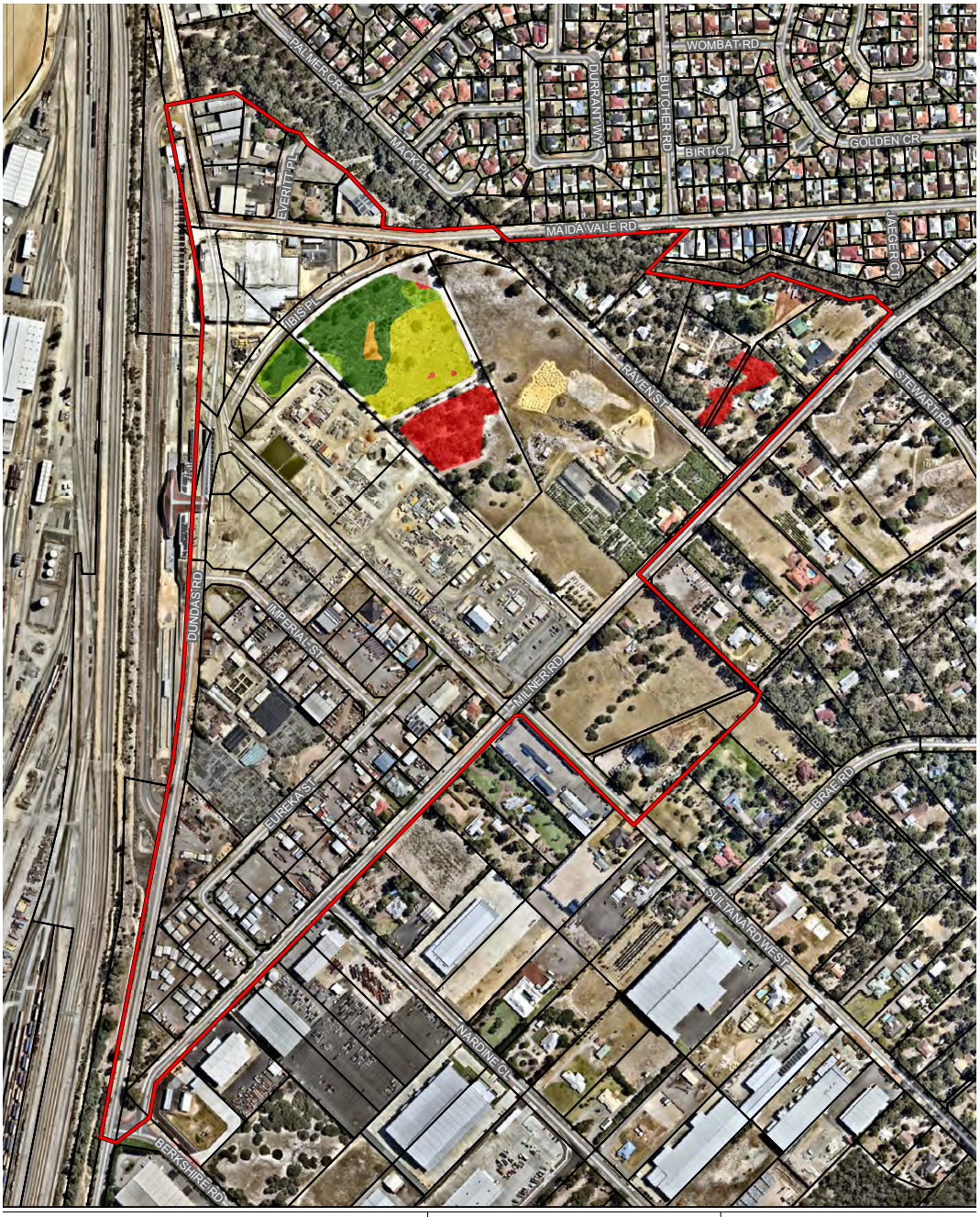
Legend
- Project area
- Cadastral boundary

Vegetation type
- AfXpHh (0.31 ha)
- CcVdHa (2.50 ha)
- Trees (1.10 ha)
- Roads (MRWA)

Scale 1:6,500 at A4	0 50 100 metres	Forrestfield North TOD Precinct Perth, WA
Coord. Sys. GDA 1994 MGA Zone 50		VEGETATION TYPES
Job No: 57806		
Client: Element		FIGURE 2.6
Version: A	Date: 11-Apr-2021	strategen JBS&G
Drawn By: cthatcher	Checked By: HS	

Figure 13. Vegetation Units (JBSG)

35



Legend:
- Project area
- Cadastral boundary

Vegetation condition
- Very good
- Good
- Excellent
- Degraded
- Completely degraded
- Roads (MRWA)

Scale 1:6,500 at A4	0 50 100 metres	Forrestfield North TOD Precinct Perth, WA
Coord. Sys. GDA 1994 MGA Zone 50		VEGETATION CONDITION
Job No: 57806		
Client: Element		FIGURE 2.7
Version: A	Date: 11-Apr-2021	strategen JBS&G
Drawn By: ctatcher	Checked By: HS	

Figure 14. Vegetation Condition (JBSG)

2.1.3 Habitat Assessment

2.1.3.1 Foraging

Foraging habitat for Black Cockatoo species within the TOD Precinct was mapped by AECOM (2017). 3.60ha of 'valued' habitat for Carnaby's Cockatoo and 3.60 ha of 'quality' habitat for Forest Red-tailed Black Cockatoo exists within the TOD Precinct. RPS Environmental (2021) consider foraging habitat within Lot 12 to be confined to Marri trees (six identified within the lot) and Proteaceous species.

2.1.3.2 Roosting

Black Cockatoo roosting habitat is generally found in or near riparian vegetation close to fresh water and is typically comprised of the tallest trees in these areas (AECOM 2017). Whilst no roost sites were confirmed within the TOD Precinct, there are two confirmed roost sites used by Forest Red-tailed Black Cockatoos within the Residential Precinct area, approximately 300 metres from the boundary of the TOD Precinct.

2.1.3.3 Breeding

Breeding habitat for Black Cockatoos is defined by DESWPaC (2012) as trees of a species known to support breeding. A total of 47 potentially significant habitat trees with a diameter at breast height (DBH) greater than 500 mm were recorded within the TOD Precinct area with a further 411 located within the adjacent Residential Precinct area (AECOM 2017).

None of the trees were reported to contain potentially suitable hollows and, as such, the project area does not support breeding (RPS Environmental 2021). A summary of the potentially significant habitat trees recorded within the TOD Precinct and entire DSP area is provided in Technical Appendix A.

2.1.4 Bush Forever and Local Natural Areas

Bush forever site No. 45 Poison Gully Bushland runs along the northern cadastral boundary of the precinct and extends into Lots 1353, 104 and 103. Additionally, Bush Forever site 123 is located approximately 500 metres south east of the TOD Precinct.

The EPA have advised that this area is recognised as Bush Forever and Ecological Conservation. The status of the Bush Forever sites is under investigation. Any proposed clearing within Bush Forever sites is required to be offset in accordance with SPP 2.8.

2.1.5 Ecological Linkages

According to Del Marco et. al (2004) the importance of ecological linkage is to connect natural areas, preferably with continuous corridors of native vegetation, which assists with fauna movement between the areas and to access resources and habitats. The protection, management and buffering of existing natural areas within an ecological linkage is a higher priority than revegetation of cleared portions of the link. The TOD Precinct overlaps a mapped east – west Regional Ecological Linkage (WALGA 2004) associated with Poison Gully Creek. The core, vegetated portion of the mapped linkage is within Bush Forever site 45, which will be maintained within the Poison Gully Creek foreshore reserve. Furthermore, streetscaping throughout the precinct will assist with fauna movement and linkages, as will the retained Resource Enhancement Wetland which will help provide a 'stepping stone' for fauna movement.

2.1.6 Environmentally sensitive areas

Environmentally Sensitive Areas (ESAs) are areas that have been identified for protection given their environmental significance as outlined in the Western *Australian Environmental Protection (Environmentally Sensitive Areas) Notice 2005,* which was gazetted on 8th April 2005.

Exceptions offered for clearing under Regulation 5 of the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004* do not apply within ESAs. ESAs are protected under the EP Act, and include the following:

- World Heritage areas
- Areas included on the National Estate Register
- Defined wetlands and associated buffers
- Vegetation within 50 metres of a listed threatened species
- Bush Forever sites
- TECs

A mapped ESA intersects the TOD Precinct, which is associated with a TEC and its buffer (EDA ID 116826).

Based on the findings of AECOM (2017) and RPS Environmental (2021) this is considered to be linked with the occurrence of SCP 20a within Lot 12, which has been found not to meet the criteria as representative of the Banksia Woodland TEC due to the absence of key Banksia species.

2.1.7 Wetlands and Watercourses

A search of the Geomorphic Wetlands of the Swan Coastal Plain Database shows that the site contains four wetland areas, three of which are Resource Enhancement Wetlands (REW) and one is a Multiple Use Wetland (MUW).

REWs are considered as priority wetlands where they have been partially modified but still support substantial ecological attributes and function. The ultimate objective is to manage, restore and protect towards improving their conservation value. No unauthorised development is permitted within a REW. A generic wetland buffer to protect the wetlands ecosystem is usually associated with a REW, however a site buffer assessment can be undertaken to determine the buffer widths (EPA 2008).

Specifically, one REW (UFI 15880) is associated with Poison Gully Creek, another (UFI 15875) is contained within lot 12, and the third (UFI 15876) is located just beyond the western boundary of the site (however its associated buffer impacts the site). Following discussion with the City and Development WA, it is considered likely that UFI 15875 will be reclassified as a Conservation Category Wetland (CCW) due to the high ecological value of the wetland. As such, a 50-metre buffer has been applied to the north east and a buffer in excess of 50 metres to the south east, which encompasses identified existing remnant vegetation within Lot 12. UFI 5880 is associated with the assessed Poison Gully Creek foreshore reserve and as such the conservation of this wetland has been addressed by the foreshore area.

MUWs are the lowest management category assigned to wetlands by DWER, and are generally considered appropriate for development, provided the hydrological regime is not disturbed (EPA 2008). None of the other wetlands within or adjacent to the project area are considered to be suitable for retention such that they require the provision of land for conservation or management.

Refer to EAMS provided at Technical Appendix A for additional information.

2.1.8 Legislation, Policies and Guidelines

2.1.8.1 Federal

The *EPBC Act* is administered by the Department of the Environment and Energy (DEE). The EPBC Act aims to protect and manage nine Matters of National Environmental Significance (MNES) throughout Australia including:

- World Heritage Properties
- National Heritage Places
- wetlands of international importance (listed under the Ramsar Convention)
- listed threatened species and ecological communities
- migratory species protected under international agreements
- Commonwealth Marine Areas
- the Great Barrier Reef Marine Park
- nuclear actions (including uranium mines).

The MNES applicable for the TOD Precinct are listed threatened species and ecological communities:

- Banksia Woodlands of the Swan Coastal Plain TEC as associated with Lots 9 and 12 Ibis Place; and
- Low to moderate quality Black Cockatoo habitat (limited distribution).

Under the EPBC Act an action that could be a significant impact on any MNES in accordance with the Significant Impact Guidelines 1.1 – Matters of National Significance (Department of the Environment, Water, Heritage and the Arts, 2013) should be referred to the DEE for assessment by the Minister.

2.1.8.2 State and Local Legislation

Applicable legislation includes the *Environmental Protection Act 1986* (EP Act), the *Planning and Development Act 2005* (PD Act) and *Planning and Development (Local Planning Schemes) Regulations 2015* (PD Regulations).

Other relevant State legislation and local strategies, local planning policies and by-laws relevant to the management of the TOD Precinct are provided in the EAMS.

Refer to EAMS provided at Technical Appendix A for additional information.

2.2 Landform and Soils

2.2.1 Existing Topography, Soils and Geology

The topography of the precinct ranges from approximately 28 metres Australian Height Datum (AHD) along the south-western boundary to approximately 36 metres AHD in the north-eastern corner. Topographic contours for the site are shown in Figure 15.

Refer to Figure 15 – Topography, Geology and Soils (JBSG)

Geological soil unit mapping indicates that the site is characterised by sand and pebbly silt, consisting of:

- S10: Thin layer of sand – very light grey at surface, yellow at depth, fine to medium grained, sub-rounded quartz, moderately well sorted, of eolian origin over alluvial silts and sands of the Guildford formation
- MGS1: Pebbly silt – yellow, fine to medium grained, sub-angular to rounded quartz, with some feldspar, well sorted, variable silt content, of colluvial origin (Gozzard 1986).

The site is mapped as within the Pinjarra Gf5 and Gf9 phases, described as:

- Pinjarra Phase Gf5: Incised drainage channels with poorly drained gradational mottled yellow earths. Shrubland of Melaleucas and other low shrubs.
- Pinjarra Phase Gf9: Minor sandy rises (aeolian deposits) with moderately deep well drained sands overlying gravelly mottled clay.

2.2.2 Acid Sulfate Soils

Acid Sulfate Soils (ASS) are naturally occurring, iron-sulphide rich soils, sediments or organic substrates, formed under waterlogged conditions. If exposed to air, these sulphides can oxidise and release sulphuric acid and heavy metals. This process can occur due to drainage, dewatering or excavation.

Review of regional mapping indicates that the precinct has a low to moderate risk of ASS occurring within 3 metres of natural soil surface (Class 2) (DER 2015). The nearest high to moderate risk of ASS occurring within 3 metres of natural soil surface is approximately 200 metres south east of the TOD Precinct (refer to Figure 16).

Refer to Figure 16 – Acid Sulfate Soils (JBSG)

2.3 Groundwater and Surface Water

A District Water Management Strategy (DWMS) was prepared by Strategen-JBS&G (2015) for the DSP area and approved by the Department of Water (DoW) (now Department of Water and Environmental Regulation – [DWER]) and the City. The DWMS provides guidance on groundwater management, water sources for POS and sizing of stormwater systems.

A LWMS has been prepared by Urbaqua (2021). The LWMS is consistent with regional and district scale urban water management planning, including the State Water Plan (DPC 2007) as well as State Planning Policy 2.9 Water Resources (WAPC 2006). The LWMS aims to meet the principles and objectives of stormwater management in Western Australia, as detailed in the Stormwater Management Manual for Western Australia (DoW 2007).

Refer to LWMS provided at Appendix D for additional information.

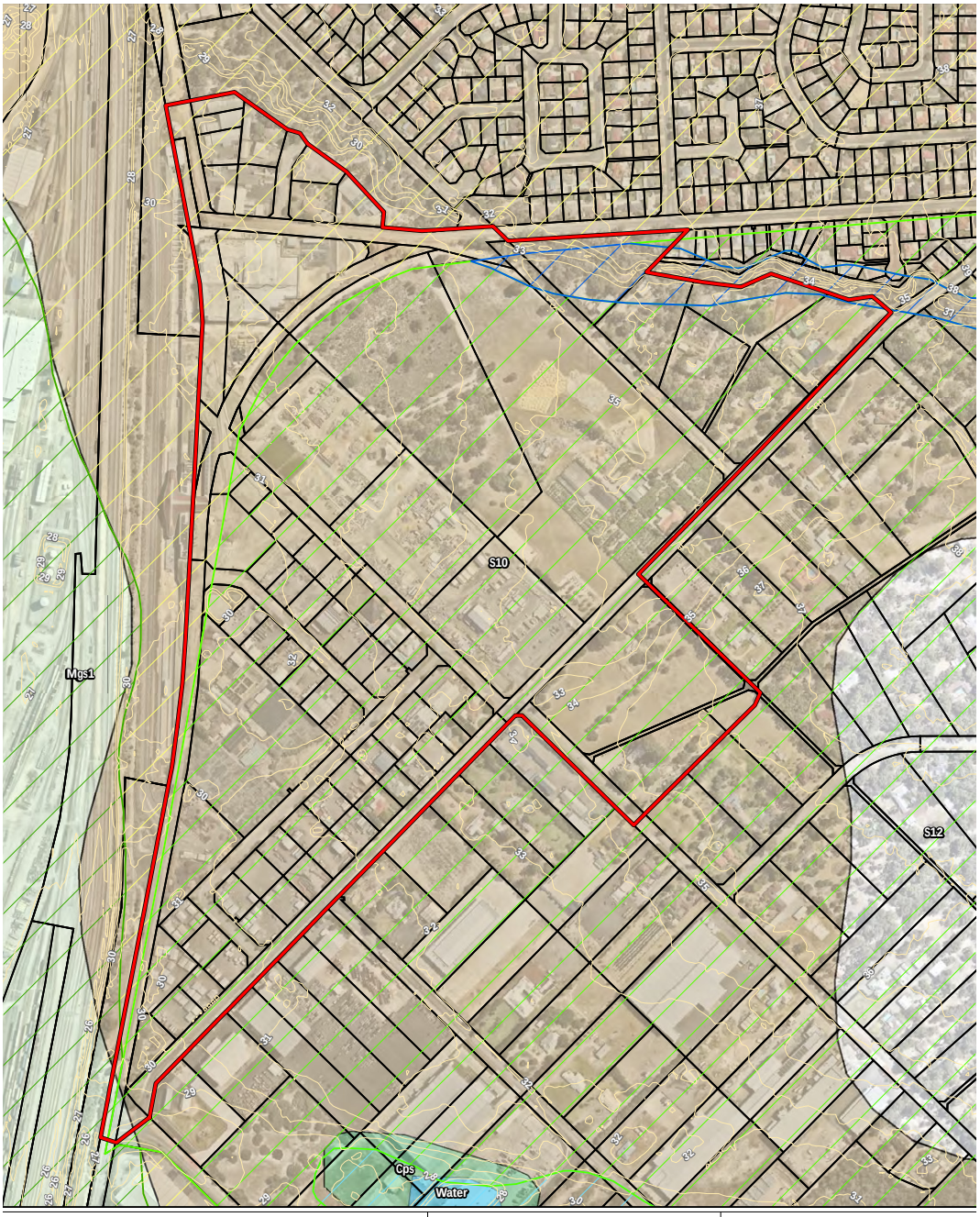
2.3.1 Groundwater

There are three aquifers underlying the DSP area; each assigned the name of the major geological unit in which the aquifer occurs (DWER 2017). In descending order of depth from natural surface they are:

- Superficial Aquifer (unconfined)
- Leederville Aquifer (confined)
- Yarragadee North (confined)

Groundwater flow is in a westerly direction through the Project area. Groundwater levels within the TOD Precinct range from 26.8 metres AHD to 33.9 metres AHD (refer to Figure 17), with a depth to groundwater of over 15 metres (Urbaqua 2021). The presence of low permeability material (clayey sand) results in shallow, perched groundwater in parts of the site.

Hydrogeological features of the DSP area are dominated by surface water/groundwater interactions resulting in variable groundwater gradients and flow directions across the site (EMRC 2013). The local groundwater flow appears to be influenced by a combination of geology and drainage systems to the west and northwest of the site such as localised recharge features associated with industrial areas, Perth Airport, and new developments (EMRC 2013).



Legend

- Project area
- Cadastral boundary
- Topographic contours (mAHD)

Geology 1:50,000

- Cps
- Mgs1
- S10
- S12
- Water

Soil landscape mapping (DPIRD)

- 213Pj__Gf5
- 213Pj__Gf9
- 213Pj__Mgs1
- 213Pj__S10
- 213Pj__Ya3

Scale 1:6,500 at A4 (0 50 100 metres)		Forrestfield North TOD Precinct Perth, WA
Coord. Sys. GDA 1994 MGA Zone 50		TOPOGRAPHY, GEOLOGY AND SOILS
Job No: 57806		
Client: Element		FIGURE 2.1
Version: A	Date: 11-Apr-2021	strategen JBS&G
Drawn By: cthatcher	Checked By: HS	

Figure 15. Topography, Geology and Soils (JBSG)

element.

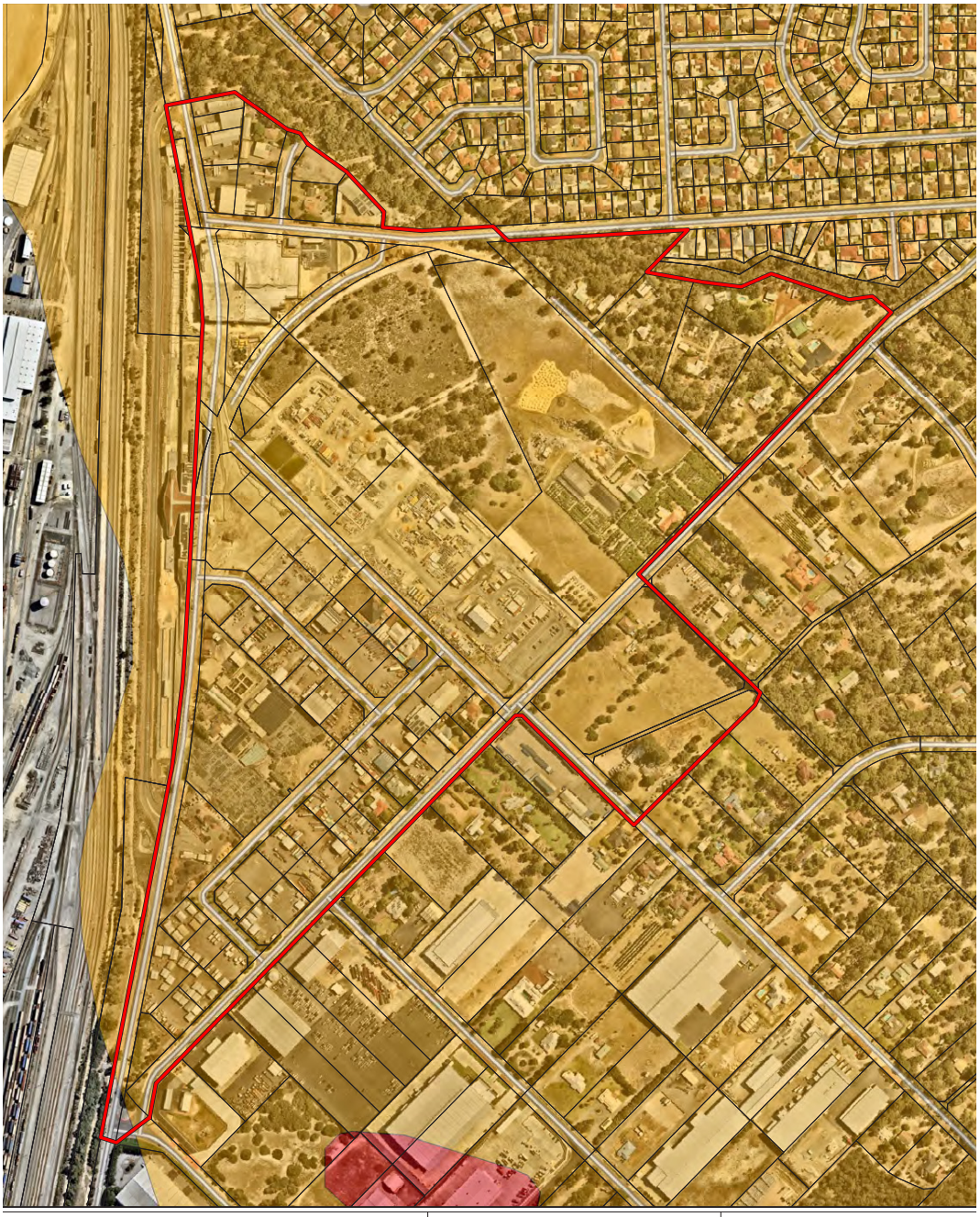


Figure 16. Acid Sulfate Soils (JBSG)

41

Four monitoring bores are located within the Project area (MB01, MB07, MB08 and MB09), with groundwater quality monitoring undertaken by Strategen–JBS&G (2012). Across the DSP area, groundwater is generally slightly acidic, with pH ranging between 5.97 to 6.35 (Strategen–JBS&G 2012). Groundwater is fresh with a mean electrical conductivity (EC) level of 0.345 mS/cm. The mean EC level was identified to be within the expected range of 0.3–1.5 mS/cm for slightly disturbed ecosystems in south-west Australia (Strategen–JBS&G 2012).

Urbaqua (2021) reported that nutrient levels slightly exceeded short and long term limits in the Swan Canning Water Quality Improvement Plan (Swan River Trust 2009). Limited sampling indicated concentrations of Copper, Chromium, Nickel, Lead and Zinc exceed Australian and NZ Guidelines for Fresh and Marine Water Quality guidelines (ANZG 2018).

Groundwater attributes within the precinct are presented in Figure 17. The Department of Water and Environmental Regulation's Water Register indicates there is limited groundwater available for allocation from the Superficial Aquifer within the Project area. Urbaqua (2021) have identified that there is currently a combination of temporary and standard licences within the Project area. The temporary licences are associated with construction of the Airport rail line (160,000 lL/yr). Two standard licences also exist with a total allocation of 112,510 kL.

Refer to Figure 17 – Groundwater (JBSG)

2.3.2 Surface Water

Poison Gully Creek is located immediately north of the TOD Precinct and follows the cadastral boundary. Poison Gully Creek is an ephemeral creek that flows in a westerly direction via Limestone Creek (a tributary of Perth Airport Northern Main Drain) into the Swan River during the winter months. Previous monitoring has reported water present within September and October (Strategen-JBS&G 2011 and ERMC 2013).

Poison Gully Creek is part of the City of Kalamunda and Water Corporation drainage network and has an extensive catchment to the east of the TOD ACP/LSP area (Water Corporation 2010). It is estimated that Poison Gully has a catchment area of approximately 770 ha at the intersection of Maida Vale Road and Dundas Road. No stream gauging data is publicly available for either drainage line. It is understood that the Water Corporation have previously maintained a stream gauging station for Poison Gully Creek at Littlefield Road (Station No. 616015).

Strategen–JBS&G (2012) completed a Foreshore Assessment of Poison Gully Creek which was included in the DWMS. This was approved by the Department of Water (now DWER) in 2015. In accordance with Determining Foreshore Reserves (WRC 2001) guidelines, the assessment considered the following biophysical criteria: vegetation, hydrology, soil type, geology, topography, habitat, land use and heritage. The Creek is deeply incised, with vertical exposed banks of 3 metres to 5 metres high in some areas, with the steepest gradient occurring on the eastern extent of the creek. Evidence of erosion was observed along the length of the creek line to varying degrees. This is likely due to the steep gradient and degraded nature of fringing vegetation which, if intact, would serve to stabilise the banks. Heavy infestation of introduced plant species including Watsonia (*Watsonia bulbillifera*) and Spanish bamboo (*Arundo donax*) was recorded by Strategen-JBS&G (2012b).

2.3.3 Flood Potential

1 in 100-year Average Return Interval (ARI) flood level modelling for Poison Gully Creek was undertaken by the Water Corporation (2010). This flood modelling indicates a 1 in 100 year ARI flood level ranging between 39.81 metres AHD at Roe Highway and 32.36 metres AHD at Maida Vale Road (Strategen–JBS&G 2015) which is mostly contained within the valley area of the creek line. The flood height at Roe Highway is considered to be underestimated as the invert level of the creek at this point is greater than 40 metres AHD above the Water Corporation Flood level. Based on the Water Corporation modelling, Poison Gully will overtop the road at Milner Road in the 1 in 100-year ARI event. However, as indicated the 1 in 100- year ARI event is contained within the foreshore boundary.

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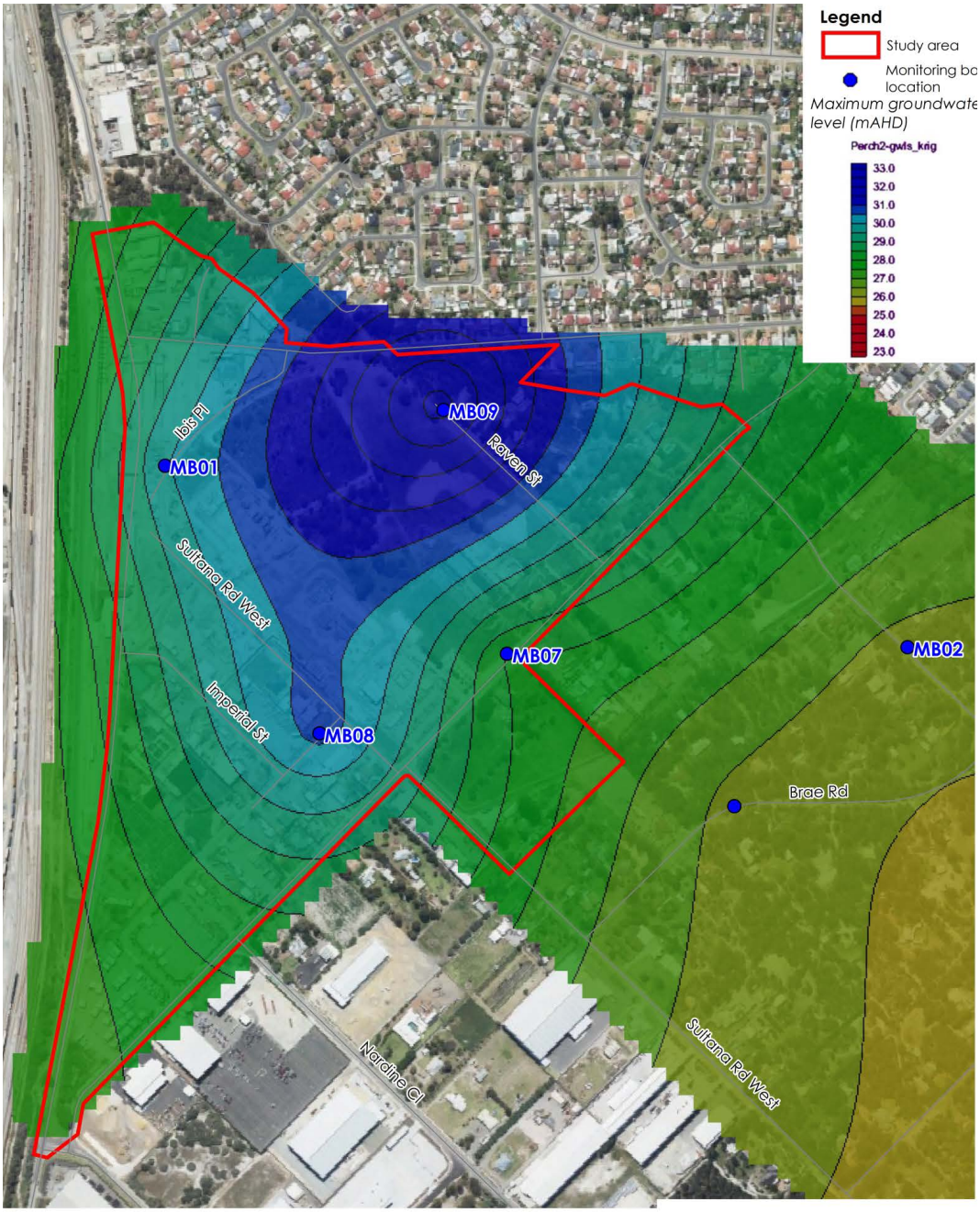

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Figure 17. Groundwater (JBSG)

2.4 Potentially Contaminating Activities

2.4.1 Contaminated Sites Register Database

A desktop search of the Department of Water and Environmental Regulation (DWER) Contaminated Sites Database reveals that there are no known contaminated sites within the TOD ACP area.

2.4.2 Previous Land Use(s)

Land within the TOD Precinct has previously been used for market garden and orchard activities, which have been identified as potentially contaminating activities. Within the Residential Precinct, immediately adjacent to the TOD Precinct, previous land uses including Brand Road Landfill and several orchards have been identified as potentially contaminating. These are located at a minimum distance of 765 metres from the project area and are not considered to constrain development of the TOD Precinct (refer Figure 18).

Refer to Figure 18 – Contaminated Sites (JBSG)

2.5 Bushfire Hazard

A search of regional Bushfire Prone mapping available through DFES (2019) has identified that the north-eastern portion of the precinct is bushfire prone. As a result, a Bushfire Hazard Level (BHL) assessment and Bushfire Management Plan (BMP) has been completed for the TOD ACP area.

Strategen-JBS&G have prepared a BMP to address requirements under Policy Measure 6.3 of *State Planning Policy 3.7 – Planning in Bushfire Prone Areas* (SPP 3.7; WAPC 2005) and *Guidelines for Planning in Bushfire-Prone Areas* (the Guidelines; WAPC 2017).

The BMP has been prepared as a strategic guide to demonstrate how development compliance will be delivered at future planning stages in accordance with the Guidelines. Future BMP's prepared for subsequent subdivision and development applications are to meet the relevant commitments outlined in this strategic level BMP, address the requirements of SPP 3.7 and demonstrate in detail how the proposed development will incorporate the relevant acceptable solutions or meet the performance requirements of the Guidelines.

The BMP notes that the TOD Precinct is unlikely to be impacted by a landscape scale bushfire as the surrounding vegetation is largely fragmented and not of a sufficient size to support landscape scale bushfire behaviour. As illustrated on the TOD ACP Map (Plan 1) hazard separation is required at subsequent planning stages in order to ensure that no residential land is affected by BAL-40 or BAL-FZ.

The BMP concludes that the bushfire hazards within and adjacent to the project area and the associated bushfire risks are readily manageable through standard management responses as outlined in the Guidelines and AS 3959. On implementation of the proposed management measures, the project area will be able to be developed with a manageable level of bushfire risk whilst maintaining full compliance with the guidelines and AS 3959.

Refer to BMP at Technical Appendix B for more information.

2.6 Heritage

2.6.1 Aboriginal Heritage

One registered site (Poison Gully Creek; Site ID 25023) intersects the project area. Consultation has confirmed the cultural significance of Poison Gully Creek and highlighted its importance to Noongar women, particularly as a 'birthing place' with associated rituals and still seen as a place for teaching and learning about traditional cultural knowledge.

2.6.2 European Heritage

No non-Aboriginal heritage sites have been identified within the precinct area.

Refer to EAMS at Technical Appendix A for more information.

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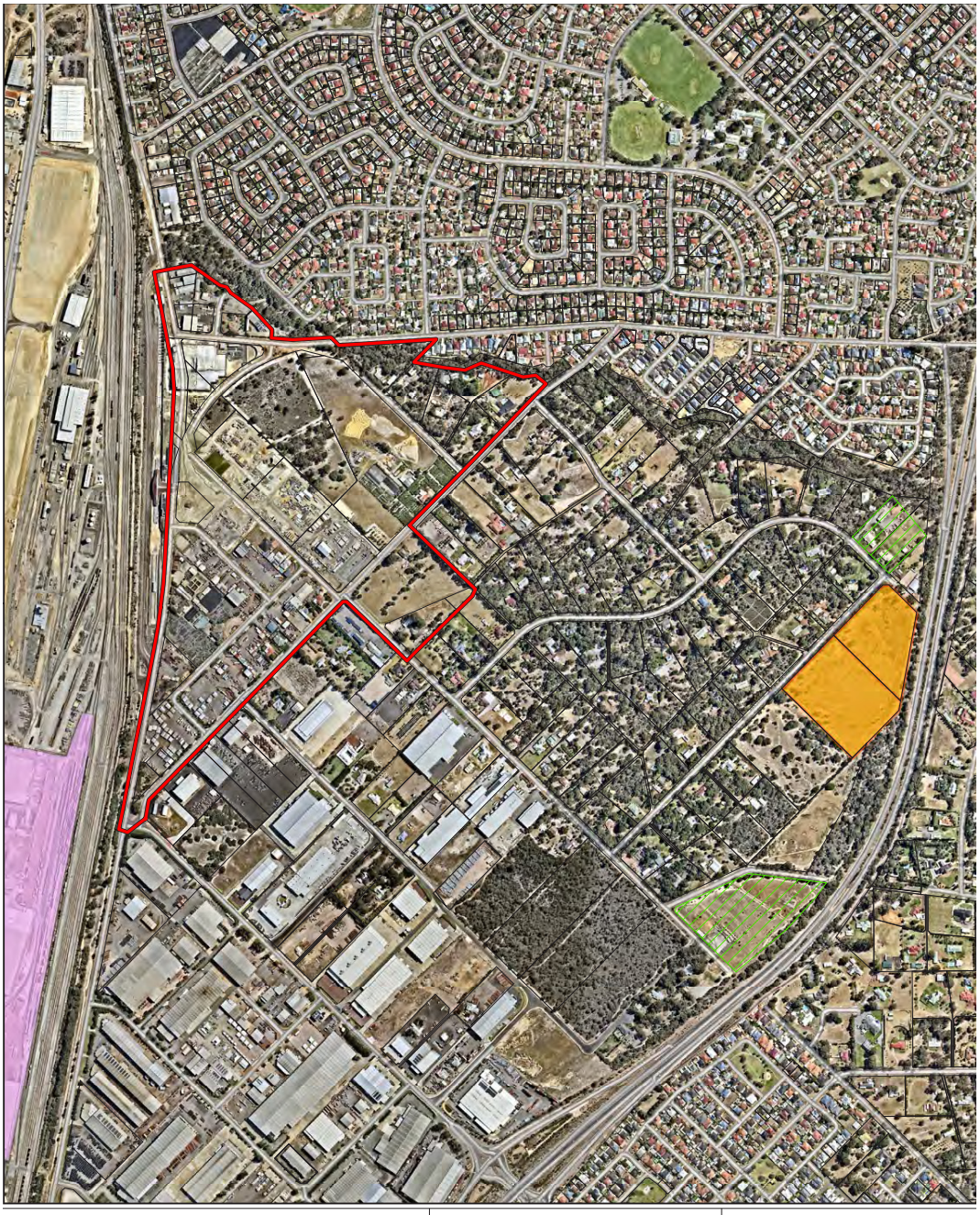


Figure 18. Contaminated Sites (JBSG)

45

element.

3. Land Use and Subdivision Requirements

3.1 Activity Centre Plan

3.1.1 Design Response to Site Constraints

The Activity Centre Plan is a considered response to the opportunities and constraints presented by the High Wycombe South Transit Oriented Development Precinct. Considerations have included the following:

- The retention and enhancement of the significant environmental values of the area to the greatest extent practical. This includes the preservation of an Ecological Conservation (Resource Enhancement Wetland) as a central feature of the precinct.
- The protection and enhancement of the ecological value of Poison Gully Creek, including foreshore area.
- A proposed central park, utilising an area with substantial pre-existing trees and providing both passive and active recreational opportunities in a central location in close proximity to High Wycombe Train Station.
- Where possible, existing roads have been re-purposed as part of the new development. The Activity Centre Plan seeks to utilise the existing road network with a new TOD Connector Road to ultimately connect High Wycombe South with Maida Vale South across Roe Highway.
- The provision of an integrated cycle and pedestrian network throughout the precinct connecting to the High Wycombe Train Station via the central park.
- Co-location of drainage areas with public open space and in some instances the use of underground storage due to size limitations and the need to manage potential impacts on the future urban form.
- Responding appropriately to noise and vibration from road traffic, Perth Airport, High Wycombe Train Station and nearby freight rail with treatments and notification requirements identified for implementation.
- The delivery of an appropriate interface to the High Wycombe South Residential Precinct to the south-east, particularly across Milner Road. The design of Milner Road is to be conducive to allowing movement between the precincts and to the new train station. Associated built form within the two precincts is to be compatible and complementary in terms of scale and street relationship to present as a coordinated urban environment.
- The intersection of the TOD Connector and Milner Road is to be signalised by 2031 to facilitate easement of movement to the new train station, particularly for pedestrians and cyclists.

3.1.2 Population Projections

Population projections for the entire TOD Precinct area based on associated development yield projections are provided in Table 6 below. Projections are based on a 'medium' scenario with minimum levels of intervention.

Table 6 – Population Projections (TOD Precinct Project Area)

	2025	2035	2045	2050	2060
TOD Precinct Population Forecast	113	117	672	1133	1662

The projected population for the precinct by 2050 is 1,133 persons.

3.1.3 Development Yields

Projected development yields for the TOD ACP area are provided in Table 7 below.

Table 7 – Projected Development Yields

Lot Types	TOD Precinct (medium scenario)
Single Lot	0
Medium Density	625
2-3 storey apartments	118
Total Dwellings	**743**

Based on the projected development yields it is anticipated that there will be approximately 467 lots within the precinct by 2050.

Estimated floorspace demand to be accommodated within the TOD Precinct is summarised in Table 8 below.

Table 8 – Estimated Floorspace Demand

	2020	2030	2040	2050	2060
Retail	-	-	5,160 sqm	5,160 sqm	5,160 sqm
Commercial	-	-	450 sqm	1,200 sqm	1,200 sqm
Medical	-	-	450 sqm	1,200 sqm	1,200 sqm
Childcare	-	400 sqm	1,250 sqm	1,250 sqm	1,250 sqm
Showroom Retail	-	-	2,500 sqm	2,500 sqm	2,500 sqm
Total	**-**	**400 sqm**	**9,810 sqm**	**11,310 sqm**	**11,310 sqm**

It is anticipated that non-residential uses may develop earlier than the projections in Table 8 based on a desire for the delivery of early amenities to the area, as a consequence of catalytic investment in supporting community facilities and in response to the opportunities presented by train station patrons.

Analysis of dwelling preference projections and likely uptake rates for medium and higher density residential dwelling typology products in the Residential and TOD Precincts has been undertaken by DevelopmentWA. The analysis indicates that there is minimal demand for apartment product until at least 2044. This has resulted in a downward revision to expected yields and density ranges. This will ensure that development in the adjoining Residential Precinct does not compete with the TOD Precinct and that development is more likely to meet market demand.

Refer to Urbis Population Forecast at Technical Appendix G.

3.1.4 Indicative Built Form

It is anticipated that most future residential development forms will be one to two storeys in height with additional three to four storey development close to the amenities offered by the High Wycombe Train Station, conservation areas and community uses.

Depending on prevailing residential market conditions it is anticipated that higher density development forms will also be able to be delivered around the High Wycombe Train Station.

3.2 Land Use

The proposed TOD ACP comprises the following key elements:

- The Forrestfield Station Precinct and Residential Precinct.
- The Forrestfield Station Precinct comprises the following five (5) sub precincts:
  - 1A – Eureka Sub-Precinct
  - 1B – Core Sub-Precinct
  - 1C – Conservation Sub-Precinct
  - 1D – Station Sub-Precinct
  - 1E – Maida Vale Sub-Precinct

- Four (4) public open space areas.
- One (1) environmental conservation area.
- Four (4) designated drainage areas forming part of the public open space network.
- A new TOD Connector road to provide access to the High Wycombe South Residential Precinct to the south-east and ultimately Maida Vale via a future overpass at Roe Highway.
- A community purpose facility is proposed to be located immediately south of the conservation precinct and High Wycombe Train Station.
- Residential development with densities increasing as you move west through the precinct towards the High Wycombe Train Station.

It is intended that the TOD ACP will promote a future housing environment that encompasses high quality medium to high residential development, with consistency of quality ensured through the application of comprehensive design guidelines. Future development forms are expected to encompass apartments, grouped dwellings and single houses.

The proposed residential density coding throughout the TOD Precinct will be RAC-0, meaning that density will be controlled by the specific requirements of the METRONET East Redevelopment Scheme. Typically density will increase as you traverse west towards the High Wycombe Train Station. A key focus of the future residential development will be the delivery of the 'missing middle', a significant gap in Perth's housing market, generally comprising more efficient high amenity medium density housing in terraces or other innovative forms.

3.2.1 Community Facility Provision

The TOD Precinct will contain an area designated for 'Public Purposes: Community Purpose', with the opportunity to provide a range of civic and community based uses to support train station patrons and the wider community.

A principal focus has been to ensure that sufficient appropriate land is set aside to allow future development. The actual detail of each type of facility developed may vary as the community establishes and people take up residence in the area.

3.2.2 Public Open Space Provision

The TOD ACP provides for approximately 11 hectares of open space in the form of local open space, environmental conservation areas and pre-existing Bush Forever. Several areas of the local open space will also be used as part of water management across the precinct.

Although less than the normally required 10%, the extent of provision is considered appropriate having regard to:

- The over provision of open space in the adjacent High Wycombe South Residential Precinct and the strategic positioning of the Town Park towards the western edge of that precinct where it can be easily accessed via future residents of the TOD Precinct via the TOD Connector.
- The strategic central location and high utility and level of amenity offered by the Central Park.
- The significant quantum of land required for environmental conservation and water management purposes within the precinct, with any further requirement unduly undermining the future development potential of the TOD Precinct.

Table 9– Public Open Space Schedule

TOD Precinct Public Open Space Schedule			
TOD Precinct Gross Site Area			**617,958**
Deductions			
Rail Reserve		31,530	
Bush Forever		25,323	
Environmental Conservation		34,960	
Drainage (1 in 1 yr Inundation)		16,043	
Total Deductions			**107,856**
Net Subdivisible Area (NSA)			**510.102**
Creditable Public Open Space Required (10%)	**0.1**		**51,010**

TOD Precinct Public Open Space Schedule				
Unrestricted Open Space (as shown on plan)				
Total Public Open Space Provision			52,308	
less 1 in 1 yr Inundation		16,043		
1 in 5 yr Inundation		1,301		
Sub - Total			**17,344**	
Total Unrestricted Open Space				**34,964**
Min. Required (80% of Original 10% Req.)	0.8	40,808		
Total Unrestricted Credited				**34,964**
Restricted Open Space				
1 in 5 yr Inundation		1,301		
Total Restricted				**1,301**
Max. Permitted (20% of Original 10% Req.)	0.2	10,202		
Total Restricted Credited				**1.,301**
Unrestricted POS				34,964 (6.9%)
Restricted POS				1,301 (0.3%)
Total Public Open Space Provision (Credited)				**36,265**
% of Provision				**7.1%**
incl. Central Park (POS-01)				**21,666 4.2%**

3.2.3 Land Assembly

The approach to future land assembly within the precinct has a been a key focus of the preparation of the TOD ACP. Using the proposed road and public open space network, eleven (11) separate development cells (Development Cells 01 – 11 have been defined to facilitate future development as depicted in the Development Plan (Plan 2). These cells include a range of State owned and privately held landholdings.

The development of the cells independently of each other will be facilitated by the provision of key infrastructure under the DCP for the precinct, providing a wider range of future development options for existing landowners within the precinct. Development consistency across the precinct will be delivered through the implementation of DevelopmentWA's planning framework, including the METRONET East Redevelopment Scheme and the supporting METRONET East High Wycombe Project Area Design Guidelines.

3.2.4 Acquisition of Environmental Conservation Areas / Bush Forever

Conservation areas which protect vegetation of State and Federal significance have been identified in addition to the POS areas and are required by relevant State Environmental Agencies to be secured.

Land identified as 'Environmental Conservation' and Bush Forever on the Activity Centre Plan (Plan 1) is to ultimately be reserved as 'Parks and Recreation' under the Metropolitan Region Scheme, after normalisation of the precinct.

element.

4. Movement Network

A detailed Transport Impact Assessment (TIA) has been prepared for the TOD ACP by KCTT. An overview of the TIA is set out below.

Additional transport statements and/or assessments will be provided in support of future subdivision and development applications within the ACP area in accordance with the Department of Planning, Land Use and Heritages Transport Impact Assessment guidelines.

Since the entire surrounding area is about to go through significant changes, it is expected that many changes will occur in the provision of public transport services. Until the future road network is in detailed stages of planning, no precise information is available. It is expected that buses will operate along the TOD Connector, Berkshire Road, Dundas Road, Maida Vale Road and potentially Raven Street.

Every major road within the TOD ACP area will have either a shared path or separate pedestrian path. The total expected additional traffic generated by the proposed development is likely to be 17,185 vehicular trips per day, 2,696 vehicular trips in AM peak hour and 2,955 vehicular trips in the PM peak hour.

4.1 Road Network

The proposed road network changes and traffic expectations within the TOD ACP area are detailed on the TOD ACP Map (Plan 1). **The TOD ACP proposes to maintain an interface between industrial land uses to the south and residential and activity centre uses north of Sultana Road West. The proposed road network will also seek to provide a balance between local residential, commercial and retail traffic as well as regional traffic attracted to the parking for the High Wycombe Train Station.**

The most notable change to the existing road network is the realignment of Dundas Road to construct the High Wycombe Train Station, as well as the construction of the TOD Connector. Furthermore, west of Milner Road, Sultana Road West is to become a cul-de-sac head when the TOD Connector is developed and the eastern side will have a controlled (i.e. no Right-Out (RO) movement onto Milner Road) intersection with Milner Road.

Refer to Figure 19 – Road Types within Development

Refer to Figure 20 – Daily Traffic – Internal Network – 2031

The TIA also details the following changes to the road network outside of the TOD area.

- Grade separation of the Kalamunda Road / Roe Highway intersection
- Roundabout at the realigned intersection of Dundas Road / Berkshire Road / Milner Road
- Addition of the TOD Connector and accompanying proposed future Roe Highway overpass connecting High Wycombe South and Maida Vale South

The TIA (Technical Appendix E) via a table on page 47 details the expected future traffic volumes for the road network within and surrounding the TOD area.

4.2 Road Cross Sections

Where appropriate, road cross sections have been designed to comply with Liveable Neighbourhoods street reserve requirements relative to the road hierarchy. However, this ACP provides for flexibility to vary Liveable Neighbourhood requirements where it can be demonstrated at subdivision stage that:

- traffic modelling supports the variation;
- the variation is necessary to achieve an environmental outcome(s);
- there is no potential to expand the existing road reserve due to infrastructure constraints; and
- that Liveable Neighbourhood principles are not compromised and a high level of urban amenity is achieved.

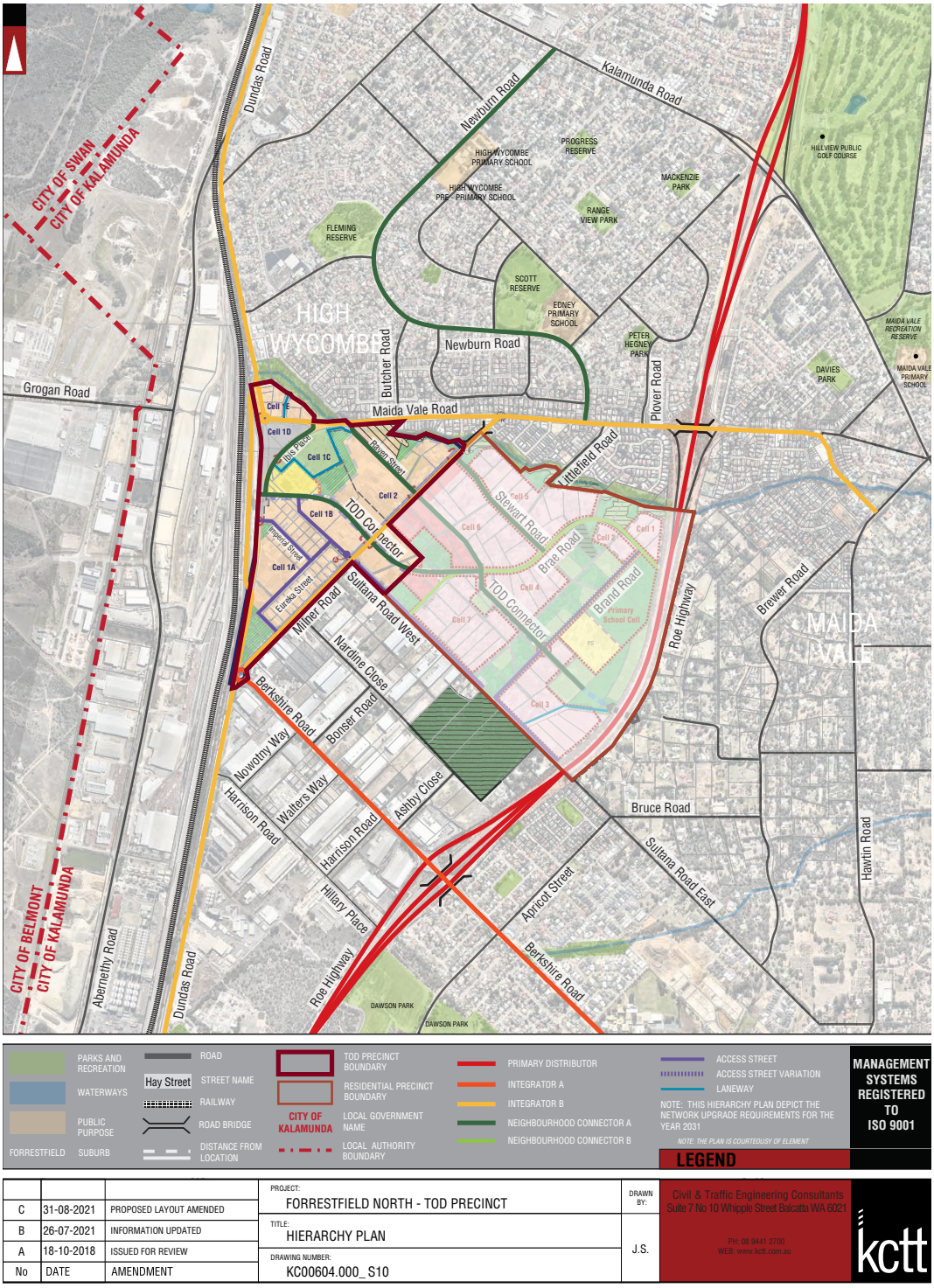


Figure 19. Road Types within Development

element.

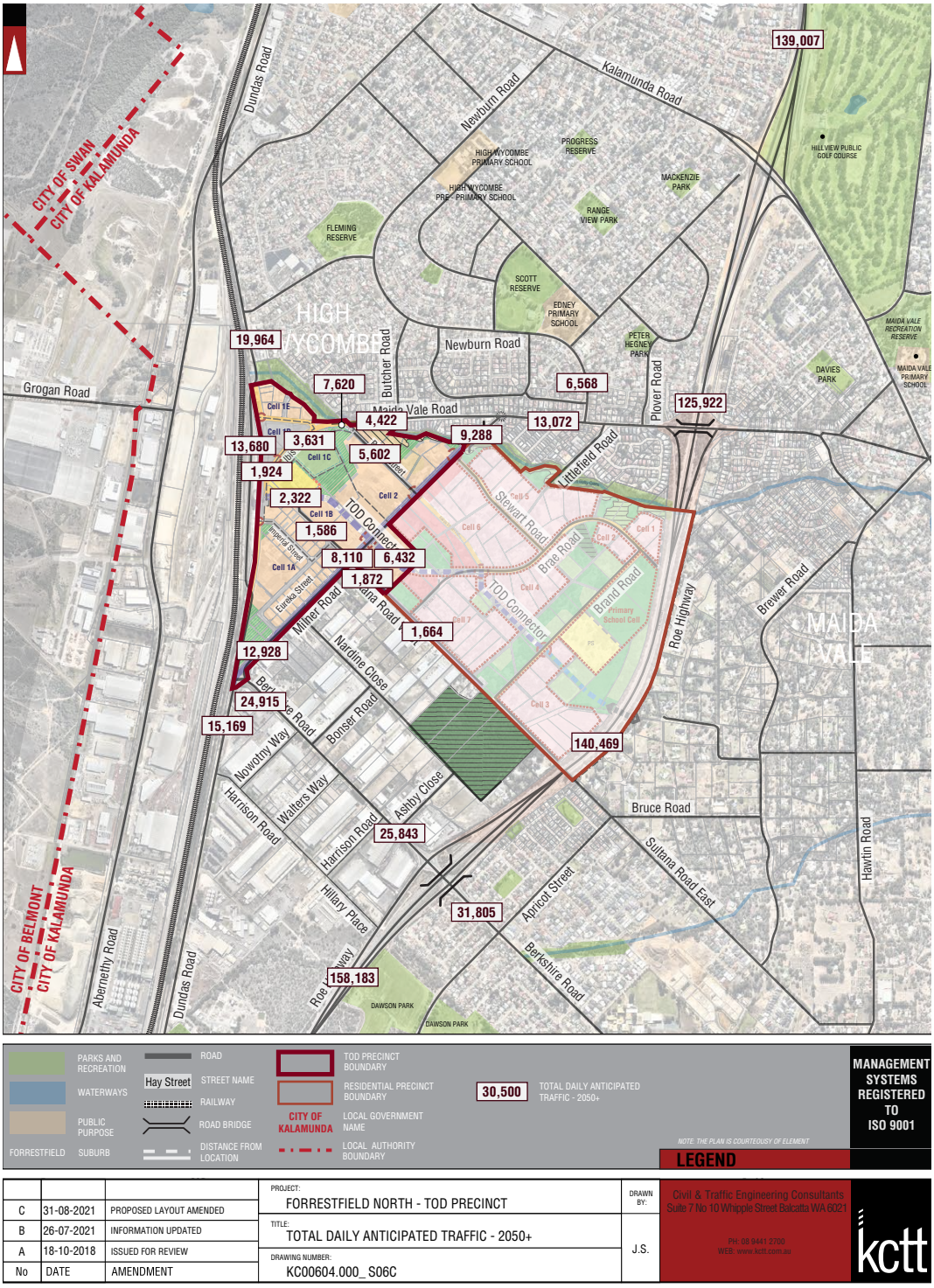


Figure 20. Daily Traffic – Internal Network – 2031

The following figures detail conceptual road cross section designs for the key roads in the ACP road network. Descriptions and dimensions of all proposed road cross sections are available in the TIA (refer to TIA provided at Technical Appendix E).

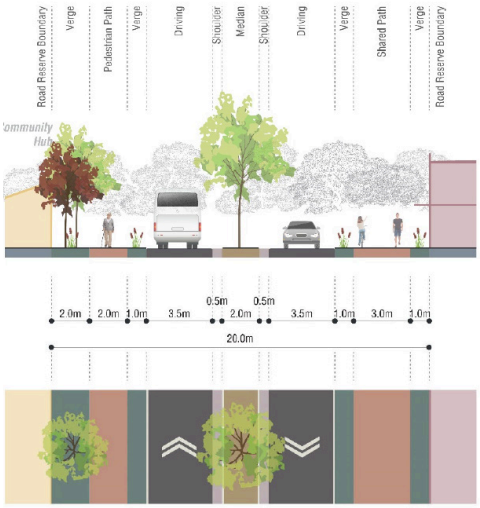


Figure 21. Road Cross Section – Enterprise Boulevard

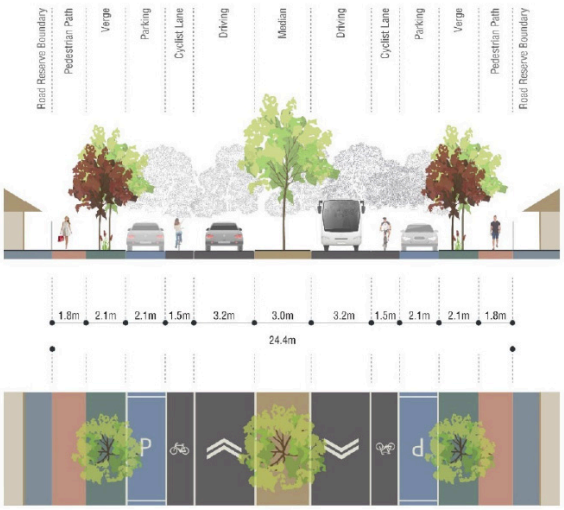


Figure 22. Road Cross Section – TOD Connector

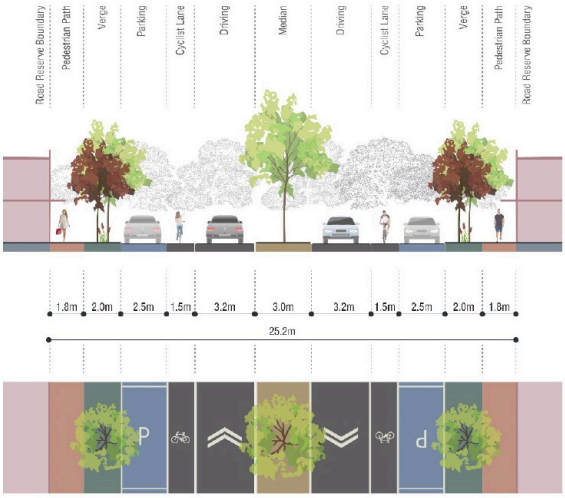


Figure 23. Road Cross Section – Milner Road between Sultana Road West and Stewart Road

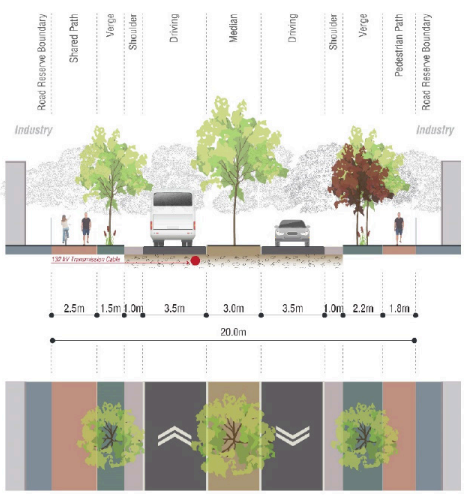


Figure 24. Road Cross Section – Milner Road between Sultana Road West and Berkshire Road

element.

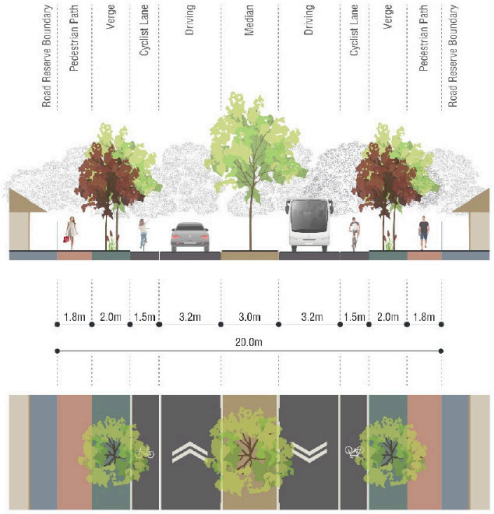


Figure 25. Road Cross Section – Maida Vale Road

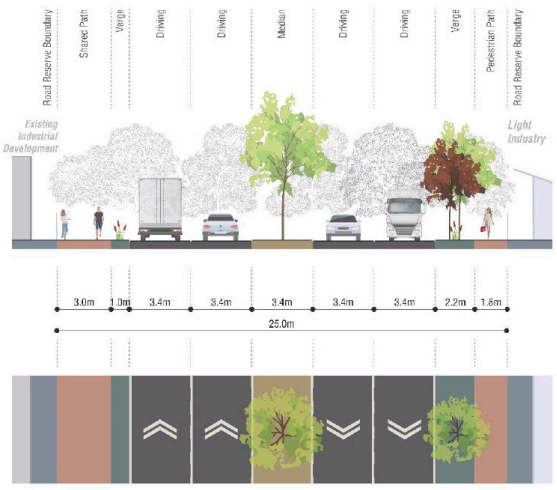


Figure 26. Road Cross Section – Berkshire Road

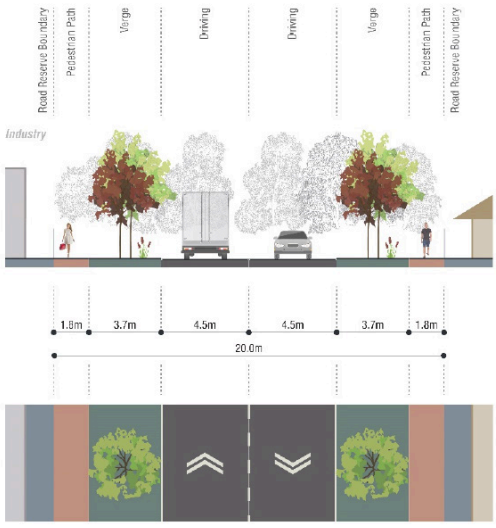


Figure 27. Road Cross Section – Sultana Road West (east of Milner Road)

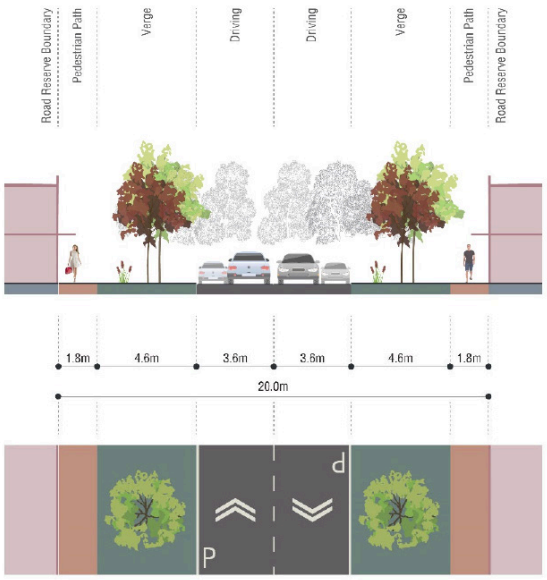


Figure 28. Road Cross Section – Sultana Road West (west of Milner Road)

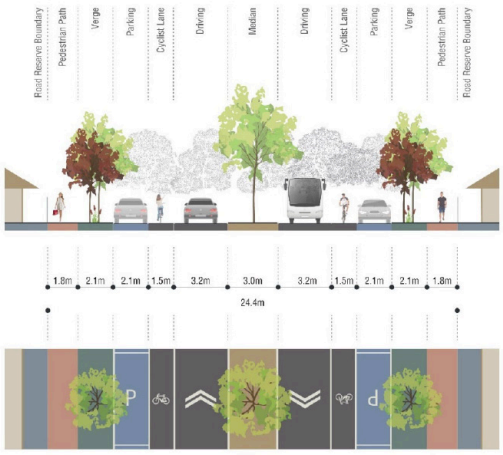


Figure 29. Road Cross Section – Raven Street

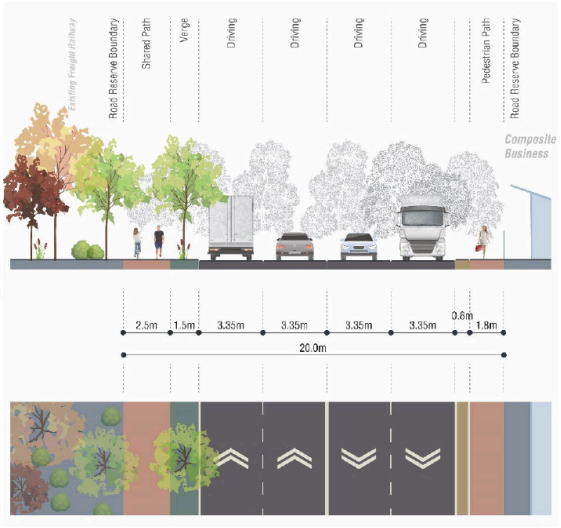


Figure 30. Road Cross Section – Dundas Road

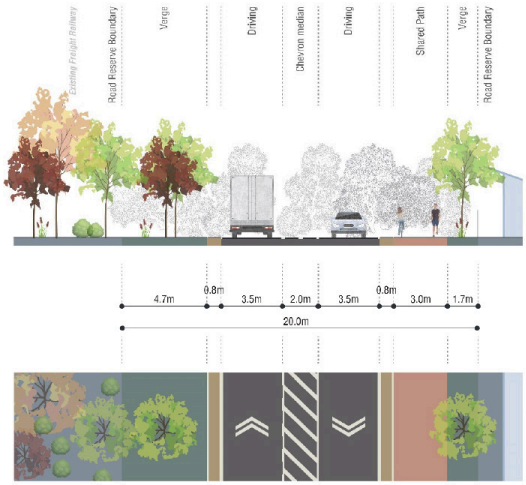


Figure 31. Road Cross Section – Dundas Road (south of Old Dundas Road)

Figure 32. Road Cross Section – Dundas Road (south of Berkshire Road)

4.3 Intersection Treatments

Proposed intersection controls are depicted in Figure 33, with a signalised intersection proposed at the TOD Connector / Milner Road junction and roundabouts proposed at the following key intersections:

- Milner Road / Stewart Road
- Milner Road / Raven Street
- Maida Vale Road / Old Dundas Road (North of Maida Vale Road)
- Dundas Road / Berkshire Road / Milner Road

Full movement sign controlled intersection treatments are also identified in other important locations including the Maida Vale Road / Raven Street intersection. When the Milner Road carriageway is divided, Nardine Close will become LILO and Right-in (RI) with RO prohibited for heavy vehicles.

Refer to Figure 33 – Intersection Control

4.4 Pedestrian Network

Existing pedestrian access through the TOD Precinct is very limited due to the low intensity of current land uses. The extent of development for the area envisaged under the TOD ACP will have a significantly higher intensity of activity, therefore the requirement for good quality pedestrian linkages emerges. One of the key objectives of the TOD ACP is to identify key linkages within the precinct.

A key focus of the TOD ACP is to develop a solid and permeable network of pedestrian paths in order to encourage pedestrian movement. The TOD ACP also acknowledges the importance of providing direct and legible pedestrian and cycle connections between the High Wycombe Train Station and surrounding area to encourage public transport patronage.

The network of proposed pedestrian paths is shown on Figure 34.

Refer to Figure 34 – Proposed Pedestrian and Cyclist Paths

Every major road within the TOD ACP area will have either a shared path or a separate pedestrian path.

All pedestrian and shared paths should be designed to be accessible by all members of the community in accordance with the City's Disability Access and Inclusion Plan 2012-2017 or any other subsequent document of this nature. The exact location of pram ramps and other elements is to be determined at a later stage in the project.

In addition to Figure 34 the provision of key pedestrian infrastructure is outlined below.

Shared paths are proposed for:

- Berkshire Road
- Milner Road (Sultana Road West – Berkshire Road)
- Maida Vale Road
- Sultana Road West
- Dundas Road
- Enterprise Boulevard

Separate Pedestrian Paths are proposed for:

- TOD Connector
- Milner Road (north of Sultana Road West)
- Berkshire Road
- Stewart Road
- Raven Street
- Sultana Road West
- Maida Vale Road
- Enterprise Boulevard
- Dundas Road (north of Maida Vale Road)
- Dundas Road (south of Old Dundas Road)
- Urban Residential Streets

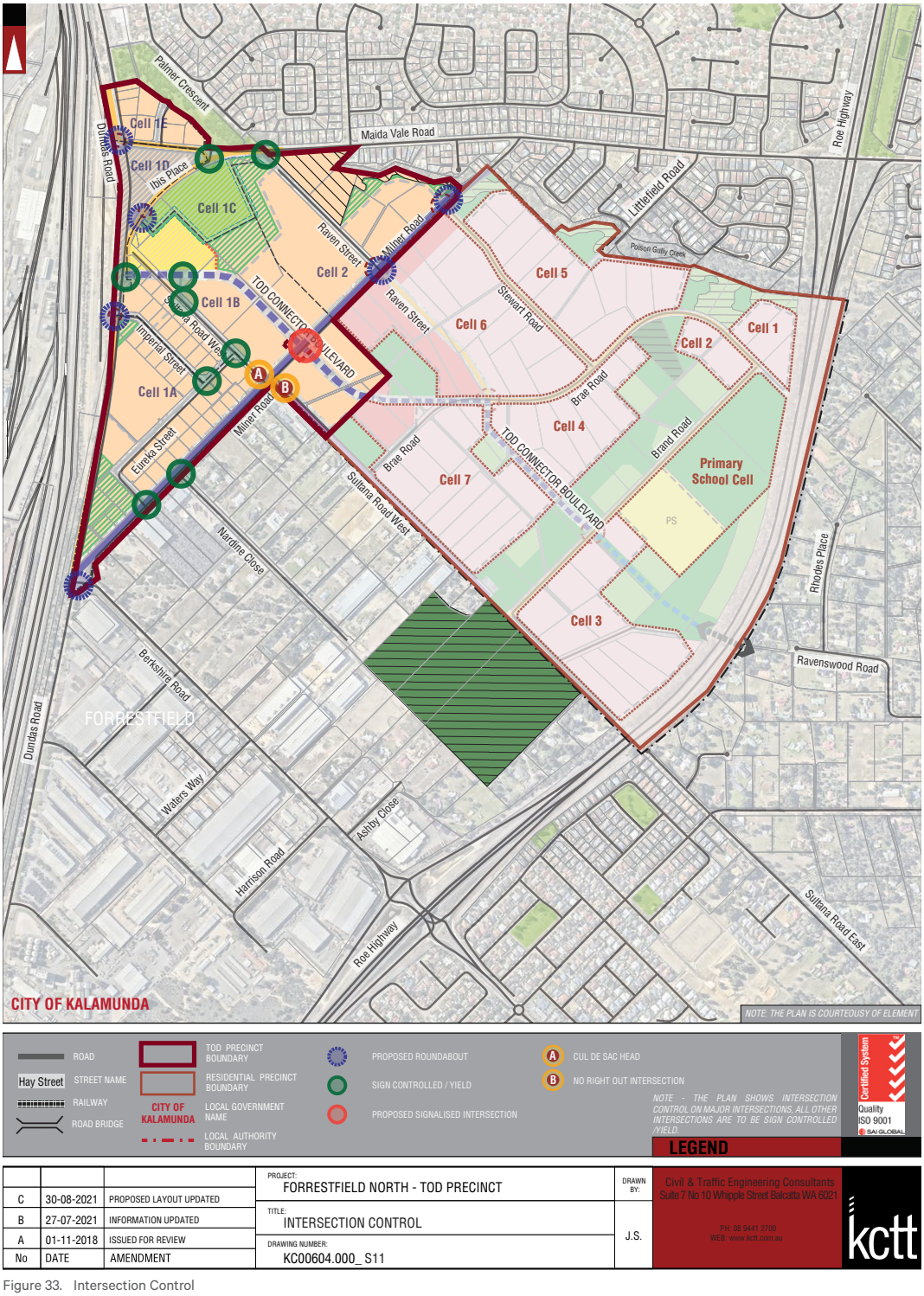


Figure 33. Intersection Control

element.

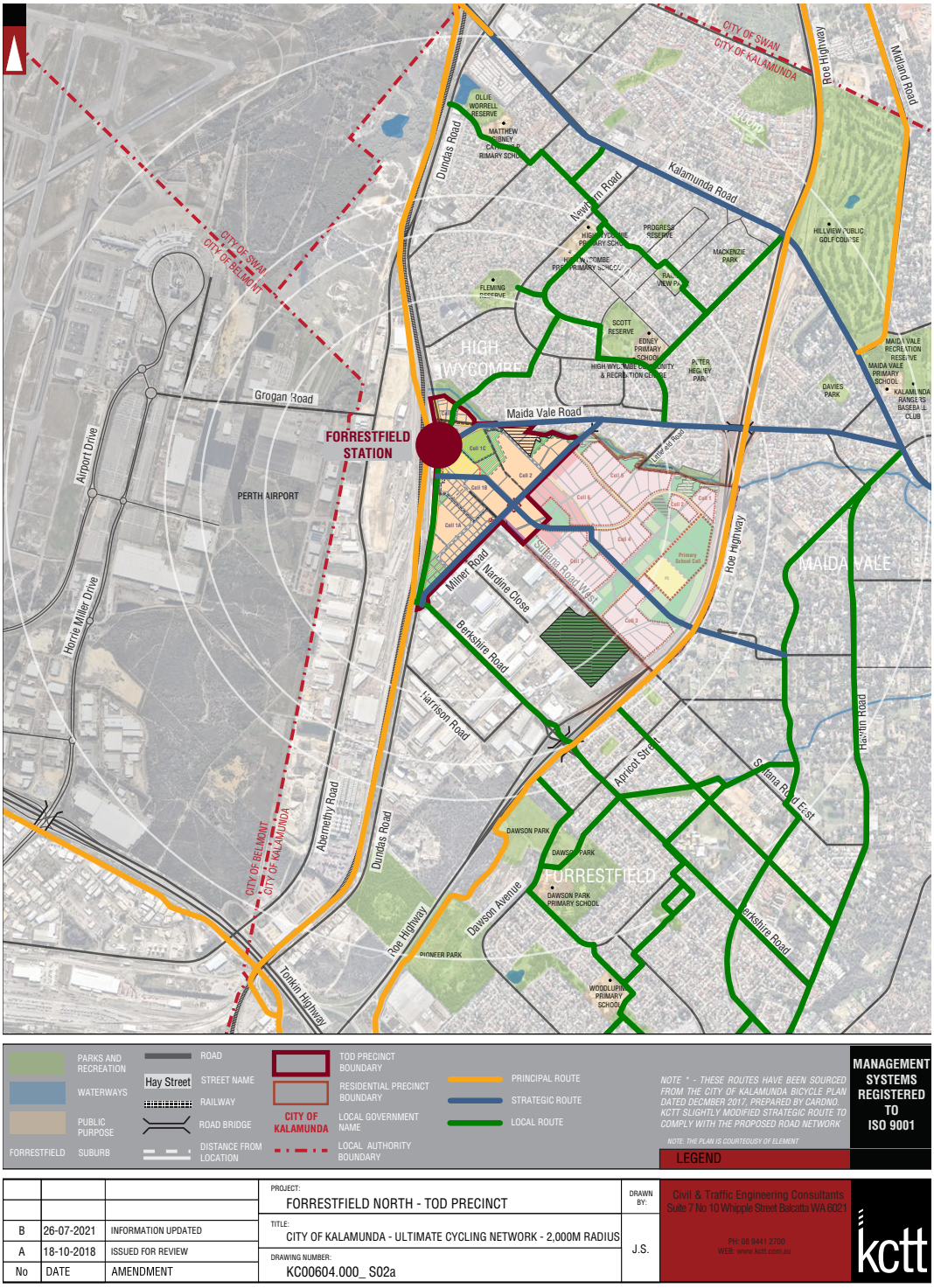


Figure 34. Proposed Pedestrian and Cyclist Paths

4.5 Cyclist Network

Existing cyclist access through the TOD Precinct is also very limited due to the low intensity of current land-uses. The extent of development for the area envisaged under the TOD ACP will have a significantly higher intensity of activity therefore the requirement for good quality cyclist linkages emerges. One of the key objectives of the TOD ACP area is to identify key linkages within the proposed ACP area. Figure 34 depicts all of the linkages.

It is assumed that residents of houses will store their bicycles and equipment within their respective dwellings. Therefore, it is considered that there is no need for additional bicycle parking provision in the precinct, however parking should be provided at the High Wycombe Train Station and within the designated Community Purpose area.

It is likely that the utilisation of bicycles within the precinct will be more viable and attractive to residents. Cycling is further promoted through a network of shared paths connecting all residential areas to the main attractors.

A new cycle link on the TOD Connector Road will be important to encourage cycling as a form of transport to the train station. The train station will include bicycle parking to encourage cycling as a mode of transport to and from the station.

The locations for the provision of separate cyclist lanes are outlined below:

- Maida Vale Road
- Milner Road (north of Sultana Road West)
- TOD Connector
- Stewart Road
- Raven Street

4.6 Public Transport

Since the entire surrounding area is about to go through significant changes, it is expected that many changes will occur in public transport services provision. Until the future road network is in detailed stages of planning, no precise information is available. It is expected however, that buses will operate along the TOD Connector, Berkshire Road, Dundas Road, Maida Vale Road and potentially Raven Street.

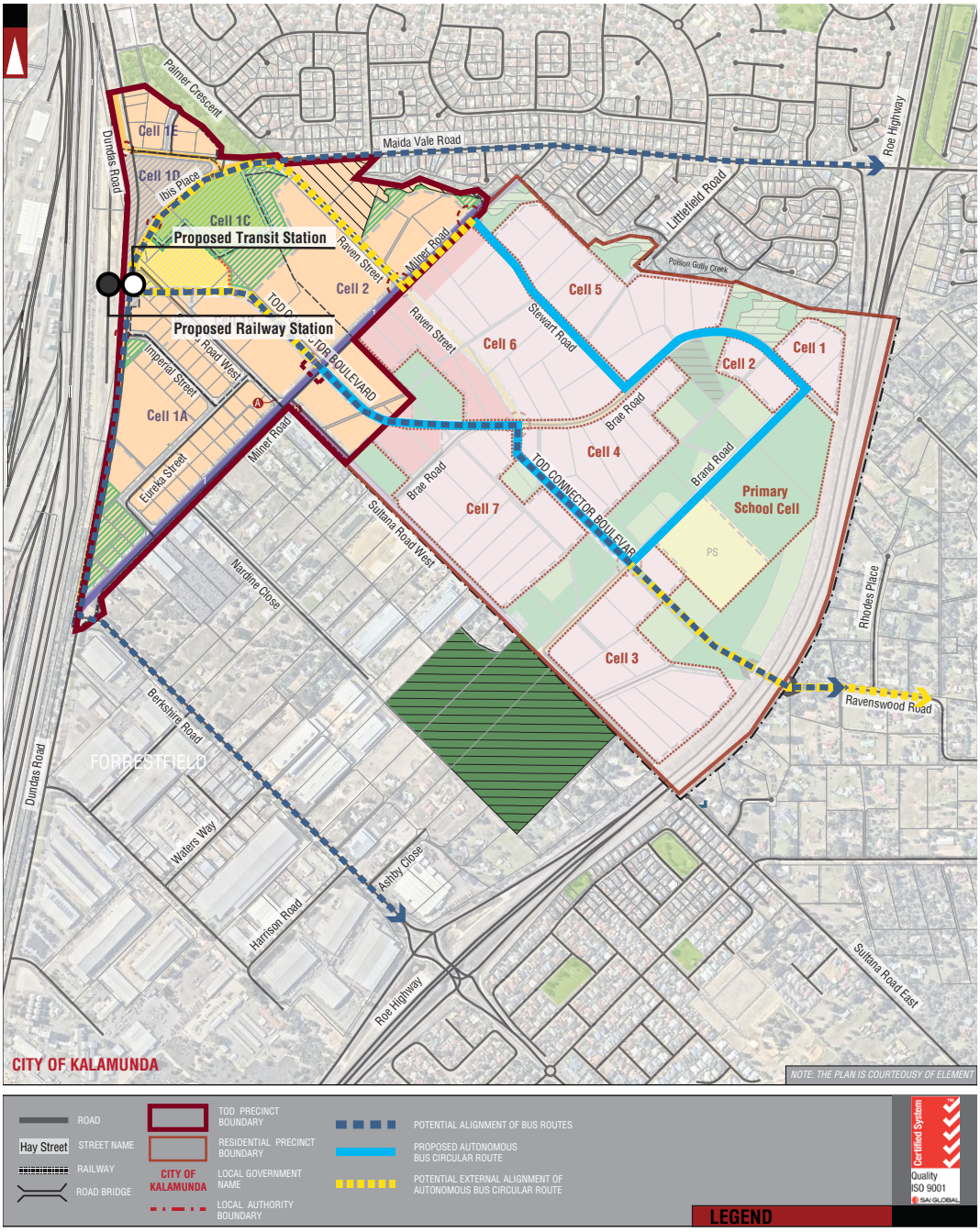
A driverless shuttle should also be considered in the future. This shuttle can provide direct connection between the railway station and the nearby Residential Precinct with potential for expansion of service once the overpass is constructed.

Alternatively, a pool of smaller vehicles can be considered as it can be stored and operated locally (either as a part of a community service or as a part of the railway station complex).

The public transport plan for the TOD ACP area and immediate surrounds is provided at Figure 35.

Refer to Figure 35 – Public Transport Plan

element.



No	DATE	AMENDMENT
C	30-08-2021	PROPOSED LAYOUT UPDATED
B	27-07-2021	INFORMATION UPDATED
A	01-11-2018	ISSUED FOR REVIEW

PROJECT: FORRESTFIELD NORTH - TOD PRECINCT
TITLE: PUBLIC TRANSPORT PLAN - PROPOSED
DRAWING NUMBER: KC00604.000_ S03a
DRAWN BY: J.S.

Civil & Traffic Engineering Consultants
Suite 7 No 10 Whipple Street Balcatta WA 6021
PH: 08 9441 2700
WEB: www.kctt.com.au
kctt

Figure 35. Public Transport Plan

4.7 Parking

4.7.1 High Wycombe Train Station

A Public Transport Authority Park and Ride facility will be provided at the High Wycombe Train Station, initially accommodating approximately 1,200 car parking bays within a multi storey car parking facility.

This is in line with the general vision for the High Wycombe Train Station which is meant to serve as an alternative transport option and promote the reduction of car usage and dependence.

The High Wycombe Train Station is expected to have 50% of its patronage arrive by bus. As a result, reduced parking requirements for non-residential land uses are proposed. The TIA at Technical Appendix E recommends proposed parking requirements for consideration by DevelopmentWA as part of the finalisation of the planning framework for the precinct.

4.7.2 Residential

It is expected that most residences will provide parking on the premises in accordance with the R-Codes. It is considered likely that every house will have their own garage, providing parking for the owner in the garage and visitors in front of the garage. Apartments will have to provide parking garages with the number of parking bays in accordance with the R-Codes depending on the location.

Some provisional rates have been provided for the Community Purposes facility however this development should be assessed on its own merits once the final composition is known. On street parking should be considered particularly in the area surrounding the Community Purposes facility and other recreational areas. Furthermore it is considered that the following streets should have some form of on-street parking:

- Milner Street between Sultana Road West and Stewart Road
- Raven Street
- Imperial Street
- Ibis Place (in the vicinity of the railway station forecourt, mainly for kiss and ride parking)
- TOD Connector
- Some lower order subdivision roads

4.7.3 Parking/Charging Stations for Electric Vehicles

Parking / charging points for electric vehicles should be provided at a minimum rate of 1 in 20 standard parking bays, and preferably 1 in 10 standard parking bays.

The use of electric vehicles is on the rise and given the reduction in pollution they provide the use should be further encouraged. While in individual dwellings, private owners / developers can choose to implement charging points for electrical vehicles, in multiple dwelling complexes and non-residential buildings it is important to provide charging points so that the residents have an option for using electrical vehicles.

The mandatory rate should be reviewed and revised every 5 years given rapid technology advancements.

4.7.4 Delivery and Service Vehicles

It is expected that delivery and service vehicles (such as waste removal vehicles) servicing the residential area of the TOD Precinct will not require designated parking spaces given that they can operate safely within the road reserve.

Service and delivery vehicles for the High Wycombe Train Station and Community Purposes facility will require appropriate parking allocated on site. The crossovers should be designed to accommodate movement of service vehicles as a minimum.

element.

5. Infrastructure and Servicing

5.1 Water

Water infrastructure planning has commenced and has been submitted to the Water Corporation for consideration. The development of water infrastructure is generally simpler than wastewater planning because the water network does not need to be designed to consider depth of service as it is a pressurised system. This means that development can be catered for generally anywhere within the precinct with relation to the water infrastructure network.

The Water Corporation has advised that there are no impediments to short-term development in the TOD Precinct, with existing services capable of servicing initial developments. Section 7 of the Infrastructure Servicing Report (ISR) provided at Technical Appendix F shows the existing water infrastructure in the TOD Precinct.

Refer to ISR provided at Technical Appendix F for additional information.

5.2 Wastewater

Detailed discussions have been held with the Water Corporation in relation to the upgrade and extension of wastewater infrastructure to service High Wycombe South and Maida Vale South as an interim measure, while the Water Corporation completes detailed planning for the Gooseberry Hill Planning Area. The interim plan involves the extension of wastewater infrastructure along Dundas Road for the TOD and Activity Centre Precincts and along Milner Road with three branch systems along Sultana Road West, picking up the proposed Activity Centre as identified in the DSP and into Raven Street and Stewart Road to service the majority of the Residential Precinct. Not all properties will be able to service directly off these extensions, however the premise is that the wastewater infrastructure provided for the area will accelerate development potential across a greater number of landholdings than presently exists.

The Water Corporation's preferred strategy is that all connections within the structure plan area drain to the south west in accordance with Water Corporation planning. The Water Corporation may consider alternative sewer connections to the north where an engineer can demonstrate this is possible and that the capacity is available.

The Water Corporation Planning department will determine ultimate wastewater planning based on future land development requirements primarily in High Wycombe and Maida Vale South, with potential for expansion of the network into Maida Vale and High Wycombe. The Water Corporation have confirmed verbally that the construction of infrastructure to suit the ultimate system will not be required by developers of High Wycombe or Maida Vale South.

5.3 Power

Initial discussions have been held with UPD in relation to current Western Power policies when considering large-scale / long-timeframe developments of this nature. The development of power infrastructure to suit developments of this type is an iterative process, as additional power capacity cannot be "stored". It is understood that Western Power is currently not utilising new 1-hectare transformer / substation sites but is preferring to increase the capacity of existing major substations. Some lead-in work may be required after the first 5 to 10 years of development, but this will be contingent on the rate of development in High Wycombe South and the rate of expansion of other land-use assets connected to local substations and feeders. The key infrastructure requirement will be the undergrounding of existing HV and LV assets in roads to be widened and in road reserves to be closed. The relocation of all existing assets due to road widening / road reservation closure will be required and will allow for the undergrounding of all HV assets at 33kV and greater.

Existing power services are generally considered to be adequate for interim development to occur in the TOD Precinct. The ISR provided at Technical Appendix F shows existing power assets in the locality. All existing services will need to be undergrounded as part of all development works, with key infrastructure in Sultana Road West, Raven Street and Milner Road to be undergrounded.

Refer to ISR provided at Technical Appendix F for additional information.

5.4 Gas

Gas infrastructure is available in the TOD ACP area for immediate development. Section 9 of the ISR provided at Technical Appendix F shows existing gas services in the TOD Precinct.

Future upgrade and relocation requirements for the provision of gas services, is to be managed by ATCO Gas in coordination with developers where an open trench is provided by the developer for the reticulation of gas infrastructure.

Refer to ISR provided at Technical Appendix F for additional information.

5.5 Telecommunications

Telecommunications infrastructure is available in the TOD ACP area for immediate development. The ISR provided at Technical Appendix F details existing major telecommunications assets in the TOD Precinct.

Future potential upgrade and relocation requirements for the connection of telecommunications and broadband internet, is to be determined iteratively as development occurs. This is to be managed by developers on all roads abutting land to be developed as a standard WAPC condition of subdivision.

Refer to ISR provided at Technical Appendix F for additional information.

5.6 Noise and Vibration

A detailed Transportation Noise Assessment (March 2021) (TNA) has been prepared for the High Wycombe South project area by Lloyd George Acoustics (LGA) using an indicative building heights plan prepared for the locality. It should be noted that assumed building heights, in particular those for the TOD and Activity Centre Precincts as identified under the DSP, are indicative only and prepared for modelling purposes. Noise assessments will be implemented at development and subdivision stages in order to recognise noise impacts from the new High Wycombe Station.

Refer to Transportation Noise Assessment provided at Technical Appendix C.

5.6.1 Transportation Noise Impacts

The Transportation Noise Assessment details the potential noise impacts that may affect the TOD Precinct. Sources of potential noise impacts are:

- Aircraft: Perth Airport – Future parallel runway to the west of the site;
- Freight and Passenger Rail: Railway – Immediately west of the site, east of the new runway;
- Road Traffic: Roe Highway – Immediately east of the site as well as other secondary roads.

Other noise sources may also be generated as a result of the ACP such as noise sensitive uses near light industry and the activity centre.

5.6.2 Aircraft Noise Assessment

The TNA has been prepared against the requirements of the state planning framework including *State Planning Policy 5.1 : Land Use Planning in the Vicinity of Perth Airport.* The majority of the TOD Precinct is located below the 20 ANEF, where there is no restriction on zoning or development due to airport noise impacts. No parts are at or above ANEF 25. No parts of the proposed High Wycombe South TOD ACP area result in development occurring in areas defined by the relevant Australian Standards as unacceptable.

The north-west portion of the TOD Precinct is between 20 and 25 ANEF, at which point SPP 5.1 recommends a maximum dwelling density of R20 except where:

- Land is identified for more intensive development through strategic planning instruments such as a regional or sub-regional structure plan;
- A higher density coding is desirable to facilitate redevelopment or infill development of an existing residential area; and
- It can be demonstrated that the public benefits of higher density coding outweigh the negative impacts of exposing additional residents to aircraft noise.

Between 20 & 25 ANEF the following developments are conditionally acceptable:

- Dwellings and caravan parks;
- Educational establishments;

- Child-care premises
- Hospitals and nursing homes;
- Places of worship;
- Cinemas, theatres and exhibition centres.

The aircraft affected areas of the TOD Precinct are shown on Figure 36.

The recommendations of this report for the TOD Precinct are:

- As a minimum, all developments (residential, commercial etc) incorporate 6mm thick glass in external facades.
- Any development containing noise sensitive parts, located west of the 20 ANEF, is to have an individual assessment undertaken by a suitably qualified acoustical consultant ensuring compliance with the internal design levels specified within AS2021.
- Any noise sensitive premises shall incorporate a notification on title as follows:

The property is situated in the vicinity of Perth Airport and is currently affected, or may be affected in the future by aircraft noise. Noise exposure levels are likely to increase in the future as a result of an increase in aircraft using the airport, changes in aircraft type or other operational changes.

Refer to Figure 36 – TOD Precinct - Aircraft Affected Areas (Lloyd George)

5.6.3 Freight Railway Noise and Vibration Assessment

The TOD Precinct will be affected by freight train noise, with parts expected to be within Exposure D (average noise levels above 66dB). Freight train logging reports show that freight train movements are reasonably consistent across a 24 hour period.

The recommendations of this report for the TOD Precinct are:

- Where a noise sensitive development is shown to be within Exposure D, these will require an individual assessment undertaken by a suitably qualified acoustical consultant ensuring compliance with SPP 5.4.
- Where a noise sensitive development is shown to be within Exposure A, A+, B+ or C+, the Quiet House Packages of SPP 5.4 Guidelines (refer Appendix C) can be adopted or alternatively, an individual assessment undertaken by a suitably qualified acoustical consultant ensuring compliance with SPP 5.4.
- Where residences are located in close proximity (first row) to a road carrying reasonable volumes in 2050 (Dundas Road, Milner Road and TOD Connector) a notification on title is required. Developers of such sites may wish to obtain specialist advice from a suitably qualified acoustical consultant.
- Any noise sensitive premises shall incorporate a notification on title as follows - *This lot is in the vicinity of a transport corridor and is affected, or may in the future be affected, by road and rail transport noise. Road and transport noise levels may rise or fall over time depending on the type and volume of traffic.*

With regards to vibration impacts from the freight railway, the TOD Precinct is outside of the affected area.

5.6.4 Road Traffic Noise Assessment

With regards to road traffic noise, SPP 5.4 applies to major roads, which can simplistically be thought of as roads that carry more than 20,000 vehicles per day (vpd). For the study, consideration was given to roads that carried less than this amount for completeness, as these will generate noise and will combine with noise from the major roads.

Nevertheless, no part of the TOD Precinct will be significantly affected by Roe Highway.

5.6.5 Other Noise Sources

In addition to the specific studies, it is further recommended that the first row of residential development incorporate notifications on title, warning of the potential for higher than normal noise levels, opposite the following locations:

- Community Purposes
- Light Industrial uses
- Mixed Uses.

Existing industry and new premises, as part of the overall High Wycombe South development, will be required to control their noise emissions to comply with the prescribed standards of the *Environmental Protection (Noise) Regulations 1997*. As applications for future development are submitted, they are to be accompanied by an acoustic assessment.

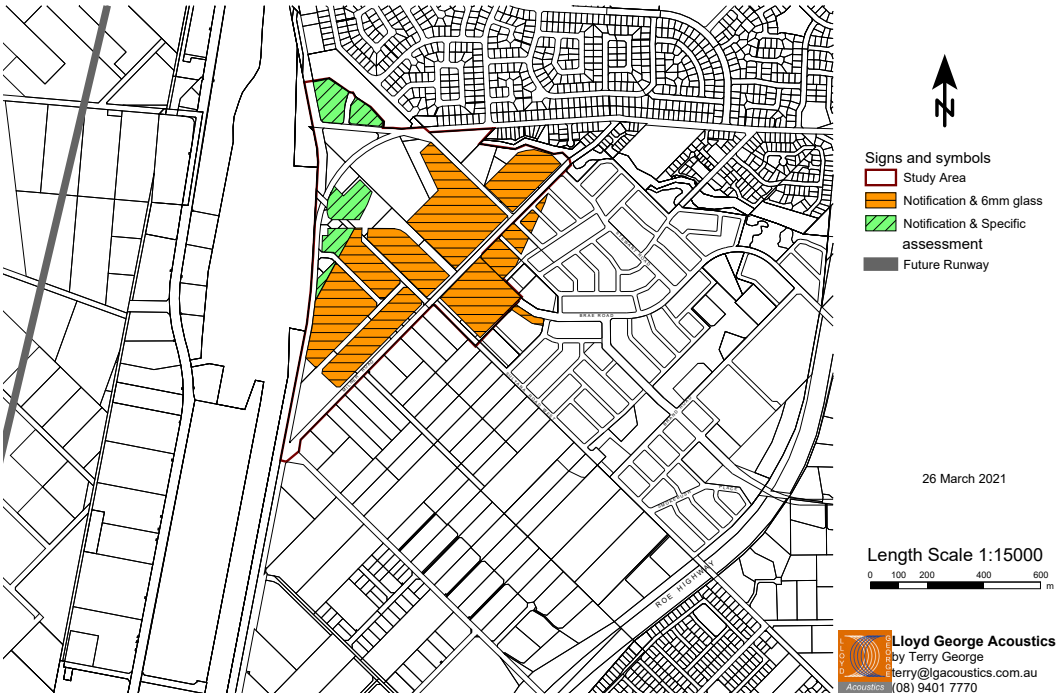


Figure 36. TOD Precinct - Aircraft Affected Areas (Lloyd George)

5.6.6 Noise and Vibration Conclusion

The Transportation Noise Assessment considers various noise sources that may affect the TOD Precinct for the purposes of the ACP.

It will be a requirement that as subdivision design progresses, including final layouts and finished lot levels, a more detailed assessment will be necessary to ensure compliance with the relevant policies and criteria and to determine appropriate levels of noise mitigation (noise walls, façade packages etc).

element.

6. Resource Conservation

The LWMS for the TOD Precinct has been developed to inform and support the lodgement of the TOD ACP. A key objective of the LWMS is to achieve better urban water management outcomes by guiding development within the precinct which incorporates and manages the total water cycle in a sustainable manner and meets objectives for water sensitive urban design. This includes consideration of:

- water conservation and efficiency (water use)
- water quantity management (groundwater levels and surface water flows)
- water quality management (groundwater and surface water quality).

Potential water sustainability measures have been assessed against the sustainability principles outlined in SPP 2.9. This requires that an integrated approach is needed to address these issues and achieve sustainable outcomes and an acceptable 'prioritisation and balance' between competing interests (WAPC 2004) with consideration of the DWMS prepared for the High Wycombe South Area (Strategen JBS&G 2014). This requires that sustainability is pursued through integration of:

- environmental protection (including protection of water resources)
- social advancement
- economic prosperity (WAPC 2004).

6.1 Climate

The TOD Precinct area exhibits a Mediterranean climate, characterised by hot dry summers and mild wet winters, similar to that of other coastal areas in the Perth Metropolitan region.

The closest Bureau of Meteorology (BoM) monitoring station to the TOD Precinct is situated at Perth Airport, approximately 4 kilometres away (BoM 2015). Temperature and rainfall data from this station are summarised in Figure 5 of the LWMS provided at Technical Appendix D.

Summer months extend from October to April, with maximum daily temperatures of between 22 and 32°C. The winter months extend from May to September, with mean minimum temperatures of approximately 18°C.

Rainfall at Perth Airport mainly occurs during winter with a mean monthly rainfall of 155.9 mm in June and 10 mm in January. The mean annual rainfall for the area is 766.1 mm.

6.2 Water Management

The LWMS outlines the key considerations for water management being as follows:

- An existing REW within the northern portion of the TOD Precinct that features a TEC;
- Variable depth to groundwater across the site, with shallow perched groundwater identified surrounding the existing wetland;
- Poison Gully Creek flows on the northern boundary of the site and ultimately discharges to Limestone Creek and the Swan River;
- The southern portion of the site drains to fenced sumps that discharge to the Perth Airport Drain (Airport South Catchment);
- Drainage infrastructure through the site contains a combination of formal (sumps, pipes and pits) and informal (roadside drains);
- The existing wetland receives runoff from the local catchment;
- There is a Bush Forever site along Poison Gully Creek, inclusive of the foreshore area and pockets of remnant vegetation near the wetland; and
- Groundwater monitoring onsite did not indicate any significant issues to prevent development.

6.2.1 Stormwater Management

The key objectives for surface water management within the TOD Precinct are:

- Maintain or restore desirable environmental flows and/or hydrological cycles
- For flood management, manage up to the 1% AEP (100-year ARI event) within the development area to pre-development flows and Water Corporation requirements
- Ensure that the first 15 mm of rainfall receives treatment prior to discharging to a receiving environment
- Minor events should be managed to provide serviceability requirements which have been specified by the City of Kalamunda as:
  - 20% AEP for residential roads, and
  - 10% AEP for Maida Vale Road (district distributor road)
- Roads and public open spaces are to be designed to cater for the surface overflow for more severe storm events
- Habitable floors at least 300 mm above the 1% AEP flood level in the local drainage system and 500 mm above the 1% AEP flood level in basins/sumps (where there is no overflow relief) and Poison Gully Creek.

6.2.2 Groundwater Management

The key objectives for groundwater management within the TOD Precinct are:

- Provide appropriate separation between finished lot levels and groundwater to provide the expected level of amenity
- Ensure soakwells devices are designed above maximum groundwater levels
- Ensure that any subsoil drainage is treated prior to discharge to waterways and sensitive environments
- The following planning measures are adopted to achieve the above objectives:
  - Subsoil drainage and imported fill to ensure adequate separation to groundwater
  - Ensure infiltration of stormwater runoff, consistent with existing conditions
  - Use of bio-retention areas within raingardens, tree pits and intercepting swales to improve groundwater quality compared with the existing conditions.

6.3 Urban Water Management Plans

Urban Water Management Plans (UWMPs) are prepared as a condition of the subdivision (in support of Local Development Plans) to demonstrate that proposed designs achieve the objectives, strategies and design criteria outlined in the LWMS.

UWMPs should be prepared for consolidated development areas or sub-precincts in consultation with the City of Kalamunda and be based on local site investigations appropriate to the proposal and level of risk to water resources. The UWMP should be consistent with the requirements of DWER's *Urban Water Management Plans: Guidelines for preparing plans and for complying with subdivision conditions* (DoW, 2008b). Specifically, the UWMP should include detailed engineering and landscaping designs and design of bio-retention systems and non-structural controls measures to manage impacts from construction.

element.

7. Implementation

7.1 Staging

The potential staging of the future development of the TOD Precinct is complex due to the fragmented land ownership within the area. It is anticipated that medium density residential development will initially occur in the Residential Precinct to the north, north east and potentially on the eastern side of Milner Road, with higher density development ultimately occurring around the High Wycombe Train Station.

Within the TOD Precinct, five distinct sub-precincts have been established. Three of these are expected to facilitate future development, including:

- 1A – Eureka Sub-Precinct
- 1B – Core Sub-Precinct
- 1E – Maida Vale Sub-Precinct

Staging of development will occur dependent on short term services availability, pre-existing road access and prevailing market conditions.