

REDCLIFFE STATION PRECINCT

ACTIVITY CENTRE PLAN



PRELIMINARY CONSULTATION DRAFT - FEBRUARY 2020

ENDORSEMENT

This Activity Centre Plan is prepared under the provisions of the *Planning and Development (Local Planning Scheme) Regulations 2015*.

IT IS CERTIFIED THAT THIS Activity Centre Plan WAS APPROVED BY RESOLUTION OF THE WESTERN AUSTRALIAN PLANNING COMMISSION ON:

..... Date

Signed for and on behalf of the Western Australian Planning Commission

.....

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

..... Witness

..... Date

..... Date of Expiry

TABLE OF AMENDMENTS

Ref	Summary	Date of Approval

The Redcliffe Station Precinct Activity Centre Plan was prepared on behalf of the City of Belmont by:



In association with:

Flyt | Traffic and Transport Planning

EPCAD | Landscape and Environmental Planning

TABEC | Infrastructure and Service Analysis

Project Reference: 16/065A

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EXECUTIVE SUMMARY

The Redcliffe Station Precinct Activity Centre Plan (ACP) has been prepared to coordinate the future subdivision, zoning and development of land within the majority of the area known as 'Development Area 6' as referenced in clause 6.1 and Schedule 14 of *Local Planning Scheme No. 15* and delineated in the Scheme maps.

The ACP follows the preparation of the Development Area 6 *Vision Plan and Implementation Strategy* by the City of Belmont in forming a shared vision of an 'Urban Village in a Landscaped Setting'. The precinct will form a new pocket of life in the central metropolitan Perth area, within walking distance of the Swan River, Redcliffe Train Station and on the door step of the future consolidated Perth Airport which is one of Perth's largest mixed employment hubs.

It is intended as a place for all ages, incomes, lifestyles and families with a mix of spaces for relaxation and enjoyment for the entire community, encompassed by a variety of economic and employment opportunities.

The vision involves the reconnection of the original street network which has long been divided and allow the precinct to truly integrate with itself and its surrounds. A regeneration that will allow people to enjoy safe movement by foot, bicycle, rail, bus and car, through a pedestrian friendly environment.

In particular the vision proposes to:

- Reconnect and improve the original grid road network as a result of the removal of Brearley Avenue, providing better connectivity and easier movement within the precinct and encouraging residents to walk and cycle to their destination;
- Redesign and expand upon the existing open space network to provide a highly functional and attractive network of open space areas down the spine of the precinct, incorporating both the Southern Main Drain and the existing mature trees as a significant asset;
- Design the station precinct to become the functional heart of the precinct, as a focal point for daily commuting, entertainment and dining, accommodating a broad range of uses including daily shopping needs, restaurants, cafes, speciality shops, offices and apartments, in addition to civic uses;
- Improve the connectivity of the precinct to the surrounding amenities and attractions, including the Swan River, Garvey Park and the Perth Airport Estate, to ensure that residents have excellent access to these opportunities; and
- Improve the interface of the precinct with Great Eastern Highway to leverage off the opportunity that exposure to the Highway and potential views of the Swan River provide.



Figure 1: Extensive consultation was undertaken with the local community in the preparation of the Development Area 6 Vision Plan & Implementation Strategy, which provides guidance to the preparation of this Activity Centre Plan.

The subject area has been divided into five sub-precincts based on the intended character and function of the local areas, key attributes and urban design vision.

These sites are identified as:

- The **Centre Sub-Precinct**, representing the land surrounding the new Redcliffe Train Station;
- The **Centre Transition Sub-Precinct**, representing the land at the periphery of the centre precinct and to the south of Second Street;
- The **Residential Core Precinct**, representing the residential land between the Centre/ Centre Transition Precinct and the Great Eastern Highway Urban Corridor;
- The **School Interface Sub-Precinct**, representing the residential land which interfaces with the Redcliffe Primary School; and
- The **Urban Corridor Sub-Precinct**, representing land which generally abuts Great Eastern Highway.

The achievable built form outcomes differ by sub-precinct, and careful consideration should be given to the primary controls associated with the relevant precinct in considering built form design outcomes.

The Centre sub-precinct and Urban Corridor sub-precinct are intended to accommodate medium to high density mixed use development, with commercial and retail development leveraging off the locational attributes of the Great Eastern Highway interface and the new Redcliffe Train Station.

The Centre Transition, Residential Core and School Interface sub-precincts are intended to accommodate a range of residential development opportunities, with new residents enjoying high quality open space, walking distance to public transport and close proximity to major employment centres.

The redevelopment of the Redcliffe Station Precinct will be facilitated by a comprehensive planning framework, of which this Activity Centre Plan forms an important part. It is anticipated that the statutory implementation of the Activity Centre Plan will be facilitated either by the preparation of an Improvement Plan and Improvement Scheme under Part 8 of the *Planning & Development Act 2005*, or via amendments to the City of Belmont's *Local Planning Scheme No. 15*, subject to further discussion and agreement with the Department of Planning, Lands and Heritage and the Western Australian Planning Commission.

The implementation of the Activity Centre Plan will also be guided by an Infrastructure Funding Strategy and Development Contributions Plan, in order to ensure infrastructure is delivered in a cost-effective and timely manner, and Design Guidelines, to ensure that built form is designed and delivered in accordance with the expectations of the vision.

A summary of the key opportunities the Redcliffe Station Precinct ACP provides is outlined in the following table.

ACTIVITY CENTRE PLAN SUMMARY TABLE

ITEM	DATA	ACP REFERENCE
Total ACP Area	49.09 Ha	Part 2, Introduction
Area of each land use proposed	Residential - 22.16 Ha Mixed Use - 8.69 Ha School - 3.26 Ha	Part 1, Plan 1
Estimated No. of Dwellings	2,550 - 3,600	Part 2, Section 3
Estimated Residential Site & Target Density	R60-R160	Part 1, Plan 1
Estimated Population	5,350 - 7,560	Part 2, Section 3
No. of High Schools	N/A	N/A
No. of Primary Schools	1	Part 2, Section 3
Estimated Non-Residential Floorspace	4.35 Ha	Part 2, Section 3
Estimated Open Space Area	3.5 Hectares	Part 2, Section 4



IMPLEMENTATION

PART

1

1. INTRODUCTION

1.1 ACTIVITY CENTRE PLAN AREA

The Activity Centre Plan (ACP) applies to the majority of the area known as 'Development Area 6' as referenced in clause 6.1 and Schedule 14 of *Local Planning Scheme No. 15* and delineated in the Scheme maps.

The ACP area is located within the suburb of Redcliffe and is bound by Tonkin Highway to the southwest, Great Eastern Highway to the northwest, Coolgardie Avenue and the Perth Airport Estate to the northeast (**Plan 1**).

The ACP covers a total area of 49.0907 hectares, and at the time of preparing this report, consists of 288 privately owned parcels of land.

1.2 ACTIVITY CENTRE PLAN CONTENT

The ACP comprises:

- **Part One - Implementation:** This section outlines the proposed zoning and reservations, subdivision and development requirements and other requirements. This section is to be used to guide discretion of determining authorities and to inform future provisions for the statutory instrument which will be used to govern land use and development in the precinct. Part One also provides guidance as to the intended investment in the public realm and the movement network to assist stakeholders in understanding the overall vision.
- **Part Two - Explanatory Report:** This section provides the strategic basis for the ACP and outlines the background, rationale, design basis and intent of the Plan to support the implementation of Part One.
- **Appendices:** The appendices provide further detail around the components of transport, service infrastructure and drainage management to guide the implementation of public works upgrades.

1.3 INTERPRETATION AND SCHEME RELATIONSHIP

The ACP has been prepared in accordance with:

- a) The decision of the Statutory Planning Committee of 28 May 2019 that an Activity Centre Plan is to be prepared in accordance with Part 5, Schedule 2 of the *Planning & Development (Local Planning Scheme) Regulations 2015*;
- b) The WAPC's State Planning Policy 4.2 (Activity Centres for Perth & Peel), which details the requirements for preparing Activity Centre Plans;
- c) The City of Belmont's *Local Planning Scheme No. 15* clause 6.1 and Schedule 14 which require the preparation of a structure plan for part or all of the area known as Development Area 6; and
- d) The WAPC's Structure Planning Framework (August 2015).

The statutory implementation of the plan has not been confirmed at the time of preparing this report, but is broadly proposed to occur in one of two ways:

- **Option 1** - An Improvement Plan, along with an Improvement Scheme, will be prepared based on the recommendations and outcomes of the ACP in accordance with Part 8 of the *Planning & Development Act 2005*, and statutory implementation will thereafter be enacted by the Improvement Scheme rather than the City of Belmont's *Local Planning Scheme No. 15*; or
- **Option 2** - The ACP will be used to guide amendments to the City of Belmont's *Local Planning Scheme No. 15*, which will thereafter be the statutory mechanism which guides /controls subdivision and development within the precinct.

In terms of Option 1, whilst this has been identified as an implementation mechanism, the Department of Planning, Lands and Heritage has advised that the Western Australian Planning Commission do not intend to initiate an Improvement Plan or Improvement Scheme for the precinct.

Upon confirmation of the preferred statutory implementation mechanism the ACP will be updated to reflect the final relationship between the plan and the Scheme.



1.4 OPERATION

In accordance with the Planning and Development (Local Planning Scheme) Regulations 2015 - Schedule 2 - Deemed Provisions, the ACP shall become operational upon its approval by the Western Australian Planning Commission.

^A It is noted that the Department of Planning, Lands and Heritage has advised that the Western Australian Planning Commission do not intend to initiate an Improvement Plan or Improvement Scheme for the precinct.

2. ZONING AND SUB-PRECINCT AREAS

The ACP area has been divided into:

- Zoning and reservations for the purpose of guiding land use permissibility; and
- Sub-precincts for the purpose of guiding primary controls.

Both of which are outlined as follows:

2.1 ZONING AND RESERVATIONS

The ACP area is divided into two zones and three reservations as depicted in **Plan 1**. The objectives for each are generally consistent with the *Planning and Development (Local Planning Scheme) Regulations 2015*, Schedule 1 model provisions and are outlined here for reference only.

1.1.1 RESIDENTIAL ZONE

The objectives of the Residential Zone are:

- To provide for a range of housing and a choice of residential densities to meet the needs of the community;
- To facilitate and encourage high quality design, built form and streetscapes throughout residential areas; and
- To provide for a range of non-residential uses, which are compatible with and complementary to residential development.

1.1.2 MIXED USE ZONE

The objectives of the Mixed Use zone are:

- To provide for a wide variety of active uses on street level which are compatible with residential and other non-active uses on upper levels; and
- To allow for the development of a mix of varied but compatible land uses such as housing, offices, showrooms, amusement centres and eating establishments which do not generate nuisances detrimental to the amenity of the district or to the health, welfare and safety of its residents.

1.1.3 PUBLIC OPEN SPACE

The objectives of the Public Open Space reserve are:

- To set aside areas for public open space, particularly those established under the *Planning and Development Act 2005 s. 152*; and
- To provide for a range of active and passive recreation uses such as recreation buildings and courts and associated car parking and drainage.

1.1.4 RAILWAYS

The objective of the Railway reserve is to set aside land required for passenger rail services.

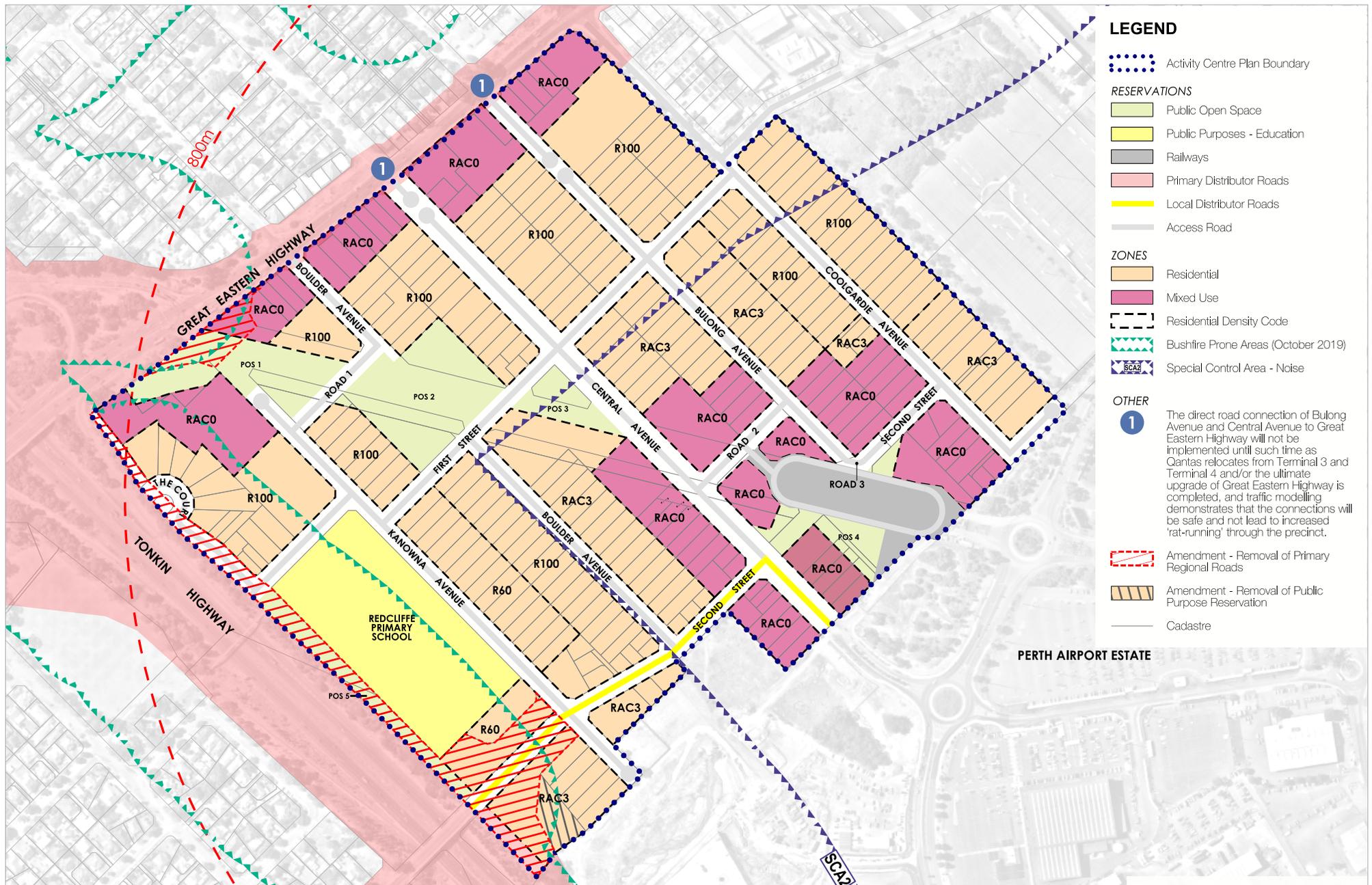
1.1.5 PUBLIC PURPOSE - PRIMARY SCHOOL RESERVE

The objective of the Public Purpose - Primary School reserve is to provide for public purposes which specifically provide for a range of essential educational facilities.

2.2 RESIDENTIAL DENSITY

Plan 1 outlines the Residential Density Codes for sites zoned Residential and Mixed Use in accordance with the WAPC *State Planning Policy 7.3* Volume 1 and Volume 2.

The implementation of the density codes is to be in accordance with **Table 1** and the corresponding provisions of Section 4 and Section 5 of Part 1, in addition to the provisions of the *Redcliffe Station Precinct Design Guidelines* and *State Planning Policy 7.3 - Volume 1 and Volume 2*.



Plan 1: Zoning and Reservation Plan for the Redcliffe Station Precinct Activity Centre Plan.

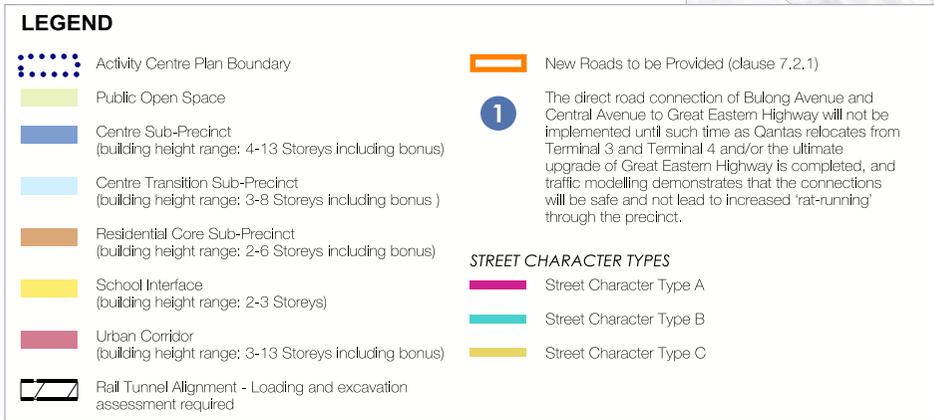
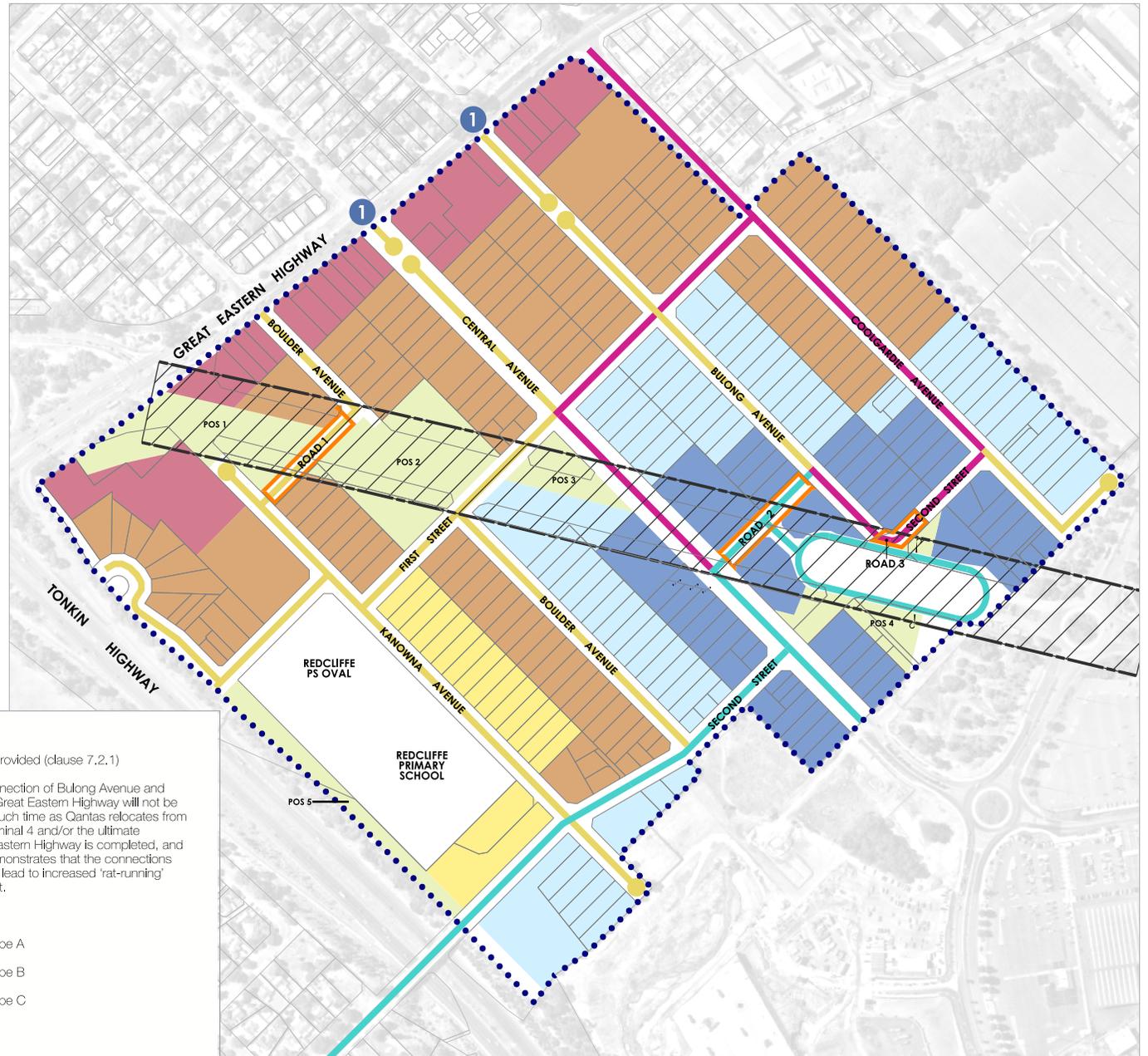
2.3 SUB PRECINCTS

The subject area has been divided into five sub-precincts based on the intended character and function of the local areas, key attributes and urban design vision.

These sub-precincts are identified as:

- The **Centre Sub-Precinct**, representing the land surrounding the new Redcliffe Train Station;
- The **Centre Transition Sub-Precinct**, representing the land at the periphery of the centre sub-precinct and to the south of Second Street;
- The **Residential Core Sub-Precinct**, representing the residential land between the Centre/Centre Transition Sub-Precinct and the Great Eastern Highway Urban Corridor;
- The **School Interface Sub-Precinct**, representing the residential land which interfaces with the Redcliffe Primary School;
- The **Urban Corridor Sub-Precinct**, representing land which abuts Great Eastern Highway.

These sub-precincts are outlined spatially in **Plan 2** and further described in **Section 6**.



Plan 2: Sub-Precinct Plan for the Redcliffe Station Precinct Activity Centre Plan.

Table 1: Primary Control Table for Redcliffe Station Precinct Activity Centre Plan.

Key Controls	Part 1 Section Reference	Centre	Centre Transition	Residential Core	School Interface	Urban Corridor
Minimum Development Site Area (m ²)	5.1	1,600m ² _A	1,600m ²	1,600m ²	1,600m ²	1,000m ²
Minimum Development Site Frontage (m)	5.1	30m	30m	30m	30m	20m
Site R-Coding	2.2	R-AC0	R-AC3	R100	R60	R-AC0
Minimum Site Area per dwelling (for Single and Grouped Dwellings)	3.5	Not Applicable	80m ² _B	80m ² _B	80m ² _B	Not Applicable
Minimum Residential Density (Minimum Dwelling Units per 100m ² of Site Area)	5.2	1.25	0.88	0.66	0.55	0.88 _C
Plot Ratio Maximum	5.5	3.0	2.0	1.3	0.8	3.0
Plot Ratio Maximum where development bonuses applicable	5.6	4.0	3.0	2.0	n/a	4.0
BUILDING HEIGHT						
Building Height Minimum (metres/approximate storeys)	5.3	4 Storeys	3 Storeys	2 Storeys	2 Storeys	3 Storeys
Building Height Maximum (metres/storeys)	5.4	8 Storeys	6 Storeys	4 Storeys	3 Storeys	8 Storeys
Building Height Maximum where bonuses applicable (metres/storeys)	5.6	13 Storeys _D	8 Storeys	6 Storeys	n/a	13 Storeys _D
Boundary Wall Maximum Height	NA	Refer to <i>Redcliffe Station Precinct Design Guidelines</i>				
BUILDING SETBACKS						
Primary Street Setback (Minimum) _E	5.7	Nil (up to 2 storeys) 4.0m (above 2 storeys)	2.0m (up to 2 storeys) 4.0m (above 2 storeys)	2.0m (up to 2 storeys) 4.0m (above 2 storeys)	3.0m (up to 2 storeys) 4.0m (above 2 storeys)	Nil (up to 2 storeys) 4.0m (above 2 storeys)
Primary Street Setback (Maximum) _E	5.7	2.0m (up to 2 storeys) N/A (above 2 storeys)	4.0m (up to 2 storeys) N/A (above 2 storeys)	4.0m (up to 2 storeys) N/A (above 2 storeys)	4.0m (up to 2 storeys) N/A (above 2 storeys)	2.0m (up to 2 storeys) N/A (above 2 storeys)
Secondary Street Minimum Setback (applicable to distance of 20m measured from primary street boundary) _{E,F}	5.7	nil	2.0m	In accordance with SPP7.3 Volume 1 and Volume 2	In accordance with SPP7.3 Volume 1 and Volume 2	nil
Side Boundary - minimum setback	5.7	In accordance with SPP7.3 Volume 1 and Volume 2				
Rear Boundary - minimum setback	5.7	2m minimum and 4m average (ground floor) as communal property 4m (second storey) 7.5m (third and fourth storey) 9m (fifth to seventh storey) 12m (eighth storey and above)				6m (Ground and 2nd storey) 7.5m (3rd - 4th storey) 9m (5th to 7th storey) 12m (8th storey and above)

_A Except where otherwise shown in Figure 9.

_B The design of single or grouped dwellings at a minimum lot size of less than 100m² will be assessed in accordance with the *Redcliffe Station Design Guidelines*.

_C Minimum residential density requirement subject to clause 5.2.3 for the Urban Corridor precinct.

_D The maximum building height of 13 storeys is subject to a maximum actual height of 46m AHD in accordance with the *Airports (Protection of Airspace) Regulations 1996*.

_E The minimum and maximum setbacks may be varied where a Publicly Accessible Private Open Space (PAPOS) is proposed in accordance with clause 5.6.

_F The secondary street minimum setback beyond 20m measured from the primary street boundary will be in accordance with SPP7.3 Volume 1 and Volume 2.

3. LAND USE

3.1 LAND USE PERMISSIBILITY

3.1.1 Land use permissibility for the Residential and Mixed Use zones within the Activity Centre Plan Area are outlined in **Table 2**.

3.2 INTERPRETATION OF THE LAND USE PERMISSIBILITY TABLE

3.2.1 The definition of uses, interpretation of symbols used in the use class table and the manner in which uses not listed and non-conforming uses are considered is in accordance with the relevant provisions of the Scheme.

3.3 ACTIVE GROUND FLOOR USES (CENTRE AND URBAN CORRIDOR SUB-PRECINCTS)

3.3.1 Ground floor uses shall be non-residential at the street frontage and POS frontage for buildings along areas identified as 'Active Frontage Required' on **Figure 9 and Figure 13**.

3.3.2 For the purpose of clause 3.3.1, Active Uses shall include but are not limited to:

- Amusement Parlour
- Cinema/Theatre
- Community Purpose
- Fast Food Outlet / Lunch Bar
- Hotel
- Health Centre or Health Studio
- Liquor Store - Small
- Public Amusement
- Restaurant / Cafe
- Shop
- Small Bar or Tavern

The design of the street frontage for active ground floor uses is guided by the *Redcliffe Station Precinct Design Guidelines*.

3.4 GROUND FLOOR USES (URBAN CORRIDOR SUB-PRECINCT)

3.4.1 Residential uses are not permitted on the ground floor of development fronting Great Eastern Highway or for the length of 50m down any side street from Great Eastern Highway.

3.4.2 For the purpose of clause 3.4.1 Residential uses include:

- Aged or Dependent Persons Accommodation;
- Multiple Dwelling; and
- Residential Building.

3.5 SINGLE HOUSE AND GROUPED DWELLING USES

3.5.1 The minimum site area for a single house or grouped dwelling is 80m² within zones where the use class is permitted.

3.5.2 The design of single houses or grouped dwellings is to be guided by the *Redcliffe Station Design Guidelines*, in addition to the provisions of this ACP.

3.6 SHOWROOM USE

3.6.1 The use class of 'Showroom' within the Mixed Use zones is only permitted within the 'Urban Corridor' sub-precinct and designed in accordance with the *Redcliffe Station Precinct Design Guidelines*.

3.7 SHOP USE

3.7.1 The use class of 'Shop' is only a Discretionary use class (D) in the Mixed Use zone within the 'Centre' sub-precinct, and is an 'X' use (not permitted) within the Mixed Use zone within the 'Urban Corridor' sub-precinct.

Table 2: Land Use permissibility for the Mixed Use and Residential zones within the Activity Centre Plan area.

Use Class	Mixed Use Zone	Residential Zone	Use Class	Mixed Use Zone	Residential Zone
Aged or Dependent Persons Dwelling	D ¹	D	Corrective Institution	X	X
Amusement Facility	D	X	Dog Kennels	X	X
Amusement Parlour	D	X	Dry-Cleaning Premises	D	X
Ancillary Accommodation	D	D	Educational Establishment	D	X
Art Gallery	D	X	Exhibition Centre	A	X
Auction Mart	A	X	Fast Food Outlet / Lunch Bar	A	X
Bed and Breakfast	A	D	Fuel Depot	X	X
Betting Agency	D	X	Funeral Parlour	D	X
Car Park	D	D	Garden Centre	D	X
Caravan Park	X	X	Grouped Dwelling	X	D ²
Caretakers Dwelling	X	X	Health Centre	D	X
Child Care Premises	D	A	Health Studio	D	X
Child Family Day Care	D	D	Holiday Accommodation	X	X
Cinema/Theatre	A	X	Home Business	P	D
Civic Use	D	D	Home Occupation	P	P
Club Premises	D	X	Home Store	D	A
Community Home	D	D	Hospital	A	X
Consulting Rooms	D	X	Hotel	D	X
Convenience Store	A	X	Industry-General	X	X

Note 1 - Residential uses restricted within Urban Corridor sub-precinct in accordance with Clause 3.4.

Note 2 - Single Houses and Grouped Dwellings are to be designed in accordance with Clause 3.5

Note 3 - Showroom is a 'Discretionary' use in the Urban Corridor sub-precinct only in accordance with Clause 3.6

Note 4 - Shop is a 'Discretionary' use in the Centre sub-precinct only in accordance with Clause 3.7.

Table 2: Land Use permissibility for the Mixed Use and Residential zones within the Activity Centre Plan area.

Use Class	Mixed Use Zone	Residential Zone	Use Class	Mixed Use Zone	Residential Zone
Industry - Hazardous	X	X	Multiple Dwelling	D ¹	D
Industry - Light	X	X	Night Club	X	X
Industry - Noxious	X	X	Nursing Home	D	D
Industry - Service	X	X	Office	D	X
Laundromat	D	X	Open Air Display	X	X
Liquor Store - Small	A	X	Pet Day Care	A	X
Liquor Store - Large	X	X	Private Recreation	D	X
Logistics Centre	X	X	Place of Worship	A	X
Lunch Bar	D	X	Public Amusement	D	X
Massage Parlour	A	X	Radio or TV Installation	D	D
Medical Centre	D	X	Reception Centre	A	X
Mining Operations	X	X	Residential Building	D ¹	D
Mobile Phone Tower & Associated Facilities	X	X	Restaurant / Cafe	D	X
Motel	D	X	Restricted Premises	D	X
Motor Vehicle, Boat or Caravan Sales	X	X	Salvage Yard	X	X
Motor Vehicle Hire	X	X	Service Station	X	X
Motor Vehicle Repair	X	X	Serviced Apartments	D	D
Motor Vehicle Wash	X	X	Shop	D ⁴	X
Motor Vehicle Wrecking	X	X	Showroom	D ³	X

Note 1 - Residential uses restricted within Urban Corridor sub-precinct in accordance with Clause 3.4.

Note 2 - Single Houses and Grouped Dwellings are to be designed in accordance with Clause 3.5

Note 3 - Showroom is a 'Discretionary' use in the Urban Corridor sub-precinct only in accordance with Clause 3.6

Note 4 - Shop is a 'Discretionary' use in the Centre sub-precinct only in accordance with Clause 3.7.

Table 2: Land Use permissibility for the Mixed Use and Residential zones within the Activity Centre Plan area.

Use Class	Mixed Use Zone	Residential Zone
Single House	X	D ²
Small Bar	A	X
Stables	X	X
Trade Display	X	X
Tavern	A	X
Telecommunications Infrastructure	A	P
Trade Supplies	X	X
Transport Depot	X	X
Truck Stop	X	X
Veterinary Centre	A	X
Vet Consulting Rooms	D	X
Vet Hospital	A	X
Video Store	D	X
Warehouse	X	X
Waste Storage Facility	X	X

Note 1 - Residential uses restricted within Urban Corridor sub-precinct in accordance with Clause 3.4.

Note 2 - Single Houses and Grouped Dwellings are to be designed in accordance with Clause 3.5

Note 3 - Showroom is a 'Discretionary' use in the Urban Corridor sub-precinct only in accordance with Clause 3.6

Note 4 - Shop is a 'Discretionary' use in the Centre sub-precinct only in accordance with Clause 3.7.

4. SUBDIVISION

4.1 SUBDIVISION

4.1.1 Green title and survey-strata subdivision of land will not be supported where:

- The proposed lot size is less than the minimum site area requirement for the sub-precinct as outlined in **Table 1**; and
- The proposed subdivision is not demonstrated to be consistent with the objectives of the sub-precinct as outlined in **Section 6**.

4.2.1 The subdivision of land within the ACP area to create green title, survey strata or built strata lots with a site area less than the minimum site area outlined in **Table 1** will only be supported where an applicant can demonstrate that a proposal will facilitate residential and mixed use development at an intensity appropriate to a transit oriented development and where:

- a) The Plan of Subdivision is demonstrated to be in accordance with a development approval granted for the subject site; and
- b) Approved development has been undertaken to a minimum plate height of 3m above natural ground level.

4.2 NOTIFICATIONS ON TITLE

4.3.1 At subdivision and/or development approval stage a notification on title pursuant to section 70A of the *Transfer of Land Act 1893*, together with section 165 of the *Planning and Development Act 2005* may be required to inform prospective future owners of:

- a) Access restrictions imposed for sites fronting Great Eastern Highway or other roads where direct vehicle access restriction is required;
- b) The likelihood of higher noise levels due to the mixed use nature of the locality, volume of vehicle traffic, proximity to the railway station and/or proximity to the Perth Airport Estate; or
- c) Implications of location in the context of existing bush fire risks.

5. DEVELOPMENT

Note: Minimum site development requirements within the areas shown on Plan 1 identified as 'Bushfire Prone Area (October 2019)' and/or 'Special Control Area 2 - Noise' may be influenced by the requirements outlined within the *Bushfire Management Plan and Noise Forecast Plan* included as **Appendix 4** and **Appendix 5** respectively.

5.1 MINIMUM DEVELOPMENT SITE REQUIREMENTS

5.1.1 The minimum development site area and site width requirement for development sites is specified in **Table 1** for each of the sub-precincts.

5.1.2 Approval for development will not be granted for a site which does not achieve:

- a) The minimum development site area, either as a single land parcel or as a combination of adjacent land parcels, in accordance with the minimum prescribed in **Table 1** (or otherwise amended in **Figure 9**); or
- b) The minimum site width at the primary street frontage only, in accordance with the minimum prescribed in **Table 1**.

subject to the exemptions outlined in clause 5.1.3.

5.1.3 Exemptions to the minimum development site area and site width requirement may only be considered where development proposes:

- A site area no less than 95% of the **Table 1** requirement and an applicant can demonstrate that the proposal otherwise aligns with the precinct objectives;
- Refurbishment of existing commercial development which provides additional net leasable area no greater than 15% of the existing commercial development;
- Extensions to existing single house or grouped dwellings which provide additional floor space no greater than 15% of the existing single house or grouped dwelling on site;
- Provision of an ancillary dwelling with a plot ratio area of no greater than 100m²; or
- Provision of an outbuilding in accordance with the Residential Design Codes.

5.2 MINIMUM RESIDENTIAL DENSITY REQUIREMENT

5.2.1 The minimum residential dwelling density requirement is specified in **Table 1** for each of the sub-precincts.

5.2.2 Development proposals are to outline compliance with the minimum residential dwelling density requirement as a component of an application.

5.2.3 The minimum residential density requirement for sites within the 'Urban Corridor' precinct may include 'short stay accommodation' uses as dwelling units for the purpose of meeting the minimum requirement.

5.3 MINIMUM BUILDING HEIGHT

5.3.1 The minimum building height is specified in **Table 1** for each of the precincts.

5.3.2 The minimum building height requirement will apply only to:

- a) The portion(s) of a building that front the primary street; and
- b) a minimum depth of 8m beyond the maximum primary street setback line.

as shown in **Figure 2**.

5.3.3 The minimum floor to ceiling height of the ground floor of a development site identified as 'Active Frontage Required' or 'Adaptable Ground Floor Required' in **Figure 9** and **Figure 13** is 4m, as shown in **Figure 3**.

Development proposals are to demonstrate compliance with the minimum floor to ceiling height.

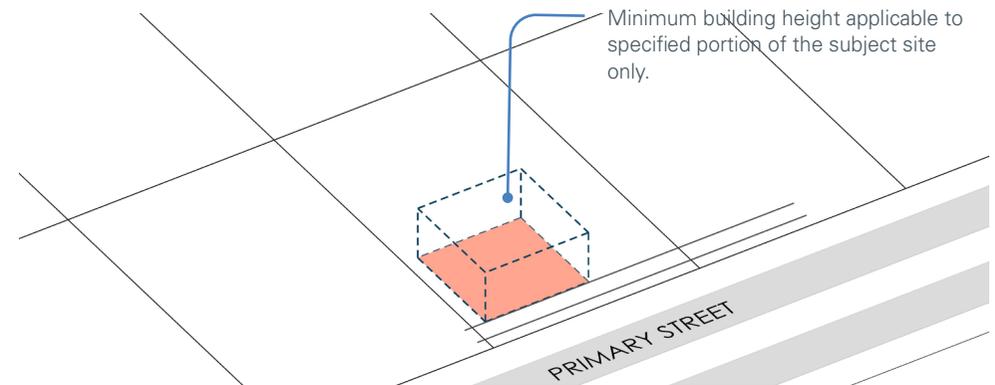


Figure 2: The minimum building height requirement outlined in Table 1 applies only to a minimum depth of 8m beyond the maximum primary setback line for the portion of the building that fronts the primary street.

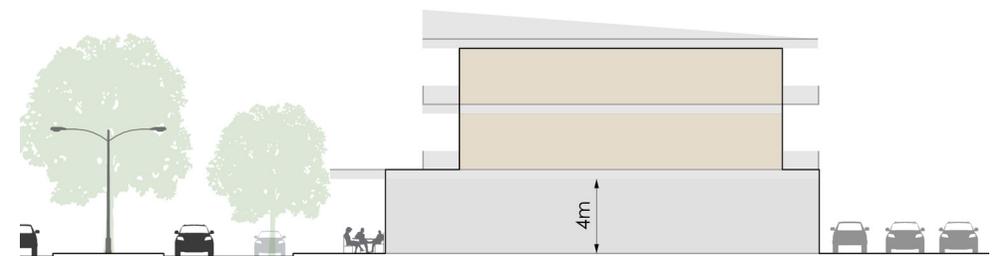


Figure 3: The minimum floor to ceiling height is 4m for the ground floor of development within areas annotated as 'Active Frontage Required' or 'Adaptable Ground Floor Required' in Figure 9 and Figure 13.

5.4 MAXIMUM BUILDING HEIGHT

- 5.4.1** The maximum building height requirement is specified in **Table 1** for each of the sub-precincts.
- 5.4.2** The potential bonus building height is specified in **Table 1** for each of the sub-precincts (**Figure 4**). The bonus building height is available only where a proposal meets the bonus criteria outlined in clause 5.6 (**Figure 5**).
- 5.4.3** Support for the proposed building height for development within the area annotated on **Plan 2** as 'Rail Tunnel Alignment - Loading and Excavation Assessment Required' will be subject to the applicant demonstrating that the rail tunnel infrastructure will be protected during and post construction.

5.5 MAXIMUM PLOT RATIO

- 5.5.1** The maximum plot ratio is specified in **Table 1** for each of the sub-precincts.
- 5.5.2** For the purpose of calculation the plot ratio area is defined by *State Planning Policy 7.3 - Residential Design Codes* (as amended) inclusive of non-residential floorspace and excluding service areas, storerooms, preparation areas, lobbies, bin storage areas, passageways or amenities areas common to more than one dwelling or commercial site.

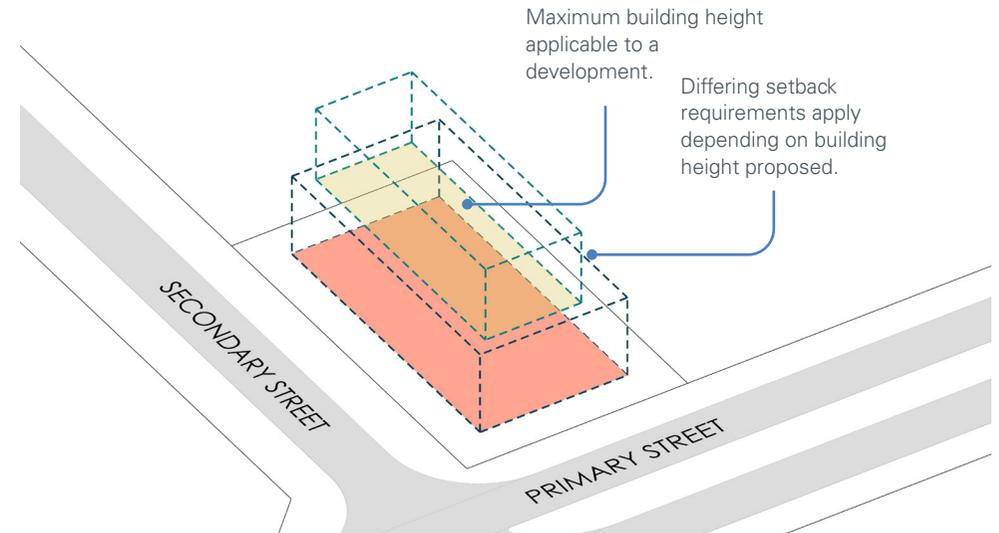


Figure 4: The maximum building height requirement outlined in Table 1 applies to all development proposals, with boundary setbacks differing depending on the building height proposed.

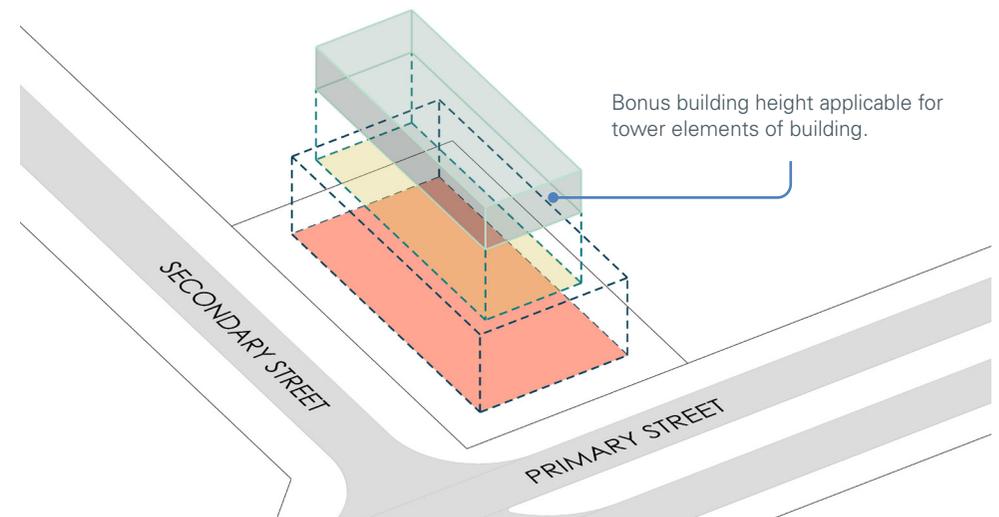


Figure 5: The maximum building height requirement can be increased to accommodate bonus height where a development demonstrates one or more of the bonus criteria.

5.6 DEVELOPMENT BONUS CRITERIA

5.6.1 The potential bonus building height and plot ratio available to developers is specified in **Table 1** for each of the sub-precincts.

5.6.2 The bonus building height and/or plot ratio is available only where a proposal includes one or more of the following:

5.6.2.1 Publicly Accessible Private Open Space

Publicly accessible private open space areas (PAPOS) are encouraged in the general vicinity of the locations shown on the Centre Precinct Plan (**Figure 9**) and Urban Corridor Precinct Plan (**Figure 13**).

In order to be considered as a sufficient community benefit for the purpose of justifying bonus building height or plot ratio a PAPOS must comply with the following:

- The PAPOS must represent a minimum area of 10% of the subject site and have a minimum dimension of 8m (**Figure 6**);
- The PAPOS must be either directly abutting the public realm or designed to be a logical extension of the public realm via the built form design, and must be designed as an integral part of abutting land uses (**Figure 6**);
- The PAPOS must be developed to accommodate the use of the broader public through the installation of landscaping, seating and other features to invite the public into the space;
- The PAPOS area must be identified as an easement in gross in favour of the local government to provide public access to the site in perpetuity, with maintenance and upkeep of the area to be provided by the landowner;
- The PAPOS must be open to natural daylight and sufficient sunlight to support landscaping, and not be enclosed on more than two sides, and does not include undercroft areas of a building; and
- The PAPOS must contain a minimum of 30% deep root zone and be able to support significant advance of tree planting.

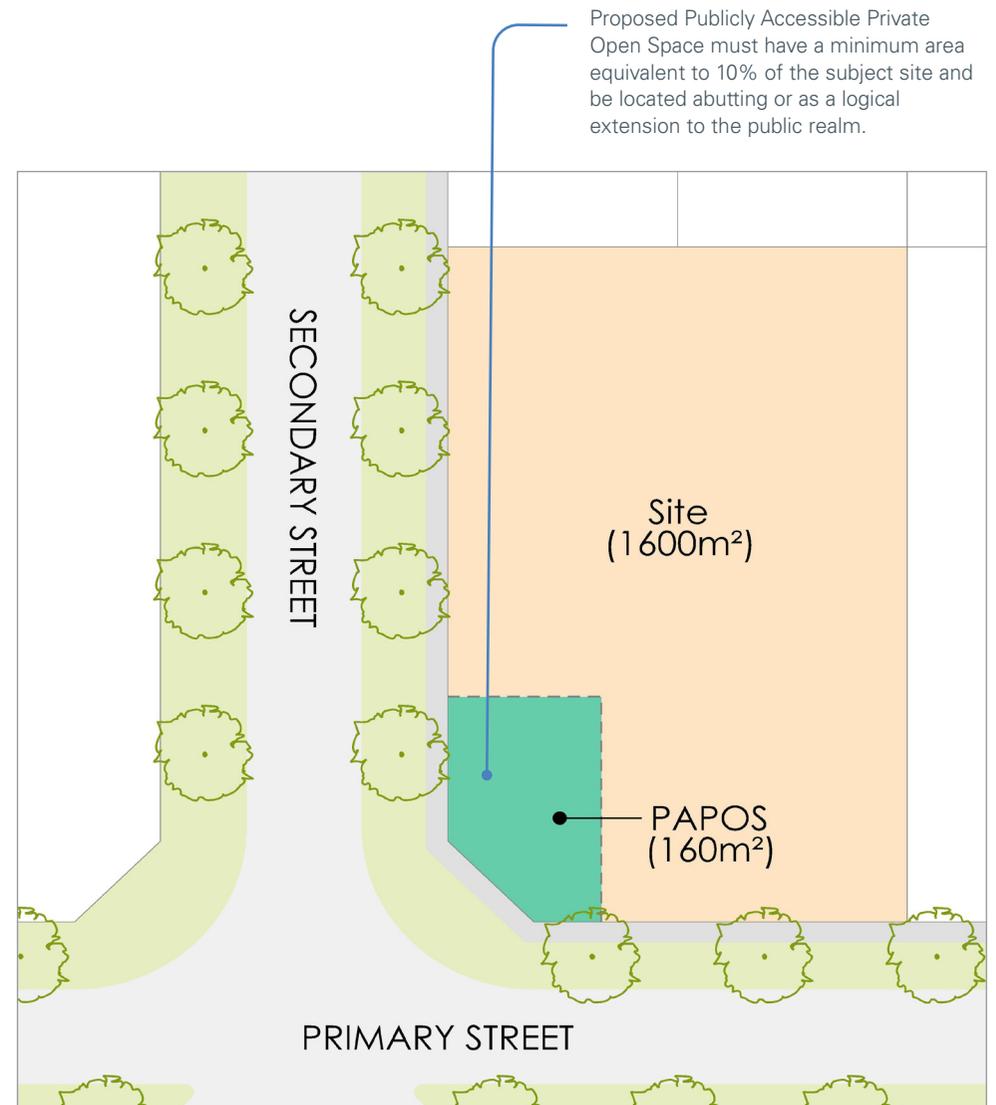


Figure 6: Development height and plot ratio bonuses may be granted where a proposal identifies a publicly accessible private open space (PAPOS) consistent with the provisions of clause 5.6.2.1.

5.6.2.2 General Community Benefit

Bonus building height and/or bonus plot ratio may be granted for a proposal which provides for the development of a use or facility which can be demonstrated as sufficiently beneficial to the broader community.

Such uses or facilities may include:

- The provision of affordable housing in collaboration with the State Government or not for profit housing provider;
- Retention of an existing large tree or planting of a large tree in accordance with the requirements of SPP7.3 - Volume 2;
- Dwellings to meet universal design requirements to:
 - a minimum Platinum level for 20% of all dwellings proposed; or
 - a minimum Silver Level for 40% of all dwellings proposed.

In accordance with the *Liveable House Design Guidelines* (Liveable Housing Australia).

- A commercial use with wider community benefits such as a child day care centre, after school care, educational establishment or other use having wider community benefits;
- Visiting cyclists' end-of-trip facilities including secure bicycle storage facilities, change rooms, clothes lockers and showers, for use by visitors to the proposed building;
- One or more facilities such as a shared office space, meeting room, boardroom, function room, lecture theatre or exhibition space, available for use by external community groups, small businesses or individuals;
- A dedicated room for use as a community exhibition gallery for display of artworks or for other exhibitions; or
- Any other use and/or facility which can be demonstrated as providing a broader community benefit.

Alternatively proponents may identify community infrastructure upgrade(s) within the abutting or surrounding public realm that they may undertake as an in kind contribution in exchange for a building height or plot ratio bonus, or provide a monetary contribution to the local government for such community infrastructure in lieu of the in kind provision.

5.7 BOUNDARY SETBACKS

5.7.1 Street Setbacks

5.7.1.1 The minimum and maximum primary street and secondary street setbacks are specified in **Table 1** for each of the sub-precincts (**Figure 7**).

5.7.1.2 Street setback areas are to be designed and developed in accordance with the *Redcliffe Station Precinct Design Guidelines*.

5.7.2 Side and Rear Boundary Setbacks

5.7.2.1 The minimum side and rear boundary setbacks are specified in **Table 1** for each of the sub-precincts.

5.7.2.2 Variations to the side boundary setback requirements are to be considered in accordance with the R-Codes.

5.7.2.3 Rear boundary setback areas are to be designed and developed in accordance with the *Redcliffe Station Precinct Design Guidelines*.

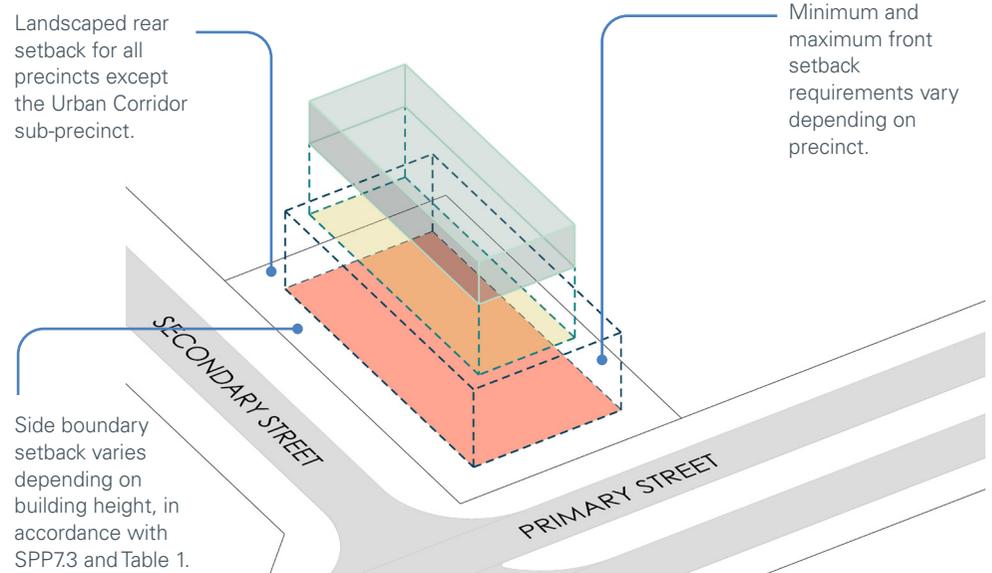


Figure 7: The minimum building setback requirements outlined in Table 1 aim to minimise the impact of building bulk and scale on the streetscape and adjacent neighbours.

5.8 VEHICLE PARKING AND ACCESS

- 5.8.1** The requirements for car and bicycle parking are outlined in **Table 3**.
- 5.8.2** All vehicle parking is to be provided within the proposed development site area and not within the public realm.
- 5.8.3** Any proposal which seeks to exceed the maximum car parking ratio may be considered, but if supported will be required to provide a financial contribution towards the City's sustainable movement network fund in accordance with the rates outlined in the *Redcliffe Station Precinct Design Guidelines*.
- 5.8.4** The bicycle parking spaces required are to be provided as dedicated parking facilities for users of the site, and should not be constrained by collocation with other on site facilities or uses.
- 5.8.5** At grade vehicle parking shall be screened from the view of the primary and secondary street via built form, fencing, landscaping or other screening which provides a high quality interface with the public realm (**Figure 8**).
- 5.8.6** A proposal for basement parking within the the area annotated on **Plan 2** as 'Rail Tunnel Alignment - Loading and Excavation Assessment Required' will be subject to the applicant demonstrating that the rail tunnel infrastructure will be protected during and post construction.

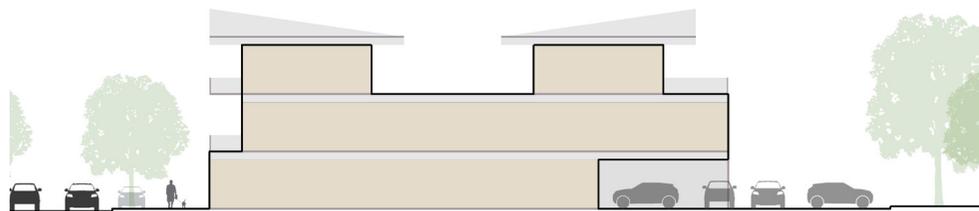


Figure 8: Vehicle parking provided in accordance with Table 3 is to be provided on-site and be screened by built form, landscaping, fencing and other screening which provides a high quality interface with the public realm.

Table 3: Maximum car parking and minimum bicycle parking bay requirements per land use classification.

Land Use Category	Minimum Car Parking Bays	Maximum Car Parking Bays	Minimum Bicycle Parking Bays
Residential Uses	Studio and 1 bed - 0.75 bay per dwelling / unit 2 Bed and above – 1 bay per dwelling Visitors - 1 bay per four dwellings up to 12 dwellings, 1 bay per eight dwellings for the 13th dwelling and above	Studio and 1 bed – 1.5 bay per dwelling / unit 2 Bed and above – 2 bays per dwelling subject to design outcomes Visitors - 1 bay per four dwellings up to 12 dwellings, 1 bay per eight dwellings for the 13th dwelling and above	1 bicycle parking space per dwelling/unit 0.25 visitor bicycle parking space per dwelling/unit
Commercial and Retail Uses	3.5 bays per 100m ² of net lettable area	4.5 bays per 100m ² of net lettable area	1 bay per 200m ² of net lettable area
Civic, Community or other uses	To be determined by the City, having regard to the nature of the use and the known or likely volume of goods, materials or people moving to and from the site.		

5.9 OTHER DEVELOPMENT REQUIREMENTS

The City of Belmont's *Redcliffe Station Precinct Design Guidelines* provide further guidance on the built form design requirements including:

- Ground floor activation;
- Interface between existing and new development;
- Relationship with the public realm;
- Colours and materials; and
- Integration of sustainable design.

6. PRECINCT AREAS

6.1 CENTRE SUB-PRECINCT

6.1.1 Precinct Overview

The Centre sub-precinct is centred around the new Redcliffe Station and focuses intensification around the primary activity node within the Activity Centre.

It is intended that this precinct will become the thriving heart of the local area as a focal point for daily commuting, entertainment and dining, accommodating a broad range of uses including daily shopping needs, restaurants, cafes, specialty shops, offices and apartments, in addition to civic uses.

New built form within the precinct will focus on mixed use, multi-storey development to provide a level of intensity and activity consistent with an urban transit oriented development precinct.

6.1.2 Precinct Objectives

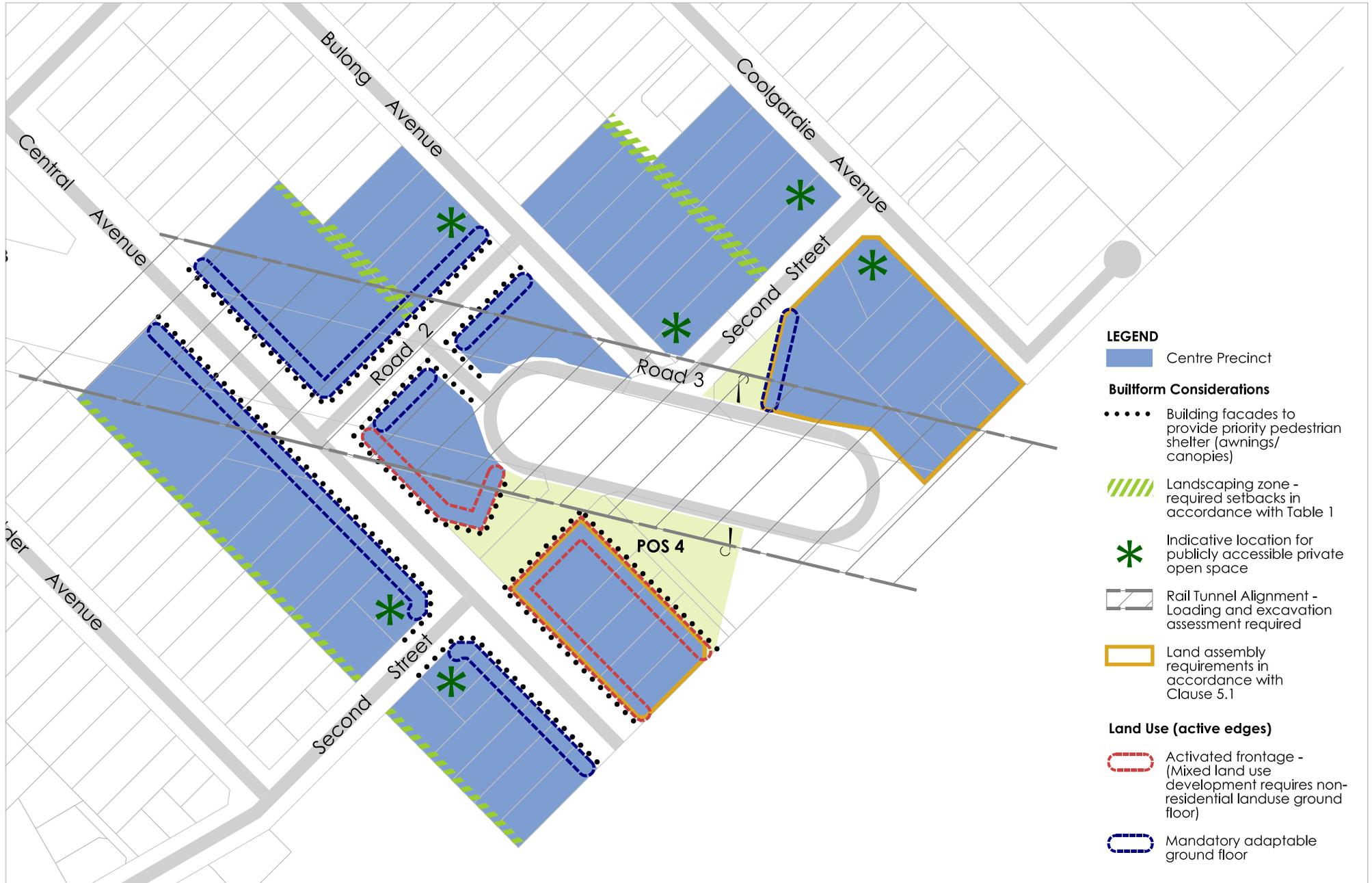
Development of the Centre sub-precinct is guided by the following objectives:

- To ensure that a variety of retail and commercial uses are provided to support convenience needs of the local community;
- To provide active uses on the ground floor in key locations to encourage public realm activity and interest, and to retain opportunity to expand active uses on the ground floor throughout the sub-precinct;
- To facilitate high density residential development in close proximity to the rail station;
- To maximise the retention of existing mature trees within development sites and within the public realm; and
- To ensure on site landscaping provides amenity and benefit to the users of the site and the broader community.

6.1.3 The primary controls applicable to the Centre Sub-Precinct are outlined in **Table 4** and shown spatially in **Figure 9**.

Table 4: Extract of Table 1 outlining primary controls for the Centre Sub-Precinct (See Table 1 for referencing)

Key Controls	Centre
Minimum Development Site Area (m ²)	1,600m ² _A
Minimum Development Site Frontage (m)	30m
Site R-Coding	R-AC0
Minimum Site Area per dwelling (for Single and Grouped Dwellings)	Not Applicable
Minimum Residential Density (Minimum Dwelling Units per 100m ² of Site Area)	1.25
Plot Ratio Maximum	3.0
Plot Ratio Maximum where development bonuses applicable	4.0
BUILDING HEIGHT	
Building Height Minimum (metres/approximate storeys)	4 Storeys
Building Height Maximum (metres/storeys)	8 Storeys
Building Height Maximum where bonuses applicable (metres/storeys)	13 Storeys _D
Boundary Wall Maximum Height	Refer to <i>Redcliffe Station Precinct Design Guidelines</i>
BUILDING SETBACKS	
Primary Street Setback (Minimum) _E	Nil (up to 2 storeys) 4.0m (above 2 storeys)
Primary Street Setback (Maximum) _E	2.0m (up to 2 storeys) N/A (above 2 storeys)
Secondary Street Minimum Setback (applicable to distance of 20m measured from primary street boundary) _{E, F}	nil
Side Boundary - minimum setback	In accordance with SPP7.3 Volume 1 and Volume 2
Rear Boundary - minimum setback	2m minimum and 4m average (ground floor) as communal property 4m (second storey) 7.5m (third and fourth storey) 9m (fifth to seventh storey) 12m (eighth storey and above)



- LEGEND**
- Centre Precinct
- Builform Considerations**
- Building facades to provide priority pedestrian shelter (awnings/ canopies)
 - Landscaping zone - required setbacks in accordance with Table 1
 - * Indicative location for publicly accessible private open space
 - Rail Tunnel Alignment - Loading and excavation assessment required
 - Land assembly requirements in accordance with Clause 5.1
- Land Use (active edges)**
- Activated frontage - (Mixed land use development requires non-residential landuse ground floor)
 - Mandatory adaptable ground floor

Figure 9: The Centre Sub-Precinct Plan

6.2 CENTRE TRANSITION SUB-PRECINCT

6.2.1 Precinct Overview

The Centre Transition sub-precinct is the first stage of transition from the Centre sub-precinct to the surrounding residential area, and will focus predominantly on medium to high density residential development.

New built form within the precinct will primarily focus on the provision of apartments to provide residential opportunity in close proximity to the station precinct and Airport Estate, with ground floor development to be designed to transition to mixed use development over time.

6.2.2 Precinct Objectives

Development of the Centre Transition sub-precinct is guided by the following objectives:

- a) To facilitate medium to high density residential development in close proximity to the rail station;
- b) To maximise the retention of existing mature trees within development sites and within the public realm; and
- c) To ensure on site landscaping provides amenity and benefit to the users of the site and the broader community.

6.2.3 The primary controls applicable to the Centre Transition sub-precinct are outlined in **Table 5** and shown spatially in **Figure 10**.

Table 5: Extract of Table 1 outlining primary controls for the Centre Transition Sub-Precinct (See Table 1 for referencing)

Key Controls	Centre Transition
Minimum Development Site Area (m ²)	1,600m ²
Minimum Development Site Frontage (m)	30m
Site R-Coding	R-AC3
Minimum Site Area per dwelling (for Single and Grouped Dwellings)	80m ² _B
Minimum Residential Density (Minimum Dwelling Units per 100m ² of Site Area)	0.88
Plot Ratio Maximum	2.0
Plot Ratio Maximum where development bonuses applicable	3.0
BUILDING HEIGHT	
Building Height Minimum (metres/approximate storeys)	3 Storeys
Building Height Maximum (metres/storeys)	6 Storeys
Building Height Maximum where bonuses applicable (metres/storeys)	8 Storeys
Boundary Wall Maximum Height	Refer to <i>Redcliffe Station Precinct Design Guidelines</i>
BUILDING SETBACKS	
Primary Street Setback (Minimum) _E	2.0m (up to 2 storeys) 4.0m (above 2 storeys)
Primary Street Setback (Maximum) _E	4.0m (up to 2 storeys) N/A (above 2 storeys)
Secondary Street Minimum Setback (applicable to distance of 20m measured from primary street boundary) _{E, F}	2.0m
Side Boundary - minimum setback	In accordance with SPP7.3 Volume 1 and Volume 2
Rear Boundary - minimum setback	2m minimum and 4m average (ground floor) as communal property 4m (second storey) 7.5m (third and fourth storey) 9m (fifth to seventh storey) 12m (eighth storey)

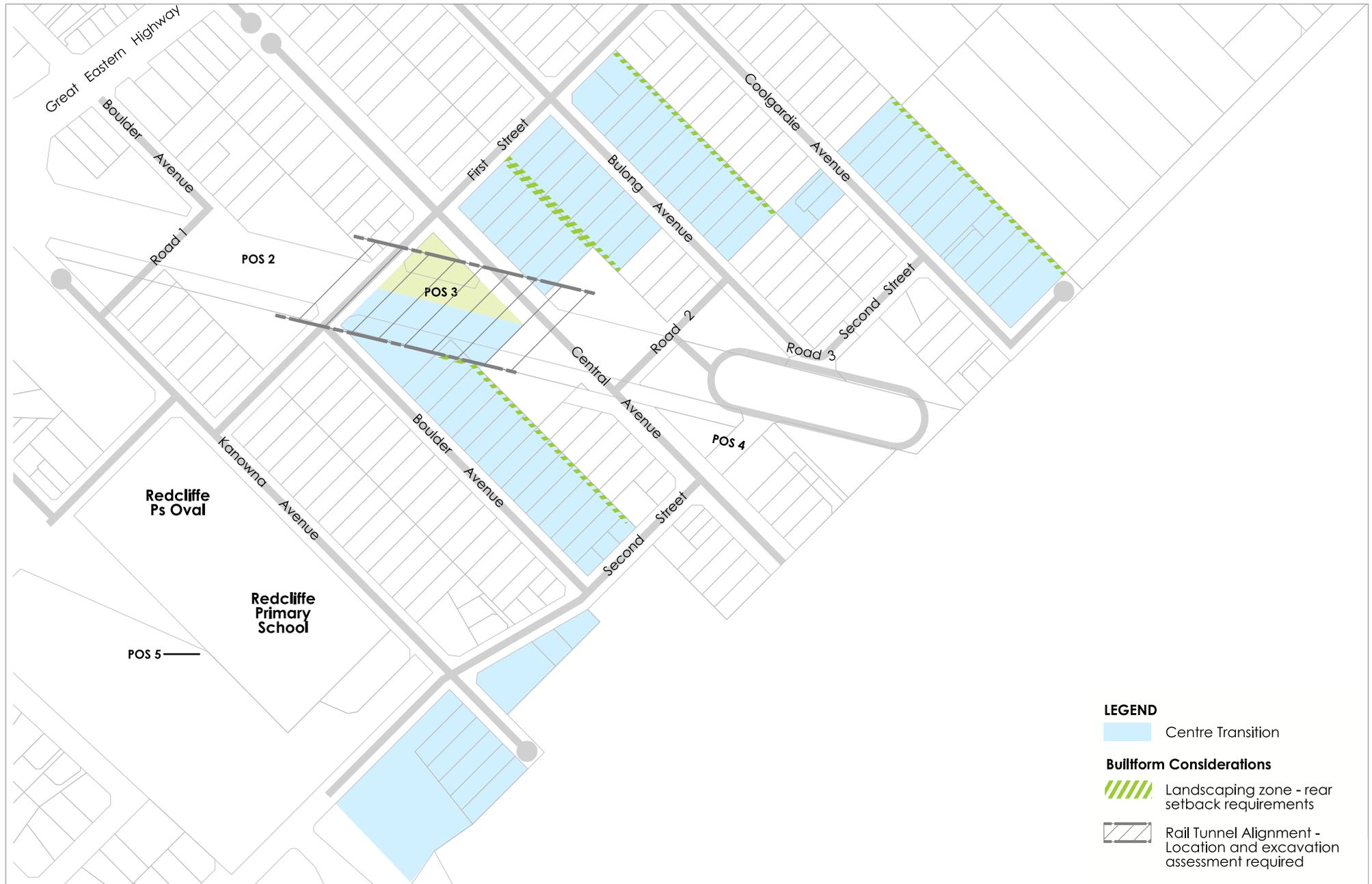


Figure 10: The Centre Transition Sub-Precinct Plan

6.3 RESIDENTIAL CORE SUB-PRECINCT

6.3.1 Precinct Overview

The Residential Core sub-precinct is the core residential area transitioning between the Urban Corridor sub-precinct and the Centre sub-precinct, and will focus on medium density residential development.

New built form within the sub-precinct will focus on the provision of apartments and terrace homes to provide a broad variety of residential opportunities in close proximity to open space, regional amenities and the Redcliffe Primary School.

6.3.2 Precinct Objectives

Development of the Residential Core sub-precinct is guided by the following objectives:

- To facilitate medium density residential development between the rail station and Great Eastern Highway;
- To maximise the retention of existing mature trees within development sites and within the public realm; and
- To ensure on site landscaping provides amenity and benefit to the users of the site and the broader community.

6.3.3 The primary controls applicable to the Residential Core sub-precinct are outlined in **Table 6** and shown spatially in **Figure 11**.

Table 6: Extract of Table 1 outlining primary controls for the Residential Core Sub-Precinct (See Table 1 for referencing)

Key Controls	Residential Core
Minimum Development Site Area (m ²)	1,600m ²
Minimum Development Site Frontage (m)	30m
Site R-Coding	R100
Minimum Site Area per dwelling (for Single and Grouped Dwellings)	80m ² _B
Minimum Residential Density (Minimum Dwelling Units per 100m ² of Site Area)	0.66
Plot Ratio Maximum	1.3
Plot Ratio Maximum where development bonuses applicable	2.0
BUILDING HEIGHT	
Building Height Minimum (metres/approximate storeys)	2 Storeys
Building Height Maximum (metres/storeys)	4 Storeys
Building Height Maximum where bonuses applicable (metres/storeys)	6 Storeys
Boundary Wall Maximum Height	Refer to <i>Redcliffe Station Precinct Design Guidelines</i>
BUILDING SETBACKS	
Primary Street Setback (Minimum) _E	2.0m (up to 2 storeys) 4.0m (above 2 storeys)
Primary Street Setback (Maximum) _E	4.0m (up to 2 storeys) N/A (above 2 storeys)
Secondary Street Minimum Setback (applicable to distance of 20m measured from primary street boundary) _{E, F}	In accordance with SPP7.3 Volume 1 and Volume 2
Side Boundary - minimum setback	In accordance with SPP7.3 Volume 1 and Volume 2
Rear Boundary - minimum setback	2m minimum and 4m average (ground floor) as communal property 4m (second storey) 7.5m (third and fourth storey) 9m (fifth to sixth storey)



Figure 11: The Residential Core Sub-Precinct Plan

6.4 SCHOOL INTERFACE SUB-PRECINCT

6.4.1 Precinct Overview

The School Interface sub-precinct will focus on medium density residential development surrounding the Redcliffe Primary School. New built form within the precinct will be designed to complement the school environment through lower scale buildings and more generous front setbacks.

6.4.2 Precinct Objectives

Development of the School Interface sub-precinct is guided by the following objectives:

- To facilitate low to medium density residential development adjacent to and opposite the Redcliffe Primary School;
- To provide built form at a scale compatible with the Redcliffe Primary School to assist in transition to the surrounding medium to high residential density environment;
- To maximise the retention of existing mature trees within development sites and within the public realm; and
- To ensure on site landscaping provides amenity and benefit to the users of the site and the broader community.

6.4.3 The primary controls applicable to the School Interface sub-precinct are outlined in **Table 7** and shown spatially in **Figure 12**.

Table 7: Extract of Table 1 outlining primary controls for the School Interface Sub-Precinct (See Table 1 for referencing).

Key Controls	School Interface
Minimum Development Site Area (m ²)	1,600m ²
Minimum Development Site Frontage (m)	30m
Site R-Coding	R60
Minimum Site Area per dwelling (for Single and Grouped Dwellings)	80m ² _B
Minimum Residential Density (Minimum Dwelling Units per 100m ² of Site Area)	0.55
Plot Ratio Maximum	0.8
Plot Ratio Maximum where development bonuses applicable	n/a
BUILDING HEIGHT	
Building Height Minimum (metres/approximate storeys)	2 Storeys
Building Height Maximum (metres/storeys)	3 Storeys
Building Height Maximum where bonuses applicable (metres/storeys)	n/a
Boundary Wall Maximum Height	Refer to <i>Redcliffe Station Precinct Design Guidelines</i>
BUILDING SETBACKS	
Primary Street Setback (Minimum) _E	3.0m (up to 2 storeys) 4.0m (above 2 storeys)
Primary Street Setback (Maximum) _E	4.0m (up to 2 storeys) N/A (above 2 storeys)
Secondary Street Minimum Setback (applicable to distance of 20m measured from primary street boundary) _{E,F}	In accordance with SPP7.3 Volume 1 and Volume 2
Side Boundary - minimum setback	In accordance with SPP7.3 Volume 1 and Volume 2
Rear Boundary - minimum setback	2m minimum and 4m average (ground floor) as communal property 4m (second storey) 7.5m (third storey)



- LEGEND**
- School Interface
 - Bullform Considerations**
 - Landscaping zone - rear setback requirements - flexibility where significant trees on site

Figure 12: The School Interface Sub-Precinct Plan

6.5 URBAN CORRIDOR PRECINCT

6.5.1 Precinct Overview

The Urban Corridor sub-precinct will focus on higher density mixed use development fronting Great Eastern Highway to leverage the exposure and public transport availability of the transport corridor, and the close proximity to the Swan River and Garvey Park. New built form within the precinct will focus on commercial development at lower levels and residential apartments above.

6.5.2 Precinct Objectives

Development of the Urban Corridor sub-precinct is guided by the following objectives:

- a) To facilitate high density, high quality mixed use development abutting Great Eastern Highway;
- b) To facilitate shared access via side streets and rear laneways and restrict access direct from Great Eastern Highway;
- c) To provide commercial and retail uses on the ground floor in key locations to encourage public realm activity and interest, and to contribute to the local employment opportunities within the precinct;
- d) To facilitate residential development above the ground level to leverage off proximity to public transport and Garvey Park; and
- e) To ensure on site landscaping provides amenity and benefit to the users of the site and the broader community.
- f) To manage the design of onsite parking to facilitate a high amenity streetscape.

6.5.3 The primary controls applicable to the Urban Corridor sub-precinct are outlined in **Table 8** and shown spatially in **Figure 13**.

6.5.4 Proponents of development or subdivision for sites directly fronting Great Eastern Highway will be required to provide side/rear vehicle access via a public access easement in favour of the City of Belmont, as outlined in **Figure 13**. This access easement will be required to be developed in accordance with the requirements of the *Redcliffe Station Precinct Design Guidelines*.

Table 8: Extract of Table 1 outlining primary controls for the Urban Corridor Sub-Precinct (See Table 1 for referencing)

Key Controls	Urban Corridor
Minimum Development Site Area (m ²)	1,000m ²
Minimum Development Site Frontage (m)	20m
Site R-Coding	R-ACO
Minimum Site Area per dwelling (for Single and Grouped Dwellings)	Not Applicable
Minimum Residential Density (Minimum Dwelling Units per 100m ² of Site Area)	0.88 _c
Plot Ratio Maximum	3.0
Plot Ratio Maximum where development bonuses applicable	4.0
BUILDING HEIGHT	
Building Height Minimum (metres/approximate storeys)	3 Storeys
Building Height Maximum (metres/storeys)	8 Storeys
Building Height Maximum where bonuses applicable (metres/storeys)	13 Storeys _D
Boundary Wall Maximum Height	Refer to <i>Redcliffe Station Precinct Design Guidelines</i>
BUILDING SETBACKS	
Primary Street Setback (Minimum) _E	Nil (up to 2 storeys) 4.0m (above 2 storeys)
Primary Street Setback (Maximum) _E	2.0m (up to 2 storeys) N/A (above 2 storeys)
Secondary Street Minimum Setback (applicable to distance of 20m measured from primary street boundary) _{E, F}	nil
Side Boundary - minimum setback	In accordance with SPP7.3 Volume 1 and Volume 2
Rear Boundary - minimum setback	6m (Ground and 2nd storey) 7.5m (3rd - 4th storey) 9m (5th to 7th storey) 12m (8th storey and above)

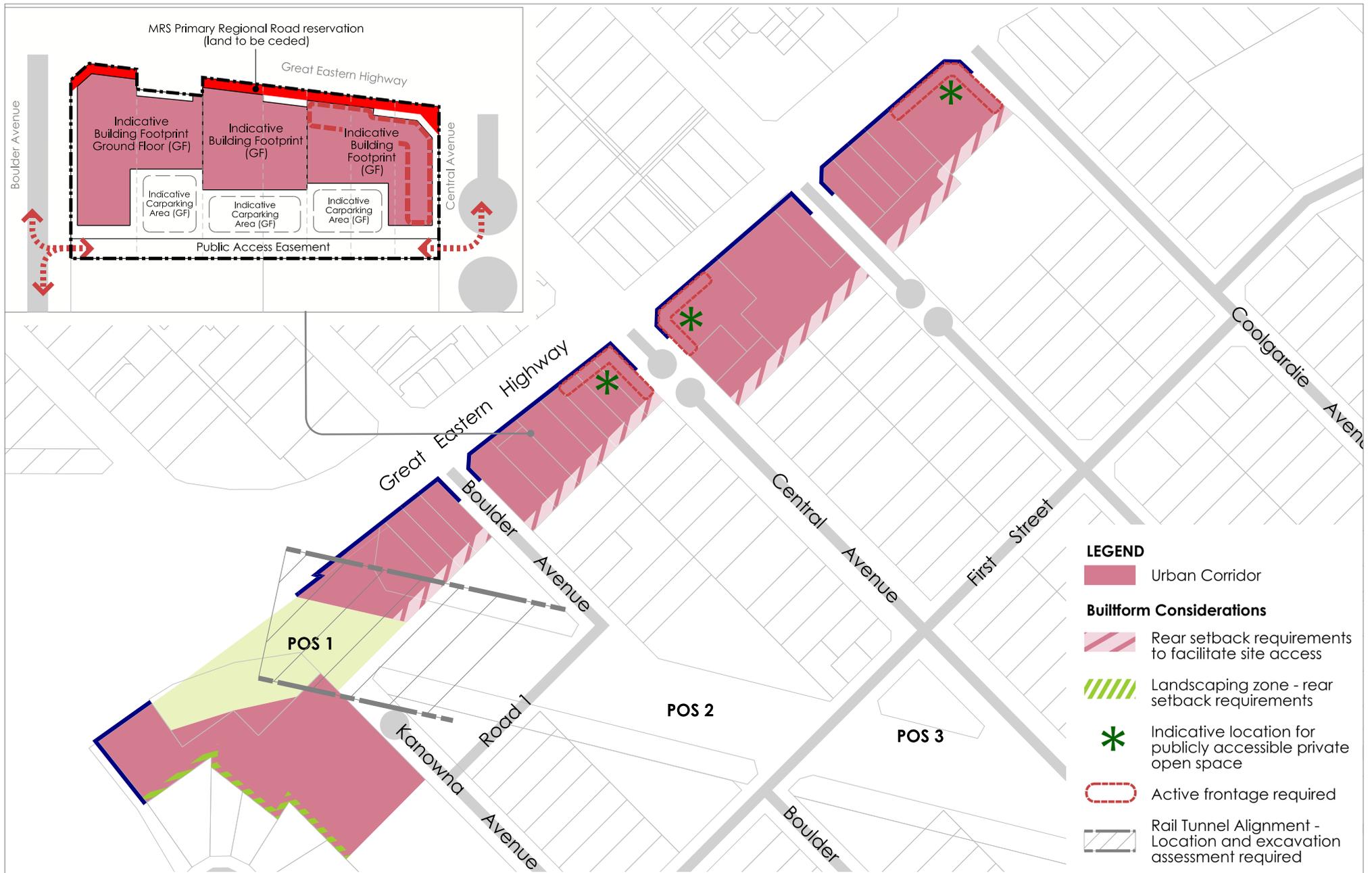


Figure 13: The Urban Corridor Sub-Precinct

7. ACCESS AND MOVEMENT

Although access and movement considerations are not proposed as requirements for developers within the precinct, this section provides an overview of the upgrades that are intended to be progressively undertaken to the access and movement network to complement the proposed redevelopment of land within the activity centre.

Applicants should seek guidance from the City of Belmont or relevant State Government agencies as to the progress and details of planned upgrades within the precinct.

7.1 REGIONAL ROAD NETWORK

Objectives

The following objectives are relevant to the regional road network surrounding the activity centre:

- Ensure that efficient access to and from the regional road network is provided for residents and workers within the Activity Centre Precinct;
- Minimise through movements within the precinct by motorists seeking to avoid congestion on the regional road network; and
- Minimise direct access points from the regional road network to the precinct to ensure efficiency of the road network is maintained at an acceptable level.

KEY ACTIONS

7.1.1 Access / Egress to the Regional Road Network

The City of Belmont and State Government agencies will work collaboratively to monitor, identify, design and deliver efficient access and egress points from the precinct to Tonkin Highway and Great Eastern Highway (GEH), including:

- a) Restricting the connection of Bulong Street and Central Avenue to Great Eastern Highway until such time as Qantas shifts all operations from Terminal 3 and Terminal 4 to the Consolidated Airport Terminal; and
- b) Facilitating the upgrade of the intersection of Coolgardie Ave with GEH to accommodate u-turn movements for large vehicles heading north-west on GEH to change direction to south-east.

KEY ACTIONS

7.1.2 Minimise through Movements

The City of Belmont and the State Government agencies will work together to design roads within and external to the precinct to reduce the opportunity and desirability of through-movements or 'rat-runs' by motorists seeking to avoid congestion on the regional road network or access Perth Airport estate, by:

- a) Undertaking upgrades to the local roads network to prioritise slowing of vehicles with traffic calming devices and prioritise pedestrian and cyclist movements to ensure the local streets are not a quicker route for through traffic; and
- b) Ongoing monitoring the flow of traffic on key distributor routes and responding to ensure these routes are less appealing as 'rat-run' opportunities.

7.1.3 Minimise Direct Access

The City of Belmont will seek to facilitate rear and side access to all properties directly fronting Great Eastern Highway to minimise direct access from properties to the highway and maintain an acceptable level of operational efficiency, by:

- a) Limiting the approval of development proposed on sites fronting Great Eastern Highway to have vehicle access via a side street or rear access way only.
- b) Facilitating the creation of shared vehicle access ways along the rear of properties through legal agreements and/or the ceding of land for this purpose, as required by clause 6.5.4.

7.2 LOCAL ROAD NETWORK

Objectives

The following objectives are relevant to the local road network within the activity centre:

- To provide new roads which assist in improving the connectivity of the precinct; and
- To reduce the speed of vehicle movements within the precinct to ensure streets are safe for pedestrians and cyclists.

KEY ACTIONS

7.2.1 Additional Street Connections

The City of Belmont will work to deliver new street connections in accordance with **Plan 2** to provide greater connectivity within the ACP area and facilitate new development, including:

- a) A new road connection between Kanowna Avenue and Boulder Avenue, annotated as 'Road 1' on **Plan 2**;
- b) A new road connection between Central Avenue and Bulong Avenue, annotated as 'Road 2' on **Plan 2**; and
- c) A new road connection between Bulong Avenue and Second Street, annotated as 'Road 3' on **Plan 2**.

Indicative staging of additional street connections is outlined within Section 2 of Part 2.

7.2.2 Safe Streets

The City of Belmont will work to design new streets and upgrade existing streets to slow traffic through the use of on-street parking, landscaping, and traffic calming devices, to encourage greater pedestrian and cyclist activity and discourage 'rat-running' by motorists.

The proposed street character types are shown in **Plan 2**, and the conceptual design for the upgrading to be undertaken is outlined in Part 2, Section 2.

The conceptual design will be further detailed and implemented by the City in accordance with an agreed staging and capital works plan, guided by the proposed upgrades and the prioritisation of works outlined in Section 2 of Part 2.

7.2.3 Sustainable Integration of Storm water Drainage

The City of Belmont will work to design new streets and upgrade existing streets to more sustainably integrate storm water drainage and verge landscaping through the use of collector devices and infiltration areas which channel storm water to landscaped areas and act to remove/control pollutants. These will be actioned either:

- a) As a component of the street upgrades within the precinct; or
- b) Where required due to abutting development subject to approval of the City.

7.3 PUBLIC TRANSPORT

Objectives

The following objectives are relevant to public transport within the activity centre:

- To establish the precinct as a transit oriented activity centre supported by a range of public transport options providing connectivity to key areas of employment and recreation; and
- To reduce dependency on private vehicle usage and encourage a modal shift towards public transport and walking/cycling.

KEY ACTIONS

7.3.1 Intensity and Activity

The approval authorities will ensure a level of density and intensity of development to provide sufficient demand for public transport services to and from key destinations through:

- a) Establishing and implementing the minimum residential density requirements outlined in clause 5.2; and
- b) Facilitating mixed use development to contribute to activation and employment around key public transport hubs.

7.3.2 Accessibility

The City of Belmont will work to design the local streets and public realm to provide ease of access to public transport services through the provision of a coordinated, efficient and high amenity footpath and cycling path network throughout the precinct, in addition to providing shelter at bus stop locations. The conceptual design for the road upgrades is outlined in Part 2, Section 2 and Section 4, and this will be further designed and implemented by the City in accordance with an agreed staging and capital works plan.

7.3.3 Increased Frequency and Additional Services

The City of Belmont will work with the Public Transport Authority to deliver increased frequency and additional services to key destinations where demand for these services is identified.

7.4 CYCLING AND WALKING

Objectives

The following objectives are relevant to cycling and walking within the activity centre:

- To reduce the barrier of pedestrian movement across regional roads and encourage greater connectivity with key areas of employment and recreation within the surrounding areas; and
- To improve pedestrian and cyclist safety within the precinct and provide a high level of amenity via supporting infrastructure within the public and private realm.

KEY ACTIONS

7.4.1 High Quality Pedestrian/Cyclist Environment

The City of Belmont will work to design new streets and upgrade existing streets to provide for a high quality pedestrian and cyclist environment through the provision of footpaths, cycle paths, landscaping, shade/shelter and community infrastructure.

The conceptual design for the road upgrades is outlined in Part 2, Section 2 and Section 4, and this will be further designed and implemented by the City in accordance with the indicative prioritisation outlined in Part 2, Section 2 and detailed designs once complete.

7.4.2 Additional Pedestrian/Cyclist Connections

The City of Belmont will work with MRWA to maintain the connectivity of the shared path network and deliver additional pedestrian and cyclist connections as shown on **Figure 37** through:

- a) Inputs into the detailed design for upgrades of the regional road network; and
- b) Integration of pedestrian/cyclist connections into the local road upgrades as outlined in Part 2, Section 2.

2. PUBLIC REALM

Though public realm considerations are not proposed as requirements for developers within the precinct, this section provides an overview of the upgrades to the open space and public realm network that are intended to be progressively undertaken to complement the proposed redevelopment of properties within the precinct.

Applicants should seek guidance from the City of Belmont or relevant State Government agencies as to the progress and details of planned upgrades within the precinct.

7.5 PUBLIC OPEN SPACE

Objectives

The following objectives are relevant to the provision of public open space within the activity centre:

- To create an integrated public open space network that supports public activity through the delivery of well landscaped, functional and accessible public space;
- To facilitate the movement of pedestrians and cyclists through areas of high amenity that connect key destinations;
- To enhance the quality of life for residents, employees and visitors by integrating the natural environment within the urban precinct; and
- To support the sustainable integration of stormwater management within open space and public realm areas.

KEY ACTIONS

8.1.1 Retention of Mature Trees

The City of Belmont and State Government agencies will work collaboratively to design the open space network to maximise the retention of mature trees within public land as the highest priority through the integrated design of the open space network and the realignment of the Southern Main Drain.

8.1.2 Creation of Active and Passive Open Space

The City of Belmont will work to design and deliver a network of high quality active and passive open space areas in the activity centre to support population growth and provide a high level of amenity to residents, employees and visitors, consistent with the concept design provided in Part 2, Section 4.

KEY ACTIONS

8.1.3 Supporting Connectivity within the Precinct

The City of Belmont will work to integrate the pedestrian and cyclist network within the open space areas to contribute to an active environment and ensure a high quality experience for pedestrians and cyclists, consistent with the POS concept design provided in Part 2, Section 4 (Figure 80-82).

8.1.4 Integrating New Development with Open Space

The approval authorities will ensure that new built form abutting open space areas will be designed to provide a high quality interface with the open space and provide opportunities for passive surveillance to assist in maintaining a safe environment.

8.1.5 Sustainable Integration of Stormwater Drainage

The City of Belmont and State Government agencies will work collaboratively to design and deliver integrated stormwater drainage within the open space network, including integration of the Southern Main Drain, to better manage the storage and flow of drainage and ensure high quality, usable open space, in accordance with the LWMS.

8.1.6 Privately Owned Public Open Space

Approval authorities will facilitate the development of privately owned publicly accessible space through the provision of bonus height and/or bonus plot ratio for development that delivers pocket parks in accordance with the criteria outlined in **Section 5.6.2.1**.

8.1.7 Reappropriation of State Government Land

The City of Belmont will work with the Department of Planning, Lands and Heritage to reappropriate former Brearley Avenue land for open space and drainage purposes as outlined in Part 2, Section 6.

7.6 PUBLIC STREETS AND ACCESSWAYS

Objectives

The following objectives are relevant to the provision of public streets within the activity centre:

- To create a defined hierarchy of streets that support and encourage pedestrian and cyclist movements;

- To enhance landscape quality and amenity by retaining and supplementing existing street trees;
- To reduce the speed of vehicle movements within the precinct to make streets safe for pedestrians and cyclists and to reduce 'rat-running' of vehicles; and
- To facilitate improved connectivity through interconnected pedestrian thoroughfares linking streets with highly landscaped, well surveilled connections.

KEY ACTIONS

8.2.1 Street Character Type A

The City of Belmont will design Street Character Type A streets, as shown in **Plan 2**, to facilitate the movement of vehicles within the precinct to the regional road network. The design will provide an efficient connection to the regional road network but still slow traffic to discourage use of these streets as 'rat-running' opportunities, as further outlined in Part 2, Section 2.

8.2.2 Street Character Type B

The City of Belmont will design Street Character Type B streets, as shown in **Plan 2**, to facilitate the safe and efficient connection of residents, visitors and employees to the network of public buses. The design will incorporate footpaths, shade/shelter structures, public infrastructure and landscaping to encourage people to use the bus network, in addition to ensuring the buses can move throughout the precinct efficiently, as further outlined in Part 2, Section 2.

8.2.3 Street Character Type C

The City of Belmont will design Street Character Type C streets, as shown in **Plan 2**, to slow the movement of motorised vehicles and prioritise the movement of pedestrians and cyclists. The design will provide for coordinated pedestrian and cyclist infrastructure, high quality landscaping, on-street parking, traffic calming devices and other methods of slowing motorised vehicles, as further outlined in Part 2, Section 2.

3. OTHER DEVELOPMENT REQUIREMENTS

7.7 DESIGN REVIEW PROCESS

All development applications will be referred to the City of Belmont Design Review Panel (DRP) for review of the proposed site and architectural design in the context of this ACP *and the Redcliffe Station Precinct Design Guidelines*, to ensure that a high standard of design is provided in all proposals and guidance is provided to the determining authority.

7.8 STUDIES AND PLANS REQUIRED

Table 9 provides guidance on the studies and plans which may be required by the City of Belmont at either the Development Application stage or as a condition of Development Approval.

The studies and plans are considered necessary to provide certainty in considering and managing key issues associated with a proposed development and to ensure high quality development within the ACP area.

Consultation with the City as to the studies and plans that may be required for a specific development approval should be undertaken prior to formal lodgement.

Table 9: Studies and Plans which may be required as a component of a development application either with the submission or as a condition of approval.

STUDY / PLAN	STAGE AT WHICH REQUIRED
Landscape Plan	With Development Application
Stormwater Management Plan	With Development Application
Waste Management Plan	With Development Application
Traffic Impact Statement/Assessment	With Development Application (where required by Deign Guidelines)
Noise Impact Assessment	With Development Application (where required by Activity Centre Plan)
Structural Engineering Assessment	With Development Application (for sites within the Rail Corridor Loading Limitation Area in Plan 2)
Bushfire Attack Level Assessment	With Development Application (as required by Bushfire Management Plan)
Geotechnical Investigation	Condition of Development Approval
Parking Management Plan	Condition of Development Approval
Landscape and Tree Retention Plan	With Development Application
Construction Management Plan	Condition of Development Approval

10. STAGING AND IMPLEMENTATION

10.1 UTILITY INFRASTRUCTURE REQUIREMENTS

The intensity and scale of proposed development within the precinct is anticipated to require the progressive upgrading of utility infrastructure within and external to the precinct, including:

- a) Conversion of existing overhead power to underground power and relocation works in all local road reserves;
- b) Water reticulation upgrades throughout the precinct to cater for additional demand;
- c) Wastewater reticulation upgrades throughout the precinct to accommodate increased demand;
- d) Relocation of the existing ATCO Gas main, reinforcement of the existing upstream network and reticulation extensions within the precinct to provide for additional demand in the precinct; and
- e) Removal and relocation of existing communications assets within Brearley Avenue.

The staging of these upgrades will depend on the pace, scale and location of development as it progresses.

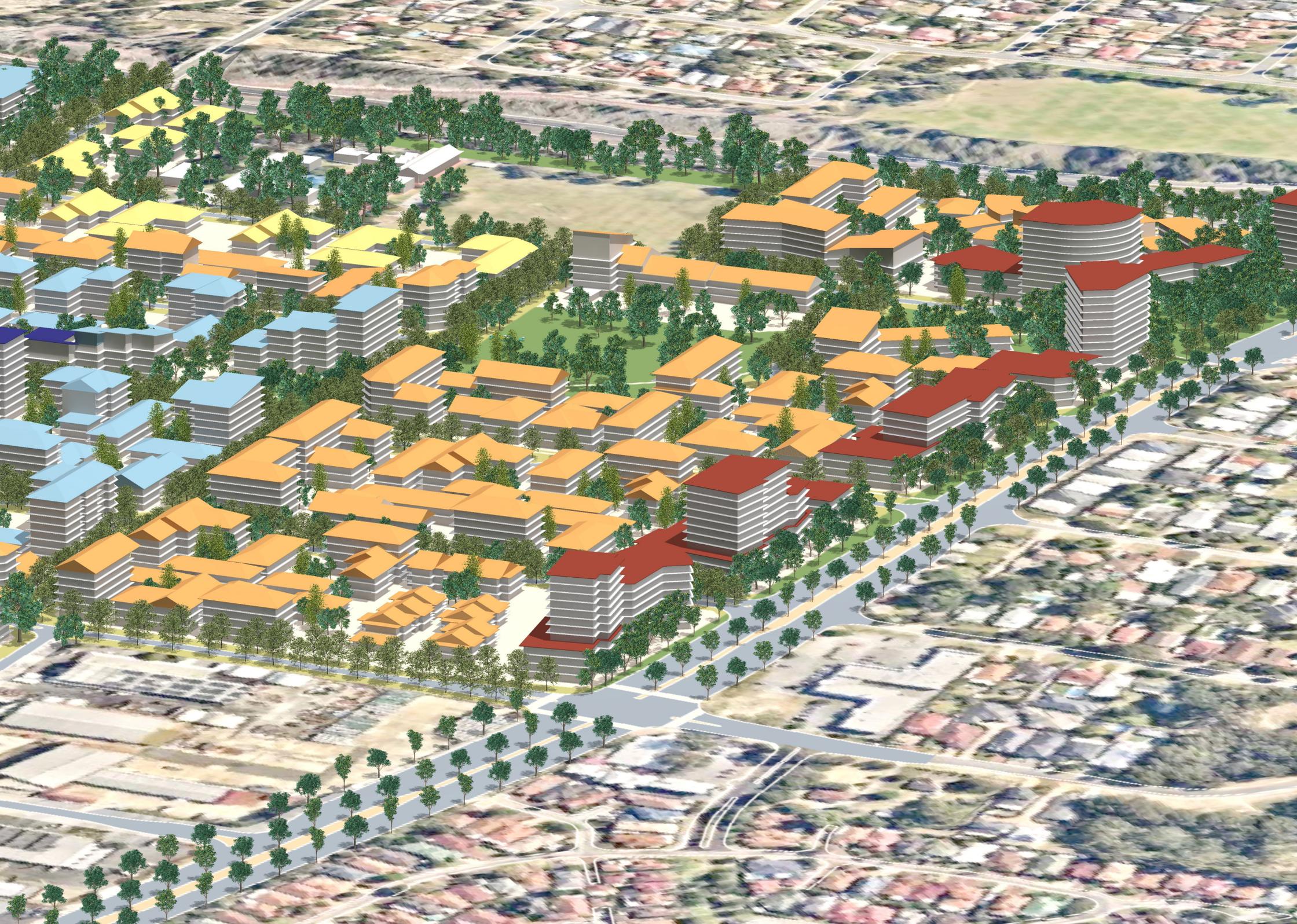
Further information on the required infrastructure upgrades, and the indicative staging based on an assumed development staging pattern, is outlined in Part 2, Section 5 and Section 6.

10.2 DEVELOPMENT AND INFRASTRUCTURE STAGING

The anticipated staging of development within the precinct, and the likely staging of infrastructure upgrades in response to development, is outlined in Part 2, Section 6 and **Appendix 2**.

10.3 INFRASTRUCTURE COORDINATION AND FUNDING

The funding and coordination of infrastructure delivery will be an essential component of facilitating the proposed vision for the ACP. The proposed coordination of infrastructure upgrades and the shared funding arrangements for this infrastructure are outlined in Part 2, Section 6.



EXPLANATORY REPORT

PART 2

INTRODUCTION

The Redcliffe Station Activity Centre Plan is intended to guide the development of one of the newest transit oriented development precincts within the Perth metropolitan area. The precinct is set to experience significant change to move from a relatively low density suburban residential area to a medium to high density, mixed use precinct focused on a new train station and adjacent a major economic and employment centre in Perth Airport Estate.

Part 2 of this report is divided into six sections as follows:

- 1. Centre Context:** This section provides a comprehensive overview of the relevant background information including the planning framework, opportunities and issues, demographic profile and contextual considerations.
- 2. Movement:** This section provides an overview of the existing and proposed movement network, including local and regional roads, public transport and cycling/pedestrian infrastructure, in addition to parking considerations.
- 3. Activity:** This section provides an overview of existing and proposed land use and activity, including residential, commercial, retail and community uses within the precinct and within the adjacent Perth Airport Estate.
- 4. Urban Form:** This section provides an overview of existing and proposed urban form within the precinct, including built form, streetscapes and public open space.
- 5. Utility Infrastructure, Drainage and Resource Conservation:** This section provides an overview of existing and proposed utility infrastructure and required realignments, along with the proposed realignment of the Southern Main Drain.
- 6. Implementation:** This section provides a detailed implementation strategy for the Activity Centre Plan, including identifying the responsibilities and preliminary cost estimates for infrastructure upgrades, the ultimate planning framework and the need for land assembly.

PURPOSE

The Activity Centre Plan (ACP) provides a framework for the planning and development of the area by providing a holistic long term vision and implementation framework. The report is intended to guide decision making by all stakeholders, including local and State Government, landowners, business owners, residents and investors.

PRECINCT DRIVERS

The evolution of the ACP area commenced in 2017 with the formal closure of Brearley Avenue which dissected the suburban residential area and provided the primary access point for commuters to the Perth Airport Domestic Terminal. With the upgrade and redesign of the regional road network and the provision of Dunreath Drive access direct from Tonkin Highway, the opportunity to close Brearley Avenue materialised, and the State Government completed the closure between 2017 and 2018.

The decision to close Brearley Avenue coincided with the State Government decision to commence the extension of the passenger rail network to connect Redcliffe, Perth Airport and Forrestfield to the network via the Forrestfield Airport Rail Link project. This project commenced in 2016 with the tunnelling of the underground rail and the construction of the three new stations, and is scheduled for completion in 2021.

These two major changes to the precinct have provided the opportunity to comprehensively plan for redevelopment of private land within the area and coordinate the design and delivery of improved public realm, public space and community facilities.

In 2013-2014 the City of Belmont and Perth Airport prepared an urban design study aimed at identifying a vision for redevelopment within the precinct and coordinating the thinking of the local government, State Government and local community. The study, titled the Development Area 6 Vision Plan and Implementation Strategy, recommended the preparation of a planning framework which provides for development of between 2 storeys and 13 storeys, to provide attractive and functional public open space and urban spaces and to facilitate the efficient movement of residents and employees.

In progressing the work undertaken by the City an ACP is the next step in the preparation and implementation of the comprehensive planning framework, and achieving the core vision for the area.

PRECINCT BOUNDARY

The precinct is located within the suburb of Redcliffe and bordered by industrial development to the north-east, Perth Airport Estate to the south-east, Great Eastern Highway to the north-west and Tonkin Highway to the south-west (**Figure 14**).

The precinct is in close proximity to Perth CBD, the Swan River, Garvey Park and the Darling Scarp. Great Eastern Highway and Tonkin Highway provide convenient vehicle access to the area. However, these major traffic routes also act as a barrier for vehicle, pedestrian and cycle linkages into the surrounding local areas.



CENTRE CONTEXT

SECTION

1

1.1 CENTRE CLASSIFICATION

Perth Airport is identified as a Specialised Centre for aviation and logistic services in State Planning Policy 4.2 - Activity Centres for Perth and Peel (SPP 4.2). Whilst SPP 4.2 does not provide a spatial boundary for the Perth Airport Specialised Centre, the specified function of the Specialised Centre would not reasonably, for the purpose of SPP 4.2, include the Redcliffe Station Precinct locality. However, the WAPC's metropolitan strategic plan, *Perth and Peel @ 3.5 million* identifies the precinct as an Activity Centre - Secondary Centre. As such, the WAPC resolved that an ACP for the precinct is required in accordance with Clause 31 of the deemed provisions, Schedule 2 of the *Planning and Development (Local Planning Scheme) Regulations 2015*. The location of the centre, and relevant surrounding activity centres is outlined in **Figure 15**.

In considering its function, however, the precinct is considered to be more consistent with that of a Neighbourhood Centre, based on the characteristics described in SPP 4.2. The Neighbourhood Centre characteristics are also anticipated to align with the characteristics of 'Station Precincts', as described in *Perth and Peel @ 3.5 million*, which the Redcliffe Station Precinct will ultimately become.

To this extent **Table 10** compares the descriptive characteristics of Neighbourhood Centres under SPP4.2 with that planned within the Redcliffe Station Precinct, along with commentary on the necessary outcomes to achieve the desired characteristics.

Table 10: Assessment of the Redcliffe Station Precinct against the typical characteristics of that of a 'Neighbourhood Centre' under the activity centres hierarchy.

Typical Characteristics	Neighbourhood Centres	Redcliffe Station Precinct (current)	Opportunities for Change
Main Role/ Function	Neighbourhood centres provide for daily and weekly household shopping needs, community facilities and a small range of other convenience services.	The centre provides for limited shopping needs or community facilities, with existing commercial development fronting a strip of Great Eastern Highway only.	Opportunities for commercial/ retail offering immediately adjacent to new rail station and Perth Airport.
Transport connectivity and accessibility	Stopping / Transfer point for bus network	The centre has reasonable access to public transport via Great Eastern Highway and the Airport Estate.	Excellent opportunity for improved connectivity to public transport with the development of Redcliffe Station as a key public transport node as well as access to connecting bus services.

Typical Characteristics	Neighbourhood Centres	Redcliffe Station Precinct (current)	Comment on Future Potential
Typical Retail Types	Supermarket/s Professional Services Convenience Shops	The centre provides limited professional services and convenience shops fronting Great Eastern Highway.	Opportunities for commercial/ retail offering immediately adjacent to new rail station.
Typical Office Development	Local Professional Services	Limited office development fronting Great Eastern Highway, with more substantial office development within the adjacent Perth Airport estate.	Opportunity for additional office development fronting Great Eastern Highway and abutting the future Redcliffe Train Station.
Future Indicative Service Population (trade) area	2,000-15,000 persons (about 1km radius)	Estimated that less than 2,000 people live within 1km of the centre.	Opportunities for commercial/ retail offering immediately adjacent to the new rail station and the Perth Airport.
Walkable Catchment for residential density target	200m	NA	The walkable catchment for a train station is generally 800m, which includes all of the centre and portions of the surrounding residential area. Further analysis of the walkable catchment is included in Section 2 .
Residential Density target per gross hectare	Minimum 15; Desirable 25	The current residential density of the precinct has been calculated as 15 dwellings per hectare.	The proposed residential density for a station precinct is 52 dwellings per gross hectare, significantly higher than the desirable target of 25 dwellings per hectare. This is further addressed in Section 3 .

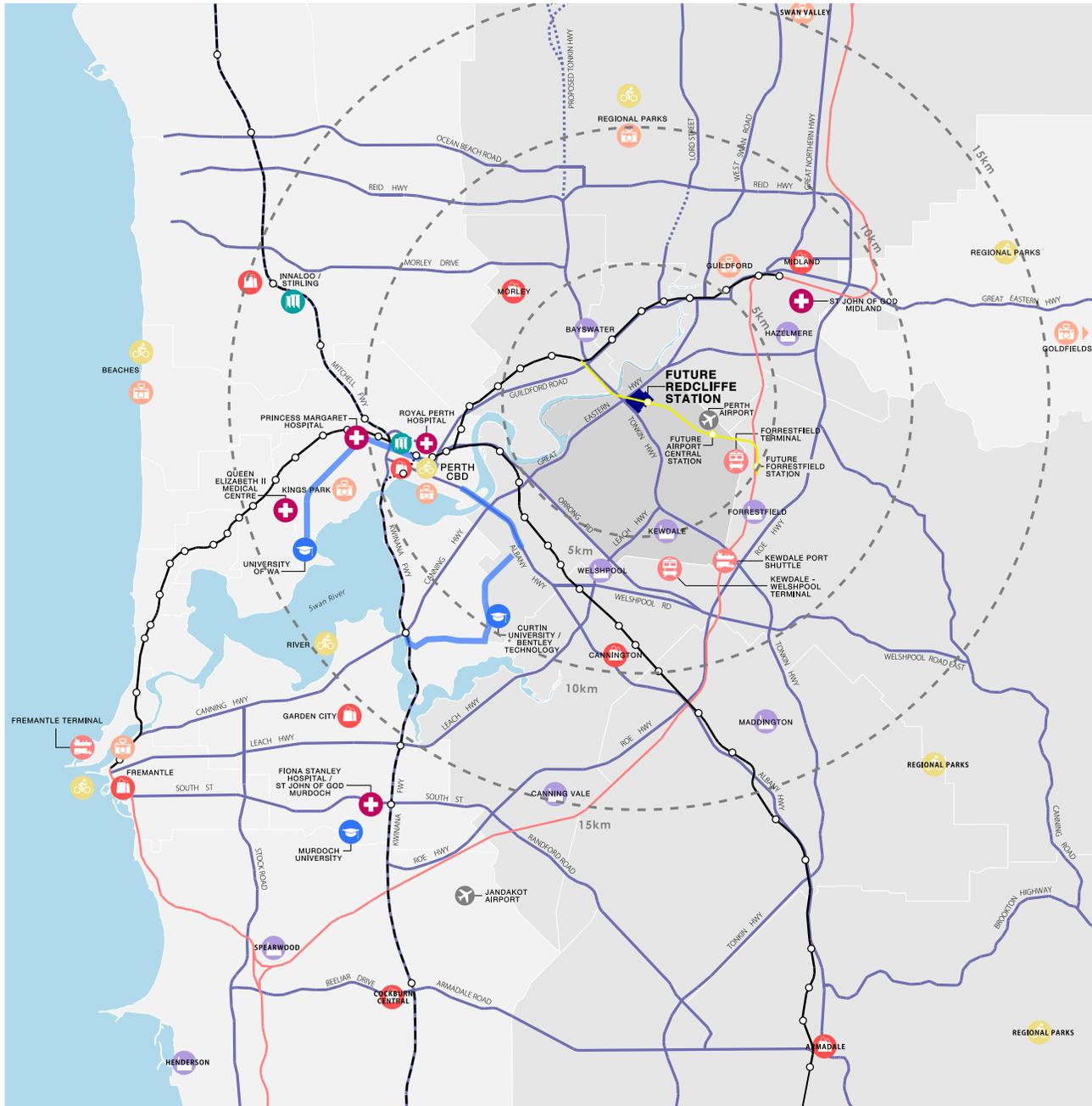


Figure 15: The metropolitan context for the Redcliffe Station Precinct.

1.2 REGIONAL CONTEXT

The Redcliffe Station Precinct is located within the eastern section of the Perth Metropolitan Region within the City of Belmont. The precinct immediately abuts Perth Airport to the east and is 13km from the Perth CBD and 30km from the Fremantle Port, as shown in **Figure 15**.

1.2.1 TRAFFIC AND TRANSPORT

The precinct is well served by major transport routes which include:

- Tonkin Highway and Great Eastern Highway, both of which connect the precinct to the broader highway and freeway network;
- Public transport via existing and proposed bus routes which traverse the surrounding residential and urban areas;
- Future passenger rail connection via the new Forrestfield Airport Link rail line between Bayswater station and the new Forrestfield Station; and
- Cycle and pedestrian connectivity via the network of existing principal shared paths.

A larger proportion of residents in the broader City of Belmont do not own a car (6.7%) compared to Greater Perth (4.7%), and a larger proportion of residents commute to work via public transport (11.3%) compared to Greater Perth (10.2%), which is anticipated to significantly increase upon the opening of Redcliffe Station and proposed bus routes throughout the locality.

1.2.2 OPEN SPACE AND RECREATION

The subject site is in close proximity to expansive areas of regional open space providing passive and active recreation opportunities.

The Swan River is located less than 500 metres to the north of the site, which offers a series of pedestrian and cycle paths as well as designated foreshore reserves.

Regional open space facilities within the surrounding area include Garvey Park to the north, Selby park to the east and Centennial Park further to the east.

Other nearby regional recreation attractors include the Ascot Racecourse and Optus Stadium.

1.2.3 RESIDENTIAL

Surrounding the precinct are the existing suburban areas of Cloverdale, Belmont, Redcliffe and Ascot, the majority of which are characterised by low density residential development with a coding of R20 to R40.

Pockets of higher density multi-storey residential developments are occurring along Great Eastern Highway, as this urban corridor is proposed to accommodate a mixed use and high density development into the future.

1.2.4 EMPLOYMENT

The precinct is located in proximity to significant commercial and employment nodes which serve a catchment across the broader South Eastern Metropolitan region of Perth, including Perth Airport Estate, the Great Eastern Highway corridor, the Forrestfield/Welshpool/Kewdale Industrial Area, Belmont Secondary Centre and Belmont Business Park.

The City of Belmont's Gross Regional Product was nearly \$8.11 billion as of June 2018, contributing to approximately 3.3% to the Western Australian economy. The major industries in the City of Belmont were Transport, Postal and Warehousing, Accommodation and Food Services and Construction, reflecting the function of major activities of the Perth Airport and Kewdale and Redcliffe Industrial Areas.

Other significant industries included Health Care and Social Assistance and Retail Trade, indicating the diversity of employment within the locality. There were over 49,000 jobs in the City in 2018, equating to 4.3% of the WA jobs. The City's employment self-sufficiency was 151% in 2016, indicating the large proportion of residents who also work within the locality.

Unemployment within the City is around the average for Perth at 8.8%, compared to 8.1% in Greater Perth. The City has a relatively skilled local labour force with approximately 41% of residents have a tertiary qualification. Approximately 77% of residents work outside the City with the top three locations being Perth CBD, and the City of Canning and Town of Victoria Park, and about 3% are in FIFO activity within WA.

The City of Belmont also attracts a large number of employees who live outside of the City, with the largest proportion of employees (outside of Belmont) travelling from the City of Swan, the City of Gosnells and the City of Stirling. The City's robust economic profile demonstrates that an Activity Centre will thrive in this locality, and will further strengthen the City's economy through increased population, activity and employment opportunities.

1.2.5 SWOT ANALYSIS

An analysis of the relevant internal and external strengths, weaknesses, opportunities and threats (SWOT) has been undertaken for the precinct, and this is outlined in **Tables 11 - 14** and **Figure 16**.

Table 11: Analysis of the internal and external strengths of the precinct.

Element	Strengths
Land Use	<ul style="list-style-type: none"> Proximity to Perth Airport specialised activity centre providing for diverse land uses and spin off residential and commercial opportunities. Great Eastern Highway Mixed Use zone establishing potential for mixed use development and commercial activity associated with the movement economy. The existing Redcliffe Primary School can cater for future family households.
Built Form	<ul style="list-style-type: none"> Grid system of streets enabling flexibility for urban infill and redevelopment. Regular lot sizes and dimensions enabling redevelopment at higher densities.
Public Realm	<ul style="list-style-type: none"> Proximity to Swan River and Garvey Park. Mature trees (mostly native) in Brearley Reserve.
Movement	<ul style="list-style-type: none"> Access to major transport routes Great Eastern Highway and Tonkin Highway providing for connections across Belmont and the Perth Metropolitan area. Access to National and International passenger airports and freight routes providing for mixed business and accommodation potential. Direct access to Principal Shared Path / Cycle commute route.

Table 12: Analysis of the internal and external weaknesses of the precinct.

Element	Weaknesses
Land Use	<ul style="list-style-type: none"> Predominant land use is owner occupier residential use, which is likely to slow market led redevelopment. Limited large lot redevelopment opportunities. Limited convenience retail and entertainment within walking distance. Close proximity to industrial activities which may impact amenity.
Built Form	<ul style="list-style-type: none"> Lot amalgamation required to create large redevelopment sites. Limited ability for underground parking due to water table and expense of construction.
Public Realm	<ul style="list-style-type: none"> Small disconnected pockets of open space along Brearley Reserve. Southern Main Drain creates a physical barrier, bisecting the area and providing an unattractive open drainage system. Relatively low lying with local drainage management issues.
Movement	<ul style="list-style-type: none"> Long street blocks limit permeability of the movement network. Existing single storey detached residential creating difficult transition to increased density. Disconnected grid system due to former Brearley Avenue bisection. Long, straight, wide roads with potential for vehicles to speed. Limited access across Tonkin Highway creating potential for congestion in peak travel times. Tonkin Highway and Great Eastern Highway act as a barrier to access the surrounding area, e.g. Garvey Park. Difficult pedestrian and vehicular access/egress via Great Eastern Highway. Direct access to PSP / Cycle commuting route as identified on Figure 27.

Table 13: Analysis of the internal and external opportunities for the precinct.

Element	Opportunities
Land Use	<ul style="list-style-type: none"> • Transit oriented development with opening of Redcliffe Train Station. • Mixed use development and transit-oriented development along Great Eastern Highway. • Potential to reduce residential/mixed use parking standards and thus reduce development costs. • Convenience retail, food and beverage, services and facilities within walkable catchment.
Built Form	<ul style="list-style-type: none"> • Potential to reduce urban footprint through intensification and redevelopment. • Mixed use with street activation enabling vibrancy and passive surveillance in transit and park locations. • Range of residential product providing choice for local community. • Small scale commercial and convenience retail outlets.
Public Realm	<ul style="list-style-type: none"> • Potential to reconnect pocket parks and create greater choice for passive and active leisure and recreation and residential amenity. • Redcliffe Primary School Oval potential for shared use. • Potential to create high amenity urban stream and improve drainage management by redesigning the Southern Main Drain.
Movement	<ul style="list-style-type: none"> • New heavy rail and bus transfer network improving public transport connectivity. • Redesign of streets to reduce car speeds and increase pedestrian priority. • Potential for green links/connections to increase permeability for pedestrians in long street blocks. • Potential to improve pedestrian access to airport commercial retail precinct.

Table 14: Analysis of the internal and external threats to the precinct.

Element	Threats
Land Use	<ul style="list-style-type: none"> • Competing redevelopment sites with greater amenity, higher investment potential in South Perth, Victoria Park, Canning Bridge, riverside locations. • Slow market take-up of land leading to fragmented redevelopment. • Limited densification and intensification reducing patronage and advantages of new Redcliffe station.
Built Form	<ul style="list-style-type: none"> • Limitations on height and built form scale due to proximity to Perth Airport. • Potential noise impacts from Great Eastern Highway and Tonkin Highway (can be mitigated through built form standards). • Potential for underdevelopment of sites in the transit-oriented locations.
Public Realm	<ul style="list-style-type: none"> • Ground level remodelling around mature trees could impact health and longevity • Potential for extensive above ground drainage regime (Southern Main Drain) which could limit open space usability and impact tree retention.
Movement	<ul style="list-style-type: none"> • Potential for spill over parking from Train Station and Perth Airport activities. • Additional access limitations to Great Eastern Highway. • Limited improvements to internal road network to reduce traffic speed and potential to 'rat run'.

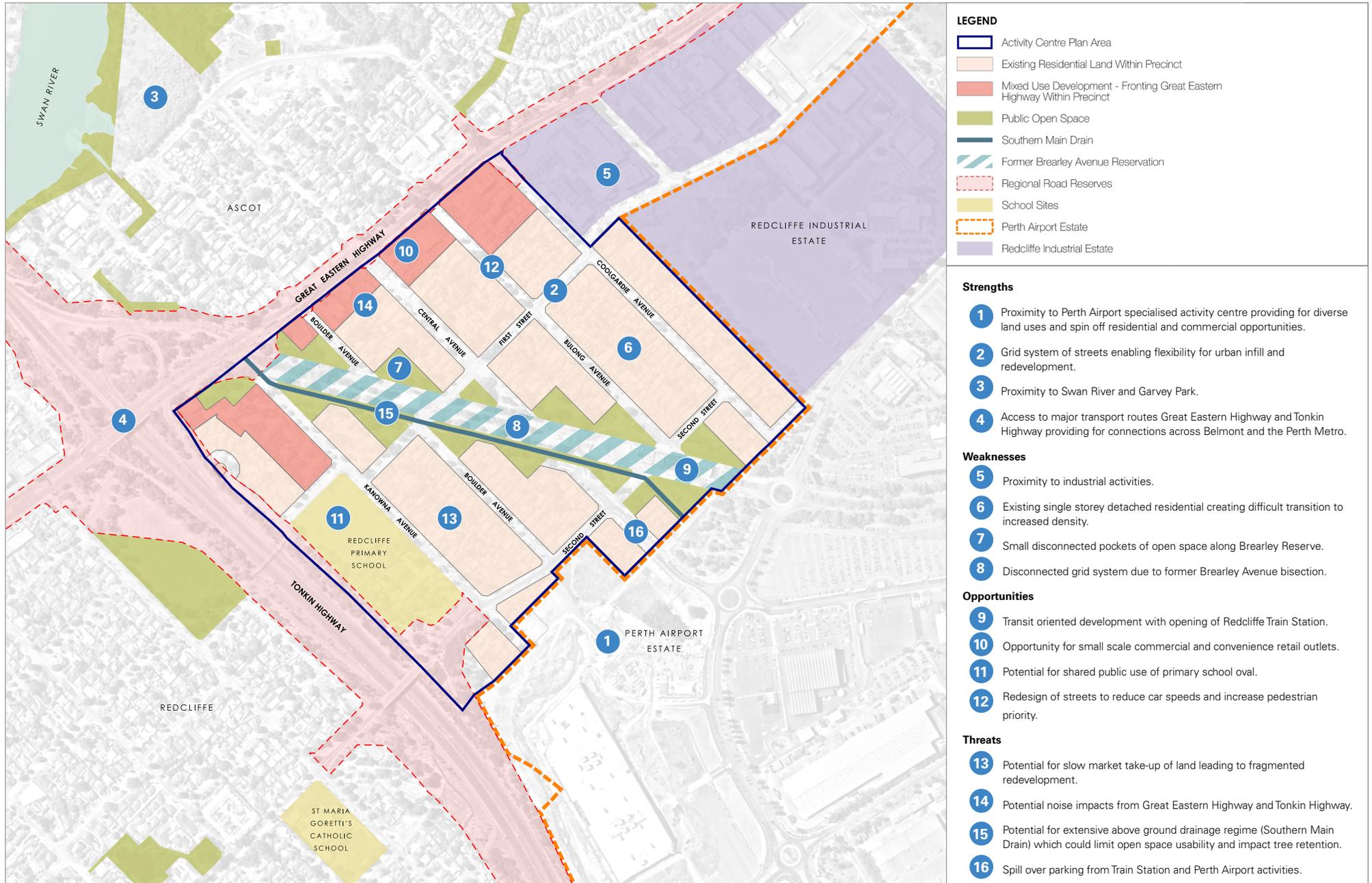


Figure 16: SWOT Analysis for the Redcliffe Station Precinct.

1.3 LOCAL CONTEXT

1.3.1 KEY LOCAL INFLUENCES

1.3.1.1 Historical Context

The areas in and surrounding the Redcliffe Precinct were amongst some of the first land grants offered in the newly formed Swan River Colony. Mark Currie was the appointed surveyor and allocated parcels of land along the Swan River, and managed reserve Swan Location 28.

The Curries' called their property 'Red Cliff' after the steep red clay banks of the Swan River, clay which was later used to make bricks. In 1850 a convict camp was established in Redcliffe at 'Depot Hill' for building local roads including the Great Eastern Highway.

In 1895 Redcliffe Farm was sold to a developer and began to be subdivided. In 1938 land was selected in Redcliffe for the site of Perth Airport.

1.3.1.2 Existing Land Uses

The precinct is predominantly characterised by residential land uses, with the majority of the area subdivided and developed for single dwellings and grouped dwellings. Commercial and retail uses are provided fronting Great Eastern Highway, inclusive of a service station, speciality shops and service commercial / offices.

The Redcliffe Primary School also falls within the precinct, and is a public primary school catering for pre-primary to Year 6 students.

Immediately abutting the area to the east is the Redcliffe Industrial Area which predominantly accommodates light industrial and warehousing activities which leverage their position on Great Eastern Highway and their proximity to Perth Airport.

Further to the east and south of the precinct is Perth Airport Estate, which in addition to providing for the domestic and international airport facilities, provides opportunity for a range of light industrial and commercial operations, including warehouses, offices and a Discount Factory Outlet (DFO) shopping mall.

To the west and north of the precinct, on the opposite sides of Tonkin Highway and Great Eastern Highway respectively, are areas predominantly characterised by suburban residential development within the suburbs of Redcliffe and Ascot.





Curtin University

Perth CBD

Crown Perth

Optus Stadium

Belmont Park

RIVERVALE

Belmont Mixed Business Area

BELMONT

Ascot Racecourse

REDCLIFFE

TONKIN HIGHWAY

GREAT EASTERN HIGHWAY

Brearley Reserve

Future Redcliffe Station

ASHFIELD

DUNREATH DRIVE

Swan River

Garvey Park

Redcliffe Industrial Area

FAUNTLEROY AVENUE

1.3.1.3 Existing Built Form

The development pattern within the area is predominantly characterised by suburban residential lots of approximately 15m wide by 50m deep, some of which have been further subdivided but the majority of which are retained intact.

The built form is primarily characterised by:

- Older undeveloped or partly renovated properties towards the northern end of the suburb (typically 1950's/1960's style on large land); and
- Newer strata-titled villas in the older northern end of the suburb (created from private subdivision); and
- Newer homes and villas through the southern part built in the 1990's and 2000's which are located in the developed estates.

The Great Eastern Highway commercial strip is predominantly characterised by single storey commercial buildings, with a mixture of styles and materials used.



Figure 17: Examples of existing built form within the residential area (left) and commercial strip fronting Great Eastern Highway (right).

1.3.1.4 Accessibility and Connectivity

Accessibility within the precinct has been a long standing issue for the local community, in that:

- The former Brearley Avenue, as the primary route to the domestic airport accommodating more than 40,000 vehicles per day, formed a significant barrier to movement within the precinct for motorists, cyclists and pedestrians; and
- The local road network was often used by motorists seeking to 'rat-run' through the area to access the airport or the regional road network and avoid signalised intersections.

The closure of Brearley Avenue provides the opportunity to improve connectivity within the precinct, but has increased pressure on key vehicle access points of Stanton Road / Second

Street and Coolgardie Avenue, and resulted in a potential increase in the desire to use the local area for 'rat-running' between the regional road network and the airport.

The precinct has reasonable connectivity to public transport via services provided along Great Eastern Highway and within the Perth Airport Estate, as shown in **Figure 19**. This is proposed to significantly improve with the finalisation of the Forrestfield Airport Link and the delivery of the new Redcliffe Station in 2021.

The existing pedestrian and cyclist network is limited and generally does not provide continuous footpaths, reducing pedestrian accessibility throughout the site. Shared use path connections are located on bridges over the Tonkin Highway to the existing Principal Shared Path that runs along the western side of the Tonkin Highway road reserve.

Pedestrian crossing phases are located at the signalised intersection on Great Eastern Highway at Brearley Avenue and Coolgardie Avenue. These connections provide pedestrian access through to open space and path networks along the Swan River.

A more detailed assessment of the accessibility and connectivity considerations for the precinct is outlined in **Section 2**.

1.3.1.5 Existing Public Realm

The precinct has limited open space and public realm amenity. Public space is restricted to small parks adjacent to the former Brearley Avenue reservation which provide limited facilities or amenity. The road network doesn't provide an expansive network or street trees and does not provide continuous footpaths in all locations, though most existing open space is accessible via footpath.

There are regional and district facilities available within the broader area, including Selby Park to the east which can be accessed via the pedestrian bridge over Tonkin Highway and Garvey Park which can be accessed by crossing Great Eastern Highway.



Figure 18: Public open space within the precinct provides limited amenity due to the size of the areas and facilities provided, but regional facilities are within close proximity in Garvey Park (right) and Selby Park.



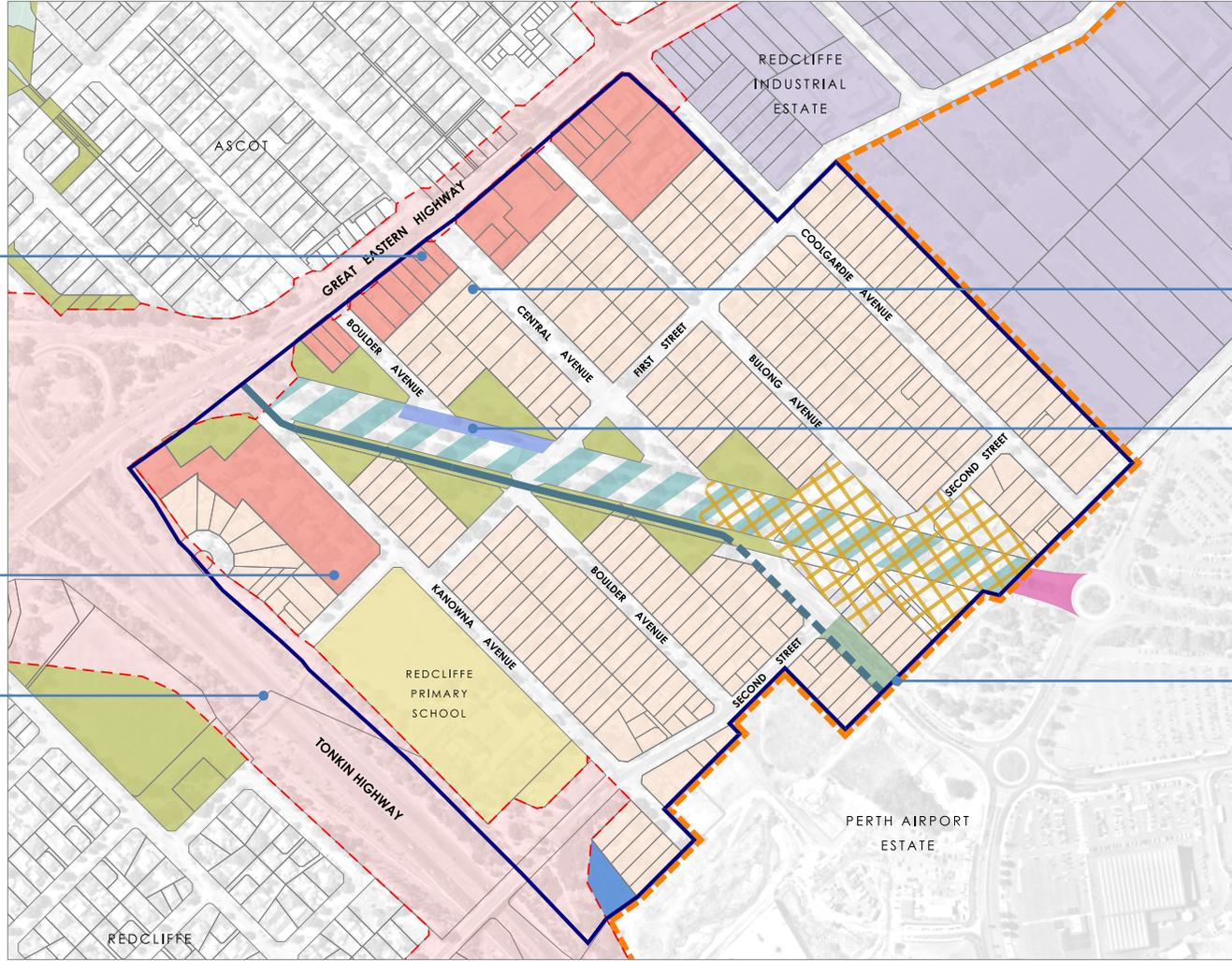
Existing Commercial Uses fronting Great Eastern Highway.



Existing hotel use fronting Great Eastern Highway and Kanowna Avenue.



Pedestrian bridge over Tonkin Highway providing important linkage to Selby Park and the broader Redcliffe area.



Existing residential development is predominantly single storey detached dwellings.



Temporary road connection provided to connect Boulder Avenue with First Street following the closure of Brearley Avenue.



Connection of Central Avenue to Dunreath Drive via an upgraded Boulevard style road is complete.

LEGEND

- Activity Centre Plan Area
- Existing Residential Land Within Precinct
- Mixed Use Development - Fronting Great Eastern Highway Within Precinct
- Public Open Space
- Redcliffe Industrial Estate
- Perth Airport Estate
- Station Construction Precinct
- Southern Main Drain
- Southern Main Drain Realignment (piped underground)
- Former Brearley Avenue Reservation
- Upgrade of Central Avenue to Boulevard Complete
- Temporary Road Connection - First Street to Boulder Avenue
- Temporary Road Connection - Station Construction Vehicles
- Regional Road Reserves

Figure 19: The local context for the Redcliffe Station Precinct.

1.3.2 DEMOGRAPHIC PROFILE

The following section summarises the existing and future community profile of Redcliffe based on a review of the Australian Bureau of Statistics (ABS) and .id forecast, using the 2011 and 2016 time series and community profiles. The socio-economic analysis is summarised, and the implications are assessed to help inform the Activity Centre Plan. Socio-economic data has also been analysed for Ascot, Belmont and Rivervale to draw comparisons between Redcliffe and its surrounding suburbs.

Population Estimates and Forecast

In 2020 it was estimated that 5,438 people live in the Redcliffe / Perth Airport area. The City of Belmont is forecast to increase from 44,642 people in 2020 to 65,659 people in 2041, an increase of 21,017 people (47.08% growth rate). Redcliffe experienced a relatively stagnant growth rate between 2012 and 2018, with an overall estimated population decline of -1.87% over the five year period.

Age profile

Redcliffe has a fairly even distribution of age groups throughout the suburb. It is important to note that Redcliffe had the highest proportion of 0-4 year olds (7%) compared to surrounding suburbs, the City of Belmont and Greater Perth, which may indicate the growing requirements of young families for associated facilities in this suburb.

The following provides a comparison of the age groups in Redcliffe with those of the City of Belmont.

- Redcliffe has a larger percentage of 'Parents and Homebuilders' (22.5% compared to 20.5%);
- Redcliffe has a smaller percentage of 'Young Workforce' (17.5% compared to 21.6%); and
- Redcliffe has a smaller percentage of 'Tertiary Education & Independence.' (8.7% compared to 10.4%).

Between 2016 and 2031, the number of persons aged under 17 is forecast to increase by 59.7%, and will comprise 20.0% of the population. The number of persons aged over 60 is expected to increase by 59.2% and comprise 19.3% of the total population. The largest service age group in 2031 is forecast to be 'Young workforce', with a total of 1,816 persons.

Ethnicity & Languages Spoken at Home

Comparatively to the City of Belmont, Redcliffe had a slightly higher proportion of the population born within Australia (54% compared to 49.1%), and a slightly less proportion born overseas (36% compared to 40%). In Redcliffe, 66% of people spoke English at home (compared to 60% for the City of Belmont), with other languages spoken including Mandarin 2.1%, Arabic 2.0%, Tagalog 1.1%, Urdu 0.9% and Filipino 0.9%.

Overall, between 2011 and 2016, the number of people born overseas within the City of Belmont increased by 2,990 (22.9%), and the number of people from non-English speaking background increased by 2,822 (32.7%). The largest changes in birthplace countries were the Philippines (+414 persons), China (+398 persons), India (+285 persons) and South Korea (+238 persons), with a decrease in persons born in the United Kingdom (-196 people).

Qualifications

Analysis of the qualifications of the population in the City of Belmont in 2016 compared to Greater Perth shows that there was a lower proportion of people holding formal qualifications (Bachelor or higher degree, Advanced Diploma or vocational qualifications), and a similar proportion of people with no formal qualifications.

Analysis of the share of the population attending education institutions in the City of Belmont in 2016 compared to Greater Perth shows that there was a lower proportion attending primary school, a lower proportion attending secondary school and a higher proportion engaged in tertiary level education.

Household Types

Similar to the City of Belmont, lone persons make up the greatest proportion of the Redcliffe population (26.6% and 26.1% respectively). Redcliffe has the highest proportion of couple families with child(ren) (25.2%) compared the surrounding suburbs of Belmont, Ascot and Rivervale and compared to City of Belmont (22.2%). Redcliffe has a lower proportion of couples without children (21.9%) in comparison to the City of Belmont (23.4%). One parent families make up 10.2% of the Redcliffe population.

The largest increase between 2016 and 2031 is forecast to be in lone person households, which will increase by 447 households and account for 29.4% of all households.

Household Size

As largely reflected across the City of Belmont, the profile of household size for Redcliffe is generally smaller than Greater Perth, with a higher proportion of one (1) person accounting for 29% of the households, (compared to 23%). The number of two (33%), three (16%), four (14%), five (6%) and six or more person households (3%) is largely similar to Greater Perth.

The average household size is expected to reduce from 2.48 persons in 2016 to 2.43 persons in 2031.

Need for Assistance

Compared to Greater Perth there was a slightly higher proportion of persons who reported needing assistance with core activities living in the City of Belmont.

		 Redcliffe	 City of Belmont	 Greater Perth	 Western Australia
AGE	 median age	37	34	36	36
INCOME	 median weekly household income	\$1,412	\$1,424	\$1,636	\$1,582
CHILDREN	 couples with children	25.2%	22.2%	32.3%	30.9%
	 couples without children	21.9%	23.4%	25.4%	25.6%
DWELLING TYPES	 medium and high density housing ¹	24.9%	35%	25%	21%
COST OF HOUSING	 households with a mortgage	35%	28%	36%	32%
	 median weekly rent	\$352	\$350	\$360	\$347
	 households renting	33%	37%	26%	27%
	ETHNICITY	 non-english speaking households	23.6%	29%	20%
SCHOOL / EDUCATION	 university attendance	4%	5%	5%	4%
	 bachelor or higher degree	16.7%	21%	23%	20%
	 vocational ¹	19.5%	18%	19%	20%

¹Represents data for the Perth-Airport profile area from .idcommunity.

Figure 20: Demographic snapshot for the Redcliffe area in comparison to the City of Belmont, Greater Perth Area and Western Australia.

Housing Stock

Analysis of the types of dwellings in the City of Belmont in 2016 shows that 64.2% of all dwellings were separate houses; 26% were medium density dwellings, and 9.2% were high density dwellings, compared with 74.6%, 19.6% and 5.1% in greater Perth respectively.

Since 2011 there has been an overall increase in the number of dwellings, 2,350 (14.5%) in the City of Belmont. Trends from 2011 census indicate that the proportion of separate houses has reduced (71.9% to 64.2%), and the proportion of medium and high density housing has increased (22% to 26% and 5.6% to 9.2% respectively).

Distribution of Housing Stock by Suburb

Over the past decade, Redcliffe experienced the smallest growth in the number of dwellings in comparison to the surrounding suburbs, increasing 5.8% from 2011 to 2016 and 4.2% from 2006 to 2011. This may indicate there is further potential to increase housing within Redcliffe.

The number of dwellings in Redcliffe is forecast to increase by 73% from 2016 to 2031.

Dwelling Size

Dwelling size within the City of Belmont, in terms of number of bedrooms, is generally smaller than in greater Perth. The City of Belmont has a higher proportion of zero, one, two and three bedroom houses, and a smaller proportion of four, five and six bedrooms or more houses compared to Greater Perth. In the City of Belmont, houses with three bedrooms make up the largest proportion of houses (47.2%), compared to Greater Perth where the largest proportion is four bedroom houses. The largest changes in the number of bedrooms per dwelling in the City of Belmont between 2011 and 2016 were:

- An increase in 4 bedroom-dwellings (+465 dwellings);
- An increase in 0 or 1 bedroom-dwellings (+286 dwellings);
- An increase in 2 bedroom-dwellings (+245 dwellings); and
- A decrease in 3 bedroom-dwellings (-266 dwellings).

There were minimal differences in the distribution of dwellings sizes between 2011 and 2016 in Redcliffe.

Housing Tenure

Analysis of the housing tenure of the population within the City of Belmont in 2016 compared to Greater Perth shows that there was a smaller proportion of households who owned their dwelling (21.4% compared to 26.7%); a smaller proportion purchasing their dwelling (28.3% compared to 39.7%) and a larger proportion of rentals (37.4% compared to 25.5%). In Redcliffe, a similar proportion of dwellings either have a mortgage (35%) or rented (33.4%) in comparison to a smaller proportion of dwellings that were owned outright (20.4%).

Housing Payments

Analysis of the monthly housing loan repayments within the City of Belmont in 2016 shows that there was a smaller proportion of households paying high mortgage repayments (\$2,600 and over per month) in comparison to the Greater Perth area.

Analysis of the weekly housing rental payments of households in the City of Belmont compared to Greater Perth shows that there was a smaller proportion of households paying high rental payments (\$450 per week or more), and a larger proportion of households with low rental payments (less than \$250 per week).

Place of Employment

Approximately 4,200 (11.1%) of the 38,339 people who worked in the City of Belmont in 2016 reside in the City. Of the City of Belmont residents who work, approximately 22.8% work in the City of Belmont, whilst 72.8% work outside the City of Belmont. The primary destinations that workers are travelling to include Perth, Canning, Victoria Park, Stirling and Swan.

Employment Status

At the time of the 2016 census, the employment rate within the City of Belmont was similar to that of Greater Perth with 91.2% of the labour employed and 8.8% unemployed and looking for full time or part time work. This compares to 91.9% and 8.1% for Greater Perth respectively.

Mode of Travel to Work

The method of travel to work for residents in the City of Belmont is overwhelmingly dominated by the car (as a driver), with a proportion greater than Greater Perth (64.5% compared to 64.1%).

A higher proportion of Belmont residents travelled by bus to work (8.4% compared to 4.1%) and by bicycle (1.1% compared to 1.0%) compared to Greater Perth, though a smaller proportion walked (1.8% compared to 2.1%) or caught the train (2.9% compared to 3.2%). In addition, a smaller proportion of Belmont residents worked at home compared to Greater Perth (2.5% compared to 3.9%).

Methods of travel to work has not changed greatly since 2011, however, there was an increase in the proportion of residents driving to work and increase in the proportion of those catching the bus.

Employment Industry & Occupation

In 2016, the industry sectors of Transport, postal and warehousing (23%), retail trade (8.5%) and Construction (7.4%) dominated employment provided within the City of Belmont. Professional (19%), Technicians and Trade Workers (17%) and Clerical and Administrative Workers (14%) accounted for the bulk of the resident workforce occupations in 2016.

Household Income

Compared with the surrounding suburbs, Redcliffe has the highest proportion of households in the lowest income group (28.3%). Compared with the City of Belmont and Greater Perth.

Summary and Implications

A summary of the key statistical implications for the precinct is provided as follows:

1. Additional housing and infrastructure provision required for growing population and expected future population growth

The City's population increased approximately 18% over the 2006 to 2011 period and 11.7% in the period 2011 to 2016. The City's population is expected to increase by a further 15% to 48,060 people by 2026 from 2015 levels (WAPC Band C forecast).

Over the past decade, Redcliffe experienced the smallest growth in the number of dwellings in comparison to the surrounding suburbs, indicating there is further potential to increase housing within Redcliffe.

2. Need to consider affordable housing options to accommodate large proportion of parents and home builders, and young professionals, in addition to the higher proportion of lower income households

Much like the City of Belmont, indicators of the demand for affordable housing for Redcliffe include:

- High proportion of parents and home builders, and young professionals in the City of Belmont;
- Lower household incomes compared to the Greater Perth;
- Significantly higher proportion of the community renting in the City of Belmont;
- Lower rental repayments and lower mortgage repayments compared to the City of Belmont; and
- The City of Belmont has a larger proportion of smaller houses, with a large proportion of 1, 2 and 3 bedroom dwellings compared to Greater Perth.

3. Demand for a diverse housing stock

Redcliffe has a fairly even distribution of age groups throughout the suburb which requires a diverse range of housing options. Overall for the City of Belmont, there is need for:

- Smaller households due to the higher proportion of lone residents;
- Medium to larger size households for the growing population of parents, and couples with children; and
- Aged housing and retirement housing and services for the large proportion of elderly and nearing retirement population.

Future residential development within Redcliffe may be able to assist in providing additional housing within the City to cater for the above.

4. Community facilities required to accommodate the greater mix of ethnicity along the Corridor

The City of Belmont has a larger proportion of non-English speaking households, people born overseas and people from non-English speaking backgrounds when compared with Greater Perth. There may be future opportunities within the Redcliffe suburb for small scale community facilities to cater for the community members' needs, which will allow different people to meet and interact, gain support and create a sense of belonging. Such uses may include a community hall, family support centre, health services and a range of meeting spaces.

5. Improvements to pedestrian, cyclists and public transport required

The method of travel to work is dominated by vehicle, with few residents cycling and walking to work. Improved pedestrian and cyclist networks, along with significant improvements in public transport and amenity, will encourage the local movement network.

1.4 PLANNING CONTEXT

1.4.1 ZONING AND RESERVATIONS

1.4.1.1 Metropolitan Region Scheme

The subject site is predominantly zoned Urban under the Metropolitan Region Scheme (MRS), with portions of the south-west and north-west boundary being reserved for Primary Regional Road purposes associated with the abutting Tonkin Highway and Great Eastern Highway.

The Perth Airport land to the east of the site is reserved for Public Purposes – Commonwealth Government Reserve, with a portion of this reserve located in the south-eastern corner of the subject site.

The majority of land to the north, west and south is zoned Urban, as shown in **Figure 21**.

At the time of preparing this report an amendment to the Metropolitan Region Scheme to reclassify land surrounding Stanton Road and Tonkin Highway from 'Primary Regional Roads' and 'Public Purpose - Commonwealth Government' to 'Urban' under the MRS is proposed (MRS 1355/57) which requires the proponent to undertake further environmental analysis as part of their justification for the rezoning.

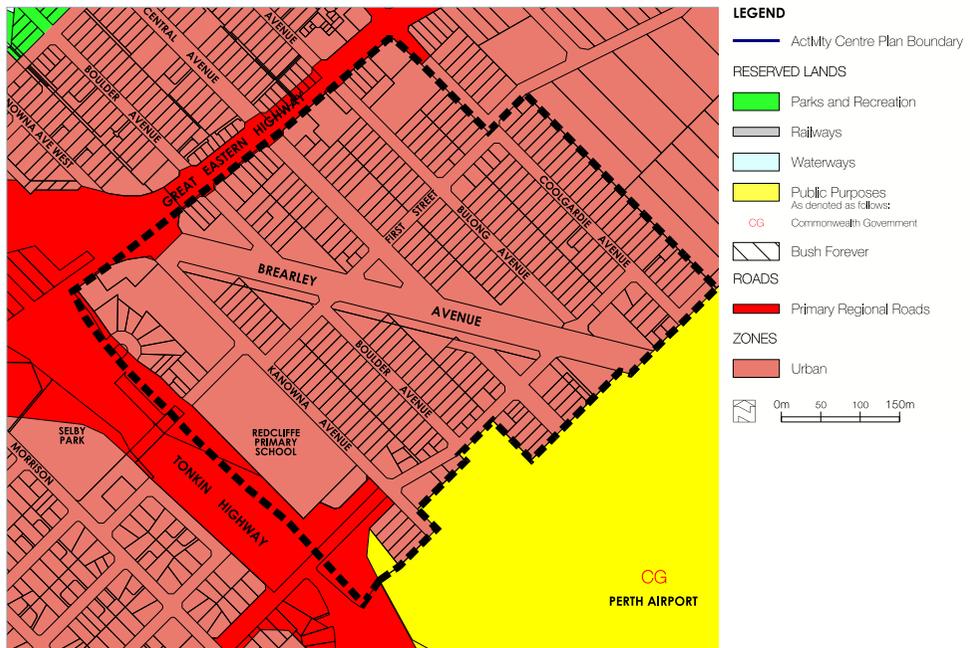


Figure 21: An extract of the Metropolitan Region Scheme outlining zoning and reservations within the precinct.

1.4.1.2 Local Planning Scheme No. 15

The subject site is predominantly zoned Residential under *Local Planning Scheme No. 15* (LPS 15), with a coding of R20 allocated. Portions of the subject site fronting the Great Eastern Highway and extending along the northernmost section of Kanowna Avenue East are zoned Mixed Use and accommodate a range of commercial land uses (**Figure 22**).

Areas of Open Space adjacent to the Brearley Avenue road reservation are partly reserved for Parks and Recreation, and partly reserved for Parks and Recreation: Water Supply Sewerage and Drainage. The Redcliffe Primary School site is reserved as Public Purpose.

Land to the north-east of the subject site is zoned General Industrial to accommodate the Redcliffe Industrial Area. To the north-west and south-west of the subject site, the land is primarily zoned Residential and to the east the land is zoned Public Purpose in accordance with the MRS.

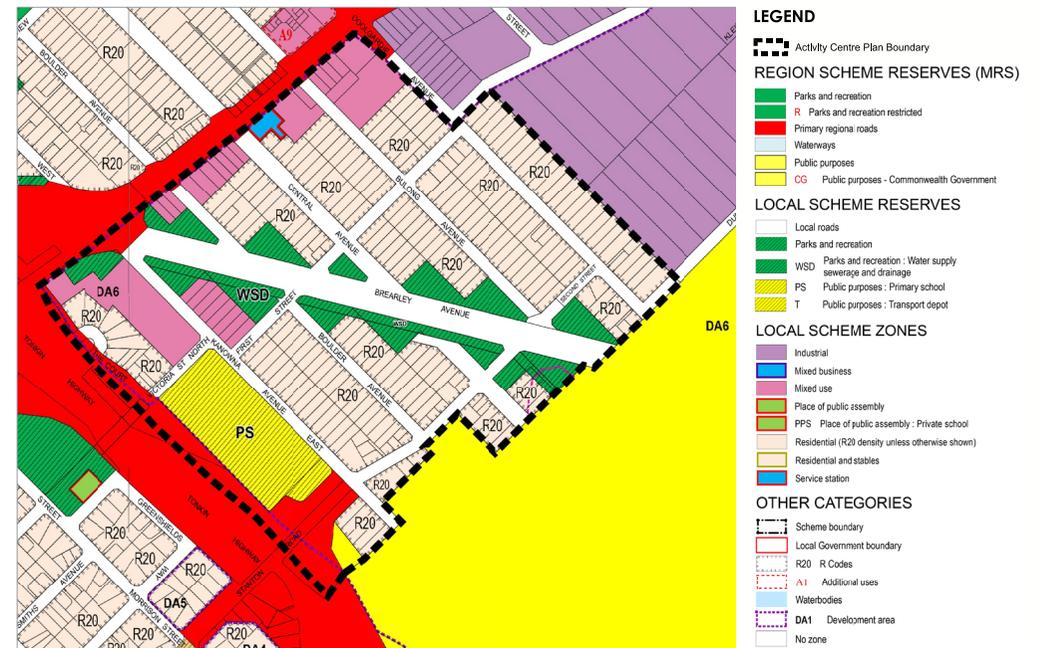


Figure 22: An extract of Local Planning Scheme No. 15 outlining zoning and reservations within the precinct.

The subject site is also included within Development Area 6 (DA6). The purpose of Development Areas is to identify areas requiring comprehensive planning and to coordinate subdivision and development through a structure plan. Schedule 14 of LPS 15 sets out the specific purpose and requirements for each development area.

The City of Belmont has received approval of the Statutory Planning Committee of the Western Australian Planning Commission on 28 May 2019 to prepare this Activity Centre Plan for the DA6 precinct, and this report will satisfy the requirement for the preparation of a Structure Plan under clause 6.1 and Schedule 14 of LPS15.

1.4.1.3 Planning Control Area 116

Planning Control Area 116 – Airport West Station was approved by the Minister on 25 August 2015 over the land shown on WAPC Plan No. 3.2630.

The purpose of the Planning Control Area (PCA) is to protect land that may potentially be affected by the Redcliffe Train Station and associated infrastructure for public purposes of the State. The WAPC considers that the planning control area is required to ensure that no development occurs on this land which might prejudice this purpose or its potential reservation for Public Purposes in the MRS. The PCA specifies that the WAPC is the sole determining authority on any development applications within this PCA.

1.4.2 REGIONAL AND SUB REGIONAL STRATEGY

1.4.2.1 Perth and Peel @ 3.5 million

The Perth and Peel @ 3.5 million land use planning and infrastructure framework sets out an over arching framework for the City with a population of 3.5 million people by 2050. The framework provides guidance on where sustainable development should occur over the next 35 to 40 years to ensure the impact of urban growth on areas of environmental significance is minimised; to protect heritage; and to maximise the benefits of available land and existing infrastructure.

The subject site falls within the Central Sub-Regional Framework (framework), is identified as an 'Activity Centre' and falls within the Perth Airport Specialised Centre, immediately adjacent to the Great Eastern Highway, which is identified as a 'Corridor' (**Figure 23**). The Framework includes a draft activity centre boundary, which is intended to be refined as part of the structure planning process with regard to the principles of *State Planning Policy 4.2 – Activity Centres for Perth and Peel* (refer **Section 1.4.4.4** below).

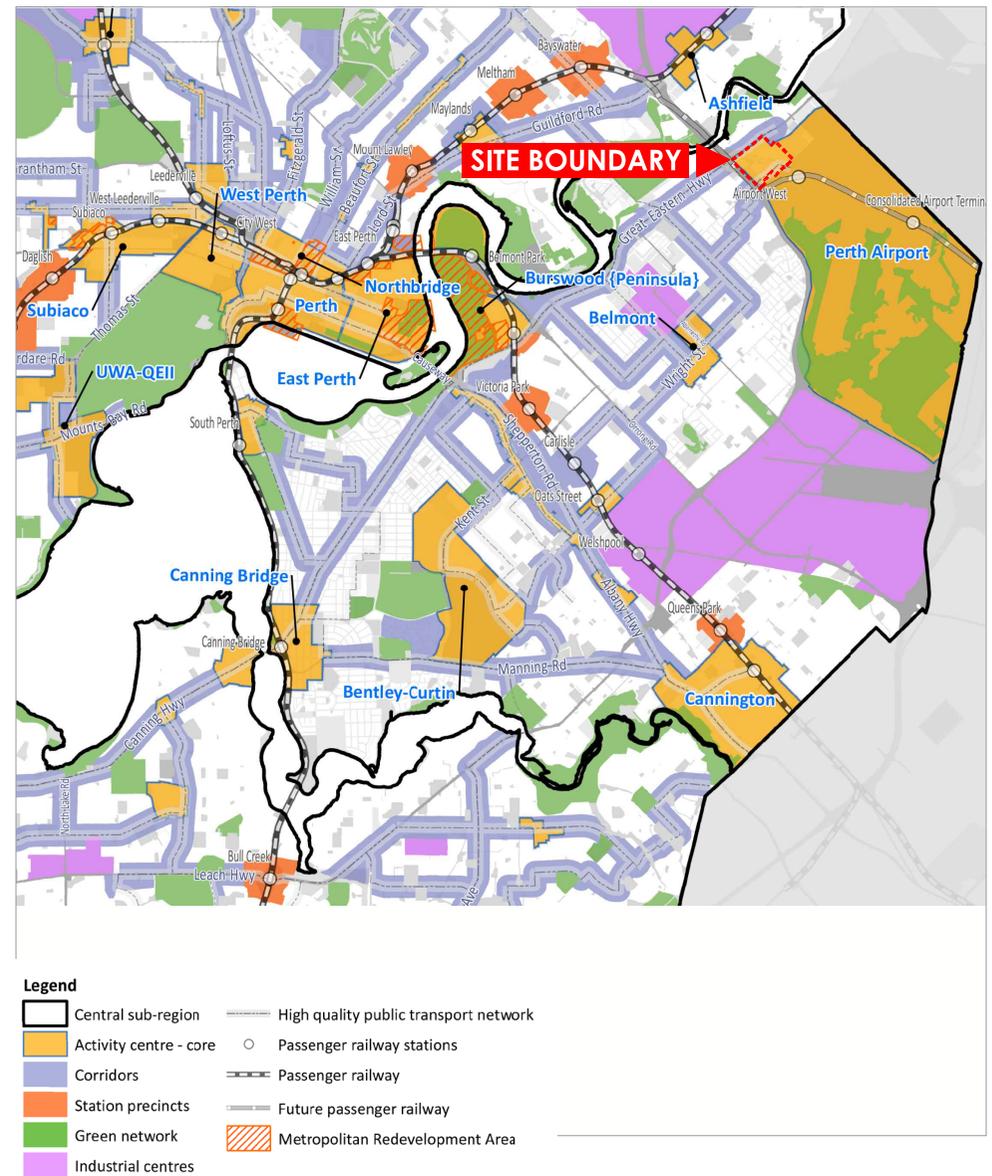


Figure 23: An extract of the WAPC's Perth and Peel @ 3.5 million showing the precinct and surrounds.

The framework defines Activity Centres as hubs that attract people for a variety of activities, such as shopping, working, studying and living. Activity Centres mainly consist of a concentration of commercial uses combined with a varying proportion of other land uses such as residential, schools and open space. The role and function of these centres and the diversity of activities within them varies depending on their catchment.

The framework anticipates:

- An urban infill target of 10,410 dwellings within the City of Belmont;
- The Perth Airport Activity Centre will accommodate an additional 7,490 jobs by 2050; and
- The proposed development will contribute towards both additional jobs and dwellings within the Perth Airport Activity Centre and the City of Belmont.

1.4.2.2 Transport @ 3.5 million - The Transport Network

The *Transport @ 3.5 million - The Transport Network* (Transport Strategy) was released by the WAPC, Department of Transport, Main Roads WA and the Public Transport Authority in March 2018.

The aim of the Transport Strategy is to guide transportation planning and infrastructure investment to coincide with land use and development under *Perth and Peel @ 3.5 Million*. The Transport Strategy is intended to be a vision for generational change of Perth's transport network and aims to achieve maximum efficiency in the way in which people move about the metropolitan area.

Of significance to the Redcliffe Station Precinct, the Transport Strategy identifies the State Government's priority to complete stage one of METRONET, including the Forrestfield-Airport Link, with three new stations at Redcliffe, Airport Central and Forrestfield.

1.4.3 LOCAL PLANNING STRATEGIES

1.4.3.1 Local Planning Strategy

The City of Belmont Local Planning Strategy provides the background information which informs the City's current LPS 15.

The strategy describes the City as having spectacularly rapid residential growth rates in the 1950's, with heavy State Housing Commission Investment, and recognises the City has undergone and continues to undergo significant residential redevelopment.

The strategy identifies that the City is strategically located by virtue of it being the eastern

gateway to the Perth Central Business District (CBD). The commercial structure of the City centres around a well developed Regional Town Centre, where there are opportunities for further expansion and diversification of retailing and entertainment uses.

The Strategy identifies the Redcliffe Industrial Area which is located north-east of the subject site is a significant source of employment in the City and should remain to cater for heavy industrial uses. At the time of preparing this report the Local Planning Strategy was under review by the City of Belmont.

1.4.3.2 Local Housing Strategy

The City's Housing Strategy is intended to provide direction for the future planning for residential development, densities and housing types within the City, which informed the basis for residential zoning and provisions for the City's current LPS15. The strategy aims to promote long term sustainability of the City by encouraging an increase in the City's population through the provision of residential land and housing. The Strategy recognises the importance of providing a range of housing types, which will attract and meet the needs of a diverse range of age groups.

The Housing Strategy recognises the subject site is currently coded R20, pending more detailed planning for the area which could allow densities up to R100 depending on the outcome of the structure planning process. At the time of preparing this report the Local Housing Strategy was under review by the City of Belmont.

1.4.3.3 Local Commercial Strategy

The City of Belmont's Local Commercial Strategy was prepared to inform the preparation of the Local Planning Scheme and ensure the continued sustainability of the various commercial centres throughout the City. At the time of preparing this report the Strategy was under review by the City, with the intent to identify the Redcliffe Station Precinct as a centre for the purpose of consideration under SPP4.2 and in accordance with the preparation of this ACP.

1.4.3.4 Great Eastern Highway Urban Corridor Strategy (Draft 2018)

In 2018 the City of Belmont prepared the draft Great Eastern Highway Urban Corridor Strategy to facilitate a vision for future development of the public and private land along the corridor. The vision focuses on the transformation of the Corridor into one of Perth's great urban boulevards and the creation of a new urban destination – a linear urban experience of beautiful and captivating spaces and places.

The Strategy focuses on four structural elements of amenity, movement networks, activity nodes and broader development precincts along the corridor from Graham Farmer Freeway in the west to Ivy Street in the east.

The Redcliffe Station Precinct falls within 'Precinct 4 - Tonkin Highway to Ivy Street', and focuses on the lots directly fronting Great Eastern Highway. The strategy proposes:

- An Activity Node at the intersection of Coolgardie Avenue and Great Eastern Highway;
- Minimal building setbacks with activated ground floor uses fronting the highway;
- The need for built form transition at the rear of corridor fronting properties to address height and scale differentiation with the residential environment to the south;
- The need for rear access and parking to restrict direct vehicle access from the Highway;
- The need for additional pedestrian and cyclist infrastructure to support crossing Great Eastern Highway; and
- The opportunity for an 'urban plaza' at the Coolgardie Street node.

These recommendations have been considered in the preparation of this ACP. At the time of preparing this report the Corridor Strategy has been publicly advertised and is awaiting further review and finalisation by the City.

1.4.3.5 Perth Airport Preliminary Draft Master Plan 2020

The Perth Airport Preliminary Draft Masterplan 2020 was advertised for public comment between July and October 2019. The Master Plan provides a blueprint for future development of the Perth Airport Pty Ltd (PAPL) land, in accordance with the requirements of the Airports Act 1996.

The Master Plan details the plans to upgrade the International Terminal, construct a new terminal for the consolidation of Qantas Group operations to Airport Central by 2025, and construct a new runway.

The Master Plan includes a Development Plan for the land which is not required for aviation purposes, which comprises 3 precincts; Airport North, Airport South and Airport West (**Figure 23**).

Of significance to the Redcliffe Station Precinct is the Airport West Precinct, which is located adjacent to the subject site (**Figure 24**).

The Airport West Precinct will predominantly be developed with office, education, hospitality, well-being, retail and bulk goods development, to the scale of a Neighbourhood Centre. The centre will take advantage of the large flat sites available and major road freight access. The precinct also presents an opportunity for aviation-related development, with direct apron frontage available for some sites.



Figure 24: An extract of the Perth Airport Preliminary Draft Masterplan (2020) identifying the subject area immediately abutting the proposed Airport West precinct.

1.4.4 STATE PLANNING POLICIES

This section contains an overview and commentary on the State planning policies relevant to the ACP precinct.

1.4.4.1 State Planning Policy 3.6 - Development Contributions for Infrastructure

The Development Contributions for Infrastructure Policy primarily aims to promote efficient and effective provision of public infrastructure and facilities to meet demands from new growth and development in a consistent and transparent way. Development contributions can be sought for infrastructure that is required to support the orderly development of an area or community infrastructure on a 'user pays' basis whereby the beneficiary of the works (the developer or landowner) pays their equitable contribution towards those works.

This policy will be relevant should the statutory planning framework and infrastructure funding considerations include a proposal for a development contributions plan to equitably share the cost of infrastructure upgrades between landowners that directly benefit from these upgrades. This is further considered in Section 6.

1.4.4.2 State Planning Policy 3.7 - Planning in Bushfire Prone Areas

State Planning Policy Planning 3.7 (Planning in Bushfire Prone Areas) guides how land use should address bushfire risk management in Western Australia. The policy applies to all land which has been designated as bushfire prone by the Department of Fire and Emergency Services (DFES) and highlighted on the Map of Bush Fire Prone Areas.

The implementation of this policy is relevant in areas of the precinct identified as being within a Bushfire Prone Area as shown in **Plan 1**. Development within Bushfire Prone Areas is required to prepare a Bushfire Management Plan as a component of a development or subdivision application to ensure the risks of bushfire are addressed in accordance with best practice standards.

1.4.4.3 Draft State Planning Policy 4.1 - Industrial Interface

The Draft Industrial Interface Policy is designed to protect industry and infrastructure facilities from the encroachment of incompatible land uses and ensure that planning decisions consider the locational constraints of these land uses, and to prevent land use conflict between industry/infrastructure facilities and sensitive land uses, predominantly through the use of statutory buffers and site design / built form controls.

The policy is relevant in consideration of the interface between the Redcliffe Station Precinct and the adjacent Redcliffe Industrial Area to the north-east and Perth Airport Estate, which provides facilities for light industrial operators, to the west and south-east.

It is noted, however, that the industrial operations occurring within these precincts are largely benign in their impact to adjacent residential uses, and the area within the ACP precinct has historically been used for residential purposes for the past 50+ years.

On this basis further separation between industrial and residential land uses is not considered necessary, but rather the built form and site design of new residential and mixed use development will be required to consider the impacts of noise associated with key noise sources, including surrounding industrial uses, traffic on major roads and the operations of Perth Airport. This will be further addressed as a component of the *Redcliffe Station Precinct Design Guidelines*.

1.4.4.4 State Planning Policy 4.2 – Activity Centres for Perth and Peel

SPP 4.2 defines a hierarchical network of activity centres based on the future importance of each from a network perspective and the magnitude of development expected for a centre. The main purpose of SPP 4.2 is to specify broad planning requirements for the planning and development of new activity centres and the redevelopment and renewal of existing centres in Perth and Peel.

Activity Centres are defined in SPP 4.2 as:

Activity centres are community focal points. They include activities such as commercial, retail, higher density, entertainment, tourism, civic/community, higher education, and medical services. Activity centres vary in size and diversity and are designed to be well-served by public transport.'

In proximity to the site, Belmont Town Centre is identified as Secondary Centre and Belmont as an Existing Industrial Centre. Other surrounding centres include Midland Strategic Metropolitan Centre, Victoria Park Secondary Centre and the Ashfield, Bassendean, and Burswood District Centres.

Perth Airport is identified as a Specialised Centre, with primary functions of aviation and logistic services. Specialised Centres should provide a range of land uses that complement the primary function of the centre.

SPP 4.2 does not provide a spatial boundary for Perth Airport Estate, and the specified function of the Specialised Centre does not reasonably, for the purpose of SPP 4.2, include the Redcliffe Station Precinct locality.

Furthermore, Perth Airport is outside of the State and local government jurisdictions and subject to separate Commonwealth legislation. Therefore, it is considered the subject site

does not form part of the Perth Airport Specialised Centre, rather a separate Activity Centre which will likely function as a 'Neighbourhood Centre' and should respond to the considerations of the Perth Airport land uses and movement network.

An Activity Centre Plan is required for the site by virtue of the resolution of the WAPC in accordance with Section 31 (c) of the *Planning and Development (Local Planning Schemes) Regulations 2015* on 28 May 2019, to address the strategic importance of Redcliffe Station and the precinct developing as a transit-oriented development precinct.

This ACP has been prepared in accordance with the framework and requirements of SPP 4.2.

1.4.4.5 State Planning Policy 5.1 - Land Use Planning in the Vicinity of Perth Airport

State Planning Policy 5.1 (SPP 5.1) applies to land in proximity to the Perth Airport which is, or may be in the future, affected by aircraft noise. The objective of the Policy is to ensure development is appropriate for relevant noise exposure, whilst ensuring development of the Airport is not restricted. The policy provides guidance to Local Governments in the vicinity of the Perth Airport and the WAPC when considering land adjacent to the Airport.

The Policy places Perth Airport's Australian Noise Exposure Forecast (ANEF) contours for ultimate development into the planning scheme for relevant Local Governments. The DA6 area site is outside of the 20 ANEF.

There is no restriction on zoning or development within areas outside the 20 ANEF.

1.4.4.6 State Planning Policy 5.4 Road and Rail Transport Noise and Freight Considerations in Land Use Planning

State Planning Policy 5.4 – Road and Rail Transport Noise and Freight Considerations in Land Use Planning (SPP 5.4) seeks to minimise the effect of traffic noise on residential development and other noise-sensitive land uses and ensure efficient operation of transport corridors are not adversely affected by incompatible noise-sensitive development. SPP 5.4 is applied where the proposal includes:

- A proposed new noise-sensitive development in the vicinity of an existing or future major road, rail or freight handling facility;
- A proposed new major road or rail infrastructure project in the vicinity of existing or future noise sensitive land uses;
- A proposed major redevelopment of existing major road or rail infrastructure in the vicinity of existing or future noise-sensitive land uses; and

- A proposed new freight handling facility.

The policy is applicable to the DA6 area due to the interface with Great Eastern Highway and Tonkin Highway.

Therefore, for subdivision or development proposed adjacent to these roads, an acoustic assessment should be undertaken and included as part of any application to demonstrate that the proposed design will meet the internal noise level requirements of SPP 5.4.

Some of the measures outlined by the policy include:

- Using distance to separate noise-sensitive land uses from noise sources;
- Construction of noise attenuation barriers such as earth mounds and noise walls;
- Building design, such as locating outdoor living areas and indoor habitable rooms away from noise sources; and
- Building construction techniques, such as upgraded glazing, ceiling insulation, sealing of air gaps and mechanical ventilation.

1.4.4.7 Stage Planning Policy 7.3 - Residential Design Codes (Volume 1 - Single and Grouped Dwellings)

The Residential Design Codes of Western Australia (R-Codes) are a WAPC policy which controls residential development across the State. The R-Codes provide guidance on matters such as density, setbacks, privacy, streetscapes, open space, parking, fill and height. The development requirements vary according to the 'R-Code' which is designated to an area.

The Codes stipulate 'deemed to comply' standards which represent one way that development can obtain planning approval, as well as 'design principles' for development to be assessed on merit value.

Local governments may vary the provisions of the R-Codes where a particular matter is locally important and requires specific planning/development controls, which can be achieved through Structure Plans, Activity Centre Plans, Local Planning Policies and Local Development Plans or via specific provisions in a Local Planning Scheme.

1.4.4.8 State Planning Policy 7.3 - Residential Design Codes (Volume 2 - Apartments)

State Planning Policy 7 (SPP 7.3) addresses the design quality of apartments within residential and mixed use developments to ensure that design provide high quality outcomes for future residents and for the broader community.

The Apartment Design Guidelines encourage good design outcomes by establishing higher baseline requirements for apartment developments, particularly focusing on:

- Creating greater levels of on-site open space for private and communal use;
- Retention of existing mature trees on-site where possible;
- Designing dwellings to take advantage of passive solar design and natural ventilation;
- Encouraging 'attached' dwelling types (boundary to boundary) in higher density areas such as activity centres and corridors; and
- Ensuring that internal living spaces are of a sufficient size and have access to natural light and breezes.

SPP7.3 will be of direct relevance in the design and assessment of apartment proposals within the precinct and will underpin the Redcliffe Station Precinct Design Guidelines.

1.4.4.9 Liveable Neighbourhoods

Liveable Neighbourhoods is the WAPC's operational policy to guide structure planning and subdivision for greenfield and large brownfield (urban infill) sites. It provides guidance on the design of movement networks, activity centres, subdivision design, public open space and education.

The design of the Redcliffe Station Precinct will be assessed against the principles and recommendations of Liveable Neighbourhoods for each of the relevant elements, and to the extent that the recommendations can be achieved within the constraints of an infill environment with significant fragmentation of land.

1.4.5 LOCAL PLANNING POLICIES

1.4.5.1 Local Planning Policy No. 13 - Vehicle Access for Residential Development

The purpose of Local Planning Policy No. 13 Vehicle Access for Residential Development (LPP 13) is to ensure that vehicle access design does not adversely impact on the neighbourhood safety and amenity while providing appropriate access to residential properties.

The objectives of the policy have been considered in the preparation of the Activity Centre Plan, with the provision of an appropriate street network that accommodates safe access to residential development. Specific access design will be addressed in the *Redcliffe Station Precinct Design Guidelines*.

1.4.5.2 Local Planning Policy No. 14 – Development Area 6 Vision

Local Planning Policy No. 14 – Development Area 6 Vision (LPP 14) was adopted by the City of Belmont on 24 February 2016, and applies to land zoned by LPS 15 (i.e. excludes the Perth Airport estate). The policy was prepared in response to the commitment of the State Government to the Perth Airport Rail Project and identification of indicative alignment the Forrestfield Airport Link and the location of the Redcliffe Station.

The Policy outlines a Vision Plan and Implementation Strategy to establish a vision for the future urban regeneration of DA6 (**Figure 25**). The plan provides a concept design for the ultimate redevelopment of the precinct, inclusive of proposed built form, land use, public realm and movement network outcomes, along with recommendations for implementation through partnership with key stakeholders and revisions to the planning framework.

LPP 14 (including the Vision Plan) has been given due regard in the preparation of the Activity Centre Plan for the precinct, and implementation of the ACP will assist in achieving the objectives of LPP 14 and realising the vision for DA6.

1.4.6 OTHER APPROVALS AND DECISIONS

1.4.6.1 Improvement Plan

The WAPC resolved to prepare an Improvement Plan for DA6 on 29 March 2017, with the provision of an Improvement Scheme, however, the request was not forwarded to the Minister for Planning at that time due to the change of government in March 2017, and the introduction of METRONET.

The finalisation of the planning implementation framework for DA6 is subject to METRONET's Redcliffe Station Precinct Delivery Review, and it is noted the Department of Planning, Lands and Heritage has advised that the Western Australian Planning Commission do not intend to initiate an Improvement Plan or Improvement Scheme for the precinct.



NOTES

- ① Great Eastern Highway upgrade/Brearley Avenue decommission.
- ② Business/Residential mixed use development (medium-high intensity) along Great Eastern Highway.
- ③ Brearley Avenue and open space reserves create new parks, recreation paths & cycleways / development sites with optimal tree retention and living stream.
- ④ Redevelopment of residential neighbourhood, with mix of 3, 6, 8 & 13 storey buildings.
- ⑤ Landscaped buffer area framing residential neighbourhood.
- ⑥ Higher intensity mixed use and residential development close to Station.
- ⑦ Local residential streets designed as slow-speed, pedestrian-friendly spaces.
- ⑧ Sensitive landscape, built form, land use transition Perth Airport/residential neighbourhood.
- ⑨ Connected public realm through Plaza, local retail, commercial development.
- ⑩ New access to Tonkin Highway.
- ⑪ Fauntleroy Avenue, Dunreath Drive and Boud Avenue main access points to Perth Airport.
- ⑫ Central Avenue tree lined boulevard with central median for pedestrians & cycle lane.
- ⑬ Park and Ride for station (500 bays).
- ⑭ Living stream creating sustainable drainage.
- ⑮ Ultimate design of all streets to be determined as development occurs.
- ⑯ Roundabout on Dunreath Drive modified to signals with pedestrian crossing-phase in ultimate development.
- ⑰ Airport West Station.
- ⑱ Coolgardie Avenue intersection with Great Eastern Highway, upgrade.
- ⑲ Fauntleroy Avenue intersection with Great Eastern Highway, upgrade.

LEGEND

- DA6 Boundary
- Perth Airport Boundary
- Residential ≤3 storeys
- Residential ≤6 storeys*
- Residential ≤8 storeys*
- Residential ≤13 storeys*
- Community/Civic

* Heights will be subject to site-area and building-performance criteria.

Figure 25: The DA6 Vision Plan and Implementation Strategy (2016) outlining the preferred vision for redevelopment of the precinct.

1.4.6.2 Redcliffe Station Development Approval

Development approval for the Redcliffe Train Station was granted by the WAPC in August 2017 and construction has commenced at the time of preparing this report, with the station projected to be operational in 2021.

The station is to be located within the former Brearley Avenue road reserve and adjacent parks and recreation reserves between Central Avenue and Dunreath Drive. The station will have below ground platforms with the station access at the surface.

Redcliffe Train Station will also form a bus / train interchange, with six bus bays located at the station entry. Passengers alighting from busses in this location will have direct access into the station, without having to cross any roads.

A comprehensive network of safe paths will help guide pedestrians and cyclists in and around the Redcliffe Station. The station's forecourt will provide a link between Bulong Avenue and Central Avenue so passengers and residents can use the station as a thoroughfare.

A 500-bay car park will be located south of the station, generally between Central Avenue, Second Street and Boulder Avenue, which will balance the need for passenger parking with the opportunity to create connected communities within walking distance of the station.

1.4.7 PRE-LODGEMENT CONSULTATION

1.4.7.1 DA6 Working Group

The Development Area 6 Working Group was formed to assist in the review of the vision and formulation of the planning framework for DA6 and provide input and advice into the formulation of the ACP. The Working Group includes representatives from the City of Belmont, the Department of Planning, Lands and Heritage, Department of Transport, Public Transport Authority, Main Roads WA, Water Corporation and METRONET.

The following key considerations were identified throughout the Working Group:

- Create a well-connected movement network that maximises access to, and within, the subject site by walking, cycling and public transport and reducing private car trips;
- Promote development which facilitates connections to and activity surrounding the Redcliffe Station;
- Provide usable open space, retain mature trees and appropriately manage drainage; and
- Encourage adaptable development which can respond to market needs.

1.4.7.2 Community Open Days

A series of Community Open Days were held in 2015 with members of the City of Belmont community to further review the DA6 vision and gain a greater understanding of what the community values and wanted to see in the area in terms of movement, land uses, built form and public realm (**Figure 26**). Feedback from the open days was used to refine and the Vision Plan.

1.4.7.3 METRONET Workshops

A series of METRONET workshops were held in August 2017 which included the entire Project Working Group, additional City of Belmont representatives, the METRONET team, the consultant team, the Government Architect and representatives from the Australian Urban Design Research Centre (**Figure 26**). The aim of the workshops was to review the City of Belmont adopted DA6 Vision Plan and Implementation Strategy to inform the ACP. The objectives of the workshop were to:

- Identify further opportunities and constraints not previously apparent or available at the time of preparing the Vision Plan;



Figure 26: Extensive stakeholder engagement and consultation has occurred in the preparation of the planning framework for the Redcliffe Station Precinct, including community open days and workshops (top) and workshops with key government stakeholders (below).

- Ensure that the outcomes of the Redcliffe Station design, DA6 project and the broader METRONET project aligned; and
- Facilitate a collaborative working relationship between the project teams for Redcliffe Station, DA6 and METRONET.

1.4.7.3 Developer Reference Group

A Developer Reference Group was established by the project team to gain expert advice and input on:

- Market considerations for residential, commercial and mixed use development within the subject area;
- Urban design and public realm considerations;
- Site design considerations for privately held land within the precinct; and
- Built form design considerations for privately held land within the precinct.

A broad range of feedback received from the Developer Reference Group was used to ensure the opportunities and issues for redevelopment have been thoroughly considered in the preparation of the ACP and planning framework.

1.5 ACTIVITY CENTRE PLAN CHECKLIST - CENTRE CONTEXT

Section 1 of the explanatory report has been prepared in accordance with the guidance provided by *SPP4.2 Activity Centres for Perth & Peel*.

In accordance with this guidance a checklist has been prepared to delineate the sections of the ACP which are used to address each of the key SPP4.2 requirements, and this is outlined in **Table 15**.

Table 15: Activity Centre Plan Checklist - Centre Context

SPP4.2 Reference	ACP Requirement	Section of ACP addressing Requirement	Summary / Additional Comment
1	Classify the centre and assess its current performance against the activity centres hierarchy and the functions and performance targets in Table 2 of the Policy.	Section 1.1	The centre has been assessed against the classification for a Neighbourhood Centre in the absence of anything more definitive in policy or from the WAPC.
2	Document and map the centres regional context, recording the centres strengths, weaknesses, opportunities and threats.	Section 1.2	SWOT analysis has been prepared for precinct and surrounding areas.
3	Clearly define and map the existing centre boundary and any proposed extension.	Section 1.2	Centre mapped in Figure 18 , noting the context of the Perth Airport Specialised Centre.
4	Document and map the centres demographic profile and defining characteristics.	Section 1.3	Demographic profile based on the 2016 census data provided.
5	Conduct a baseline assessment of land and its use within the centres boundary and walkable catchment.	Section 1.3	A basic assessment has been provided in Section 1.3, with a more detailed assessment provided in Section 2.
6	Document and map transport links and accessibility nodes within the centre boundary and its surrounds. Note local street hierarchy, bus services and stops, rail facilities, and pedestrian/cycle access and provision.	Section 1.3	Overview of the key access nodes and connectivity provided. Further analysis included in Section 2.
7	Review state and local planning policy, guidance and best practice noting key objectives and targets relating to the centre.	Section 1.4	Planning context at regional and local level provided.



MOVEMENT

SECTION
2

This section provides a summary of the key issues and recommendations for transport in the Activity Centre Precinct. A Transport Assessment has been prepared for the precinct area and is included in **Appendix 1**.

2.1 EXISTING MOVEMENT NETWORK

2.1.1 ROAD TRANSPORT NETWORK

Although not within the boundaries of the immediate area, the ACP precinct is dominated by the presence of major primary distributor roads on the northern and western boundaries (Great Eastern Highway and Tonkin Highway) as well as substantial distributor level roads within the boundaries of Perth Airport (Dunreath Drive and the former Brearley Avenue).

The existing road network within the precinct boundary has until recently been dominated by the alignment of Brearley Avenue which, until late 2017, was the primary route into Terminals 3 and 4 at Perth Airport and surrounding commercial land uses associated within the Perth Airport Estate. Prior to its closure as a through route from Great Eastern Highway to the domestic terminals it carried upwards of 36,000 vehicles per day.

The majority of the streets within the precinct are lower order access roads, as seen on the Main Roads WA Road Hierarchy plan shown in **Figure 27**, with only Second Street performing the function of a Local Distributor Road. This local street network formed a traditional grid network with access from Great Eastern Highway prior to the development of Brearley Avenue as the main access road to Perth Airport in the 1950's.

The posted speed limits for streets within the precinct are 50km/h on Access Roads and Second Street. There is a school speed zone associated with Redcliffe Primary School that is in operation at posted times.

Although the roads within Perth Airport adjacent to the site are not classified, they generally perform the function of District Distributor level roads with their current principal function being movement of vehicles as opposed to providing access to urban form.

There are no signalised intersections wholly within the ACP area, however there are signalised intersections along Great Eastern Highway which provide access to and from the network at Coolgardie Avenue. The majority of internal intersections are Stop or Give Way sign controlled intersections.

2.1.2 PUBLIC TRANSPORT

Existing public transport services are limited to bus services available along Great Eastern Highway and via Second Street and within the Perth Airport Estate. This includes:

- Services 36 and 40 along Great Eastern Highway which predominantly take commuters along Great Eastern Highway to the Elizabeth Quay Bus Station via Adelaide Terrace and St Georges Terrace;
- Services 295, 296 and 299 which take commuters between Elizabeth Quay Bus Station and Kalamunda / Walliston via Great Eastern Highway and Kalamunda Road; and
- Service 935 which travels between Kings Park and the Perth CBD through Rivervale, Belmont and Redcliffe to Perth Airport.

The alignments of these routes are illustrated in **Figure 27**.

2.1.3 CYCLE NETWORK

There are a number of existing shared use paths and connections to wider area shared path networks throughout the ACP precinct.

The overall network and connections are illustrated in **Figure 27**, inclusive of Coolgardie Avenue, First Street, Second Street and Victoria Street North which are all classified as having good on-street riding environments.

2.1.4 PEDESTRIAN NETWORK

The existing pedestrian network is limited with many streets having a footpath on one side of the street and some sections of cul-de-sac not having footpaths at all. There are existing shared use paths along the Brearley Avenue corridor, Second Street and Kanowna Avenue that are higher order paths.

There are shared use path connections on bridges over the Tonkin Highway to the existing Principal Shared Path that runs along the western side of the Tonkin Highway road reserve. These bridges provide pedestrian connections to the western side of Redcliffe.

There are also pedestrian crossing phases at the signalised intersections on Great Eastern Highway at Brearley Avenue and Coolgardie Avenue. These connections provide pedestrian access through to open space and path networks along the Swan River.

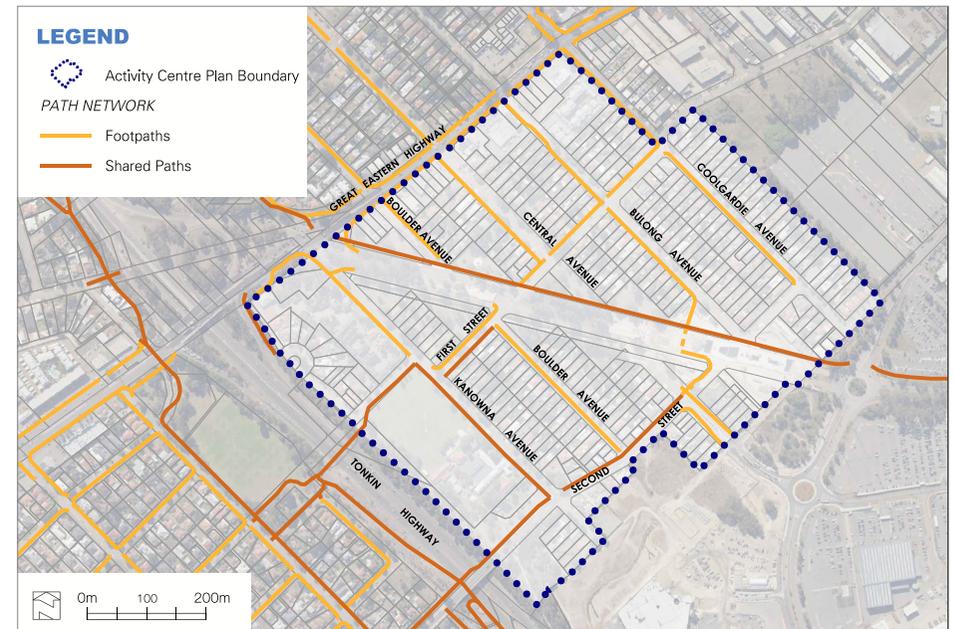
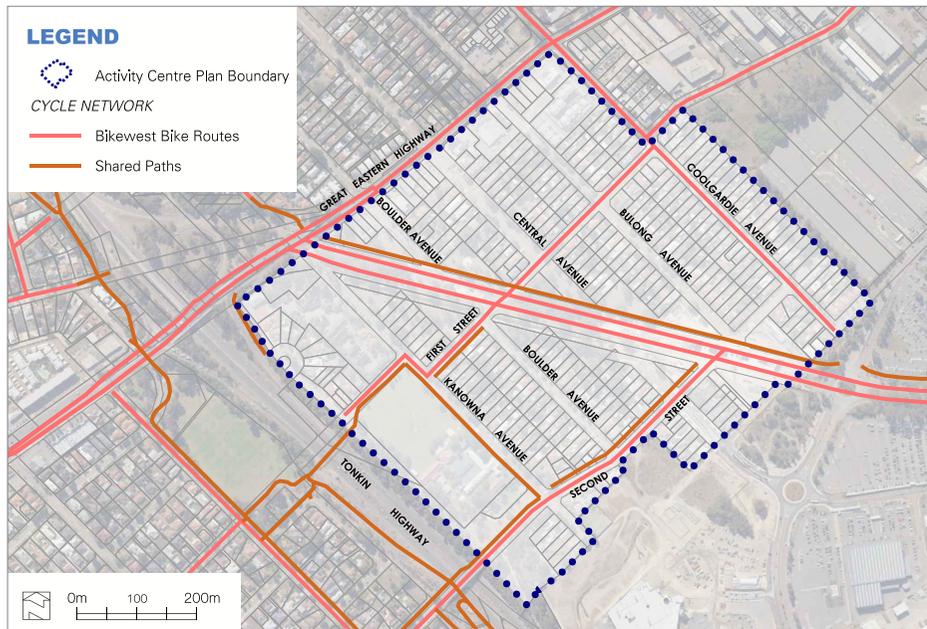
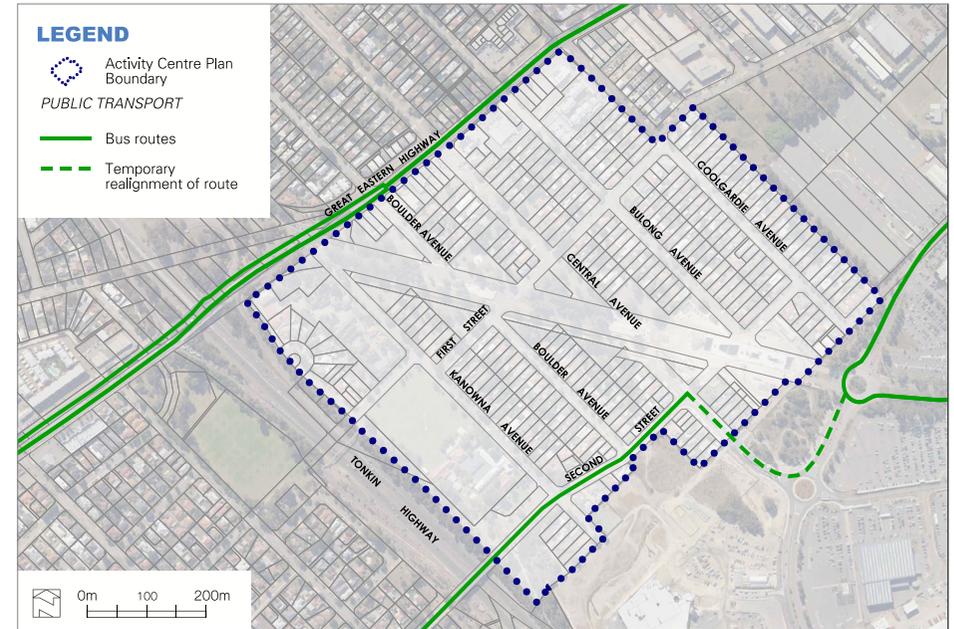


Figure 27: Illustration of the existing movement network function via the road network (top left), public transport (top right), cycle network (bottom left) and pedestrian paths (bottom right).

2.2 MOVEMENT NETWORK - OPPORTUNITIES AND ISSUES

An opportunities and issues analysis for the movement network within and immediately adjacent to the precinct has been prepared and is outlined in **Table 16** and **Figure 28**.

Table 16: Opportunities and Issues Analysis

Element	Opportunities	Element	Issues
Road Network	<ul style="list-style-type: none"> Decision to close Brearley Avenue provides opportunity for reconnection of grid road system and improve connectivity throughout precinct (Plan Reference 1) Linear network of established streets with width of 20m - 30m, providing capacity for infrastructure improvements within the existing reserve areas. Strong connectivity to the regional road network allowing quick connection to key destinations. Strong connectivity to Perth Airport as an employment centre and future activity hub (Plan Reference 2). 	Road Network	<ul style="list-style-type: none"> Precinct is regularly used for through movements or 'rat-running' as a result of people using residential streets to avoid congestion on Great Eastern Highway or access/egress the airport precinct. Connectivity to the broader network is limited to Dunreath Drive and Stanton Road to the south and Coolgardie Avenue to the north, with a left in / left out at Boulder Avenue to Great Eastern Highway (Plan Reference 6). Some evidence of on-street parking issues as a result of increased demand for local public parking associated with the Discount Factory Outlet, which is likely to be increased with the opening of the Costco and Redcliffe Train Station.
Public Transport	<ul style="list-style-type: none"> Decision to construct Forrestfield Airport Link and Redcliffe Train Station provides substantially improved public transport availability (Plan Reference 3). Existing bus routes along Great Eastern Highway and throughout the airport precinct within walking distance. 	Public Transport	<ul style="list-style-type: none"> Public transport currently limited to buses only and is primarily focused on Great Eastern Highway, with only the 935 service directly traversing the precinct (Plan Reference 7). Services currently focus only on Great Eastern Highway, Perth CBD and Kalamunda, with no other destinations directly accessible (e.g. Belmont Town Centre).
Cycle Network	<ul style="list-style-type: none"> Principle Shared Path running along Tonkin Highway abuts the precinct (Plan Reference 4). Broader cycle network connectivity adjacent the Swan River in close proximity to the precinct. 	Cycle Network	<ul style="list-style-type: none"> Limited facilities designed specifically for the cyclist, with most routes focused on shared use paths or on-street riding. No end of trip facilities currently provided for cyclists accessing the precinct.
Pedestrian Network	<ul style="list-style-type: none"> At a minimum all local streets have a single footpath, as per Figure 31 to provide some functionality for pedestrians. Connections to the broader shared path network via Stanton Road and the pedestrian bridge is currently good (Plan Reference 5). Existing street trees along local streets provide some shade and shelter for pedestrians. 	Pedestrian Network	<ul style="list-style-type: none"> Single footpath on all roads places limitation on ease of connectivity for pedestrians. Great Eastern Highway provides a poor pedestrian experience due to a lack of buffer from the traffic and limited shade or shelter. Limited safe crossing points over Great Eastern Highway makes it difficult for pedestrians to access regional space to the north (Plan Reference 8).

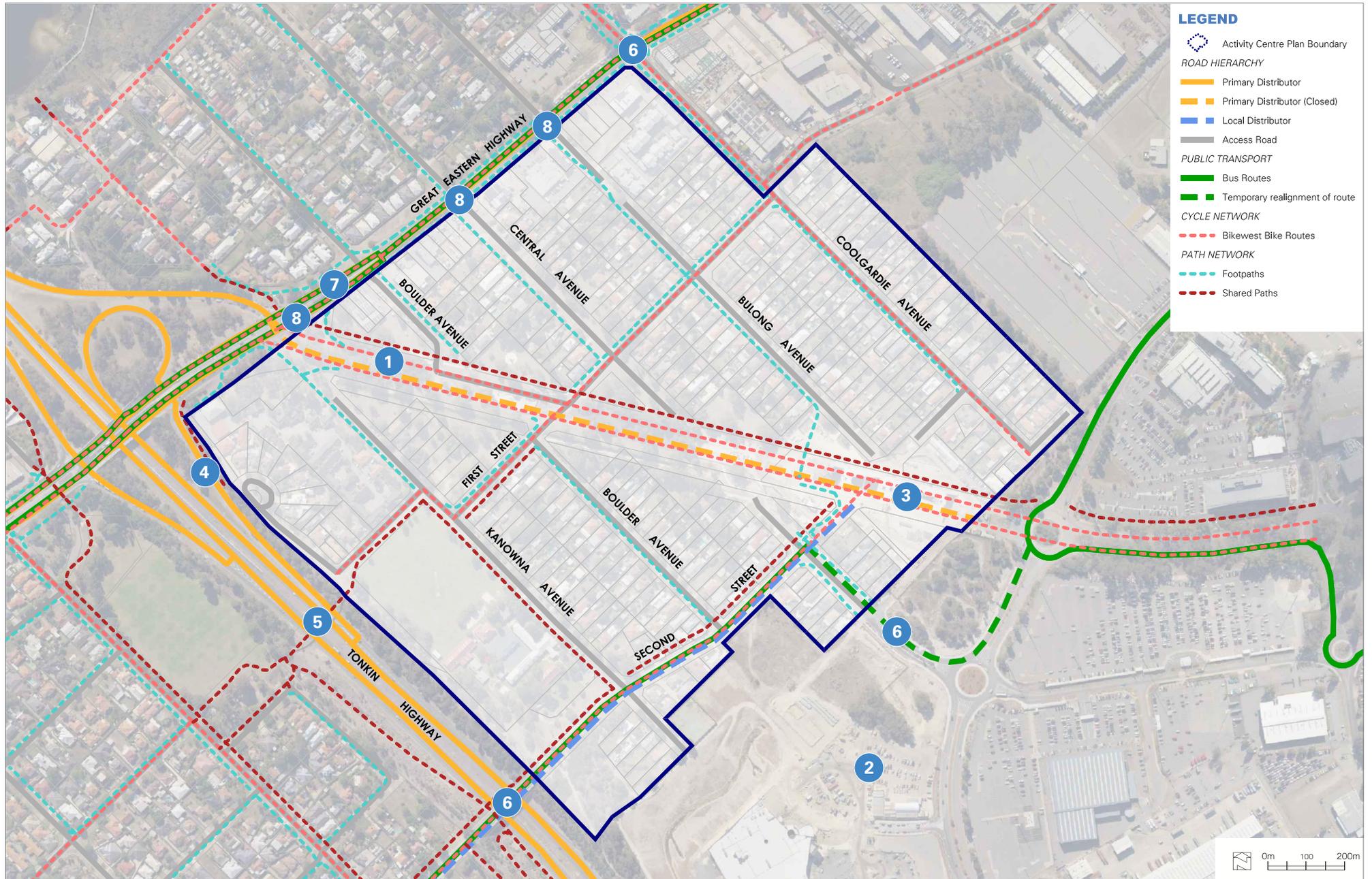


Figure 28: Opportunities and Issues Analysis undertaken for the movement network within the ACP precinct.

2.3 NETWORK CONNECTIVITY INITIATIVES

Detailed traffic modeling and analysis has been undertaken to support the growth of the ACP precinct which is outlined in **Appendix 1**.

A range of key transport initiatives are proposed as a component of this ACP with the primary aim of increasing connectivity within the precinct and to the surrounding areas, and providing the community with a broad range of sustainable transport options. The following sections, along with **Figure 29**, outline the extent and status of these measures.

2.3.1 ROAD NETWORK

2.3.1.1 Brearley Avenue Closure

The closure of Brearley Avenue between Great Eastern Highway and Dunreath Drive was progressed in late 2016 as a result of:

- a) The completion of upgrades to the regional road network via the Gateway WA Project, which, amongst other initiatives, included the upgrade of Dunreath Drive and direct connection from Tonkin Highway to Perth Airport, providing an alternative direct connection to the domestic terminal; and
- b) The progression of the Forrestfield Airport Link rail connection project which identified the former Brearley Avenue reservation as the preferred alignment for the construction of the passenger rail tunnel and new Redcliffe Train Station.

The closure of Brearley Avenue, which was finalised in October 2018, removed the direct regional traffic flow through the precinct and provides the opportunity for reconnection of the grid road system to improve local road connectivity within the precinct.

2.3.1.2 Coolgardie Avenue and Great Eastern Highway Intersection

In 2017 as a component of the decision to close Brearley Avenue the intersection of Coolgardie Avenue and Great Eastern Highway was upgraded to provide a right turn lane and permit u-turn movements to ensure that vehicles looking to access the precinct from Great Eastern Highway, or access the commercial development fronting the Highway within the precinct, could do so legally.

This upgrade was provided as an interim measure prior to the more substantial upgrade of Great Eastern Highway foreshadowed by MRWA and outlined in section 2.3.1.3.

2.3.1.3 Great Eastern Highway Upgrade

Great Eastern Highway from Tonkin Highway to Orrong Road was upgraded by MRWA in 2013/14 as a component of the Gateway WA Project, inclusive of widening the majority of the highway to accommodate bus lanes, vehicle turn facilities and cycle lanes. The timing of the proposed upgrade is unknown at the time of preparing this report.

2.3.1.4 Tonkin Highway GAP Project

In April 2019 the WA State Government announced funding for the 'Tonkin Highway Gap' project which focuses on an upgrade of Tonkin Highway between Great Eastern Highway and Guildford Road. The project is intended to improve the efficiency of this section of road and have flow on improvements to the broader regional road network.

The upgrade is likely to include changes to the operation and extent of the interchange of Tonkin Highway and Great Eastern Highway, which has the potential to impact infrastructure and land within proximity to the interchange, including land within the ACP area.

2.3.1.5 Central Avenue to Dunreath Drive Connection

In 2015/2016 the City of Belmont and Perth Airport, in anticipation of the closure of Brearley Avenue, commenced the new connection of Central Avenue to Dunreath Drive.

The road is designed as a median separated boulevard within the existing 30m wide reservation, inclusive of a dedicated cycle lane, footpaths on both sides and the potential for embayed car parking as development proceeds and crossovers are consolidated.

2.3.1.6 New Road Connections

There are several new road connections required within the precinct to reconnect the grid system following the closure of Brearley Avenue. These roads are identified in **Figure 29** and described as follows:

- Road 1, being a new 20m wide road reserve linking Kanowna Avenue to Boulder Avenue, and allowing the removal of the temporary connection of Boulder Avenue to First Street via the former Brearley Avenue reservation;
- Road 2, being a new 20m wide road reserve linking Central Avenue to Bulong Avenue to the north of the train station, and allowing connection for buses into the bus-about within the station precinct; and
- Road 3, being the connection of Bulong Avenue to Second Street to complete the loop network surrounding the station, rather than retaining two abutting cul-de-sacs.

The implementation of these road connections is further discussed in **Section 2.3.1.8 and Section 6**.

2.3.1.7 Connections to Great Eastern Highway

At the time of preparing this report the intersections of Bulong Avenue and Central Avenue with Great Eastern Highway are both restricted via cul-de-sac from direct access between the Highway and the broader precinct. This restriction is proposed to remain in place until such time as:

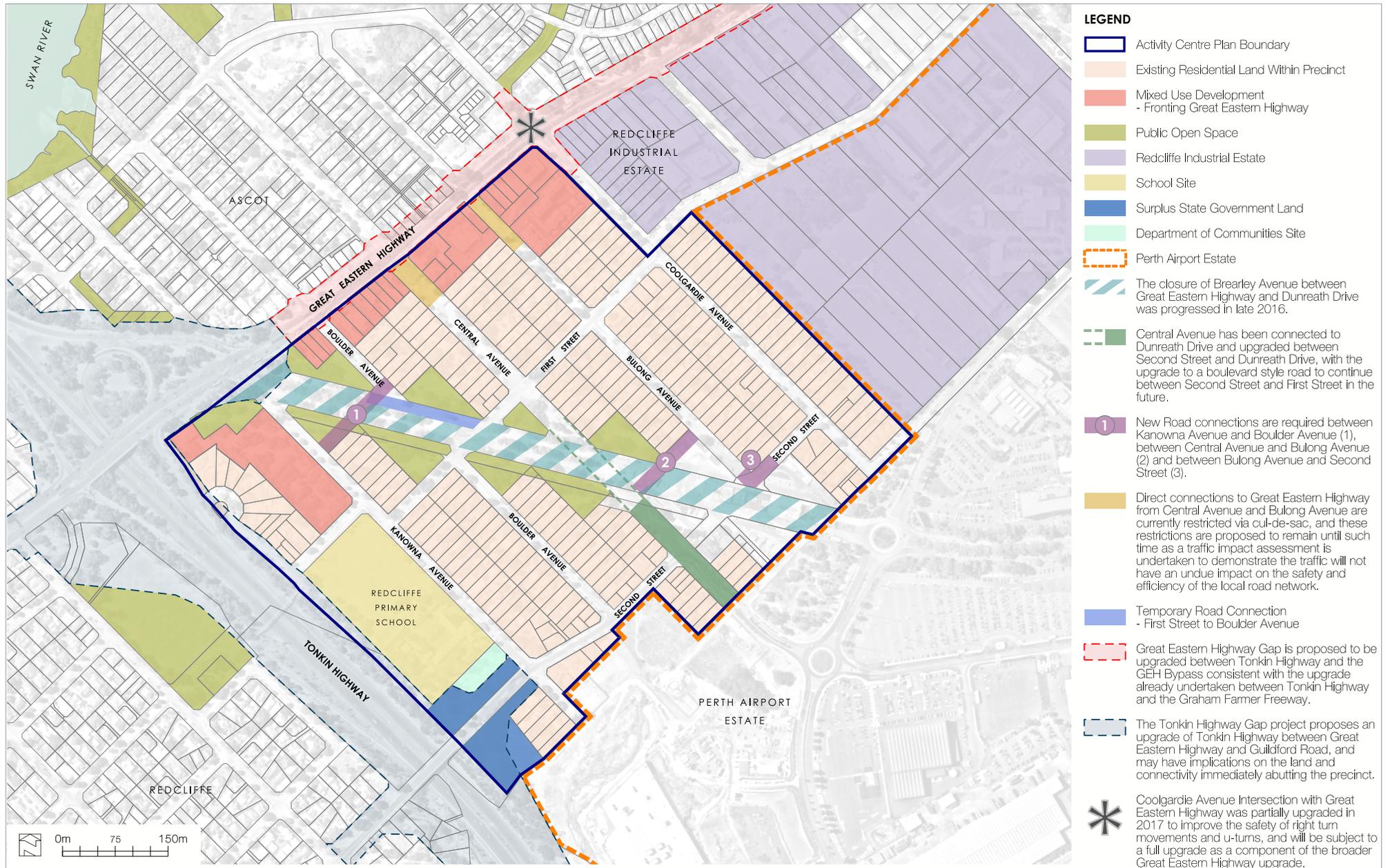


Figure 29: Road network connectivity initiatives within and external to the Redcliffe Station Precinct.

- a) The commercial domestic operations of Qantas cease at Terminal 3 via relocation to Terminal 1 and Terminal 2;
- b) The upgrade of Great Eastern Highway referenced in section 2.3.1.3 is completed; and
- c) A traffic impact assessment is undertaken to demonstrate that direct connection of these roads will not have an undue impact on the safety and efficiency of the local road network.

2.3.1.8 Local Road Upgrades

The demands placed on the local road network from a vehicle traffic perspective are going to increase as a result of the introduction of the Redcliffe Train Station, the redevelopment and intensification of use within the precinct over time, the continued (albeit short-term) operation of Qantas from Terminal 3 and the significant commercial development occurring within Perth Airport Estate, including a Neighbourhood Centre, Costco and the Discount Factory Outlet.

An assessment of the traffic volumes associated with these factors had previously been forecast for the year 2021 by the PTA as a component of the Forrestfield Airport Link Project, and a further analysis has been undertaken for the year 2031 in **Appendix 1** based on:

- The precinct road network as proposed;
- Redcliffe Station being fully operational with the bus network plans proposed within this assessment in place;
- Known land use details based on likely yield and development quantum;
- Relocation of Qantas from Terminal 3; and
- Vehicle distribution from ROM24 that is consistent with the approach used for the 2021 assessment.

The comparative flows between 2021 and 2031 for the local street network indicate that:

1. Traffic will increase on most local roads as a result of the above factors, which will benefit from a series of local road upgrades focused on the slowing of vehicles and alternative treatments to key intersections.
2. The use of Coolgardie Avenue / First Street to access the ACP area and the commercial land uses adjoining the airport estate will increase between 2021 and 2031, and as such local road upgrades between First Street and the airport precinct are a priority to direct traffic to the preferred routes.
3. The more immediate traffic impacts will result from Qantas terminal traffic, Costco, the DFO and the Park and Ride traffic on Second Street, as development within the precinct is likely to occur over a much longer time frame.

4. The signalisation of the intersection of Central Avenue and Second Street is anticipated to be essential to manage traffic volume through this area, as it will ensure greater efficiency of the intersection operation, prioritise pedestrian/cyclist movements and further discourage through movements between the airport precinct and Great Eastern Highway.
5. The relocation of Qantas from Terminal 3 wont see longer term relief in terms of traffic volumes on Second Street, which will need to be taken into account in consideration of opening the intersections of Central Avenue or Bulong Avenue with Great Eastern Highway.

In order to address the above it is proposed that a series of prioritised local road upgrades occur with the primary aim of:

- Minimising the desire for through movements of vehicles between the regional road network and the Redcliffe Train Station or the commercial development within Perth Airport Estate; and
- Slowing vehicle movements on all roads to prioritise pedestrian/cyclist movements and contributing to minimising the desirability of through movements in the precinct.

Figure 30 outlines the indicative prioritisation of local road upgrades, subject to ongoing traffic modelling and the City's capital works budget assessment.

For the purpose of local road upgrades the network has been divided by 'Street Character Types' which identify the primary functions and proposed upgrades.

There are three street character types identified for the precinct outlined as follows:

Street Character Type A

These streets are intended to facilitate primary movement of vehicles between the station precinct and signalised intersection of Coolgardie Avenue and Great Eastern Highway, as shown in **Figure 31**.

These streets will generally be designed with:

- A standard road carriageway to accommodate the movement of cars with limited conflict;
- On street parking to assist in slowing traffic and providing visitor parking for residents and businesses; and
- High quality pedestrian infrastructure including footpaths, shade and shelter and street trees to ensure a high quality amenity and ease of use of the network.

Street Character Type B

These streets represent the key streets proposed to accommodate the movement of the bus network, connecting this to the new Redcliffe Station as the primary public transport node, as shown in **Figure 32**.

These streets will generally be designed with:

- A widened road carriageway to accommodate the movement of buses and cars without conflict and minimise delays to the movement of the buses;
- High quality pedestrian infrastructure including footpaths, shade and shelter and street trees to ensure a high quality amenity and ease of use of the network; and
- Clear directional signage and locational markers to assist in legibility of the public transport network.

Street Character Type C

These streets represent all other residential streets within the precinct where priority is to be given to pedestrians and cyclists over motorised vehicles, as shown in **Figure 33**.

These streets will generally be designed with:

- A narrowed road carriageway designed to slow the speed of vehicles through deviations in its alignment, traffic calming devices and paving treatments;
- On street parking to assist in slowing traffic and providing visitor parking for residents;
- High quality pedestrian infrastructure including footpaths, shade and shelter and street trees to ensure a high quality amenity and ease of use of the network; and
- Clear signage identifying that these are local roads not intended to be used as thoroughfares.

The overall precinct allocation of the street character types is shown in **Figure 34**.

In addition to the upgrade of local streets there are a number of key intersections that require modification as follows:

- **Coolgardie / First Street:** The intersection currently provides prioritisation for Coolgardie to connect with First Street, with Coolgardie (south) a Give Way. This is proposed to be maintained to direct traffic via First and Central rather than along Coolgardie Avenue (south).
- **First Street / Central Avenue:** Intersection modification required at time of extension of Central Avenue to make Central the priority movement and make First Street approach a Give Way.

- **Central Avenue / Second Street:** The intersection of Second Street and Central Avenue is currently constructed as a full movement intersection. It is anticipated that this intersection will require an upgrade in the short to medium term to a signalised intersection as a result of traffic volumes generated by the commercial development(s) in the airport estate and by the operation of the Redcliffe Train Station. Traffic will continue to be monitored to ensure the operation of this intersection remains high, and further modifications may be required should traffic volumes exceed that acceptable for unsignalised intersection.
- **Kanowna Avenue / Stanton Road:** The intersection of Stanton Road and Kanowna is anticipated to require treatment to slow vehicles entering the precinct via the Stanton Road bridge and ensure safe movement of vehicles exiting and entering Kanowna Avenue.
- **Central Avenue / Bulong Avenue with Great Eastern Highway:** The direct road connection of Bulong Avenue and Central Avenue to Great Eastern Highway will not be implemented until such time as Qantas relocates from Terminal 3 and Terminal 4 and/or the ultimate upgrade of Great Eastern Highway is completed, and traffic modelling demonstrates that the connections will be safe and not lead to increased 'rat-running' through the precinct.

The proposed intersection modifications are further outlined in **Figure 34**.

The prioritisation of works is proposed to directly relate to the anticipated development staging within the precinct and the demands this will place on the local road network. To this extent a prioritisation plan has been prepared to broadly guide the City's decision making on road upgrades, subject to traffic monitoring, detailed design considerations, availability of funds and capital works budgeting processes.

The prioritisation order is outlined as follows and shown further in **Figure 30**:

- **Priority 1:** These works relate to local roads and intersections that will be directly affected by the opening of the Redcliffe Train Station and demand generated by commercial development within the Airport Estate. The works should focus on slowing vehicle movements, encouraging the bulk of movements to occur via the new Central Avenue connection between First Street and Second Street (rather than Kanowna Avenue or Boulder Avenue) and managing the key intersections of Kanowna Avenue / Stanton Road, Boulder Avenue/Second Street and Second Street / Central Avenue. The staging of the works will also be influenced by the extent of development on privately owned sites abutting the identified roads.

- **Priority 2:** These works relate to local roads likely to be influenced by the reappropriation of the Brearley Avenue reservation, the creation of the open space corridor and the realignment of the Southern Main Drain, in addition to traffic generation as a result of the Redcliffe Train Station and the Perth Airport Estate seeking access/egress via Coolgardie Avenue or Boulder Avenue to Great Eastern Highway. The staging of the works will also be influenced by the extent of development on privately owned sites abutting the identified roads.
- **Priority 3:** These works relate to local roads likely to be influenced by development on private landholdings within the area and by traffic accessing the station precinct from the north via Coolgardie Avenue.
- **Priority 4:** The staging of these local road upgrades is subject to further analysis required to support opening of these roads to Great Eastern Highway following the relocation of Qantas from the T3 terminal and/or the upgrade of Great Eastern Highway, in addition to modelling to satisfy the opening of the intersections is appropriate, and by development on private landholdings within the area.
- **Priority 5:** The staging of these local road upgrades is likely to be solely influenced by proposed redevelopment of private land within the area given they are designed as cul-de-sacs and are unlikely to be subject to additional traffic volume throughout the precinct.

In reviewing the prioritisation and preliminary cost estimates for the local road upgrades it is important to note that the detailed design will take account of the following matters, amongst others:

- Ongoing monitoring of traffic flows throughout the precinct;
- Opportunities and constraints in installation of traffic calming devices in key locations to ensure that they are effective in slowing traffic and prioritising pedestrian/cyclist movements, but do not have an unreasonable impact on the amenity or movement of abutting landowners; and
- Additional traffic modelling undertaken as a result of key changes in the road network or demand generators, such as the relocation of Qantas from the T3 terminal, upgrade of Great Eastern Highway or Tonkin Highway or additional development within Perth Airport which is considered a major traffic generator.

The staging and implementation of the local road upgrades will be subject to the City of Belmont's capital works programme and detailed design for the upgrade of these local roads, and may differ from the prioritisation plan outlined depending on the actual staging of development and opportunities that arise.

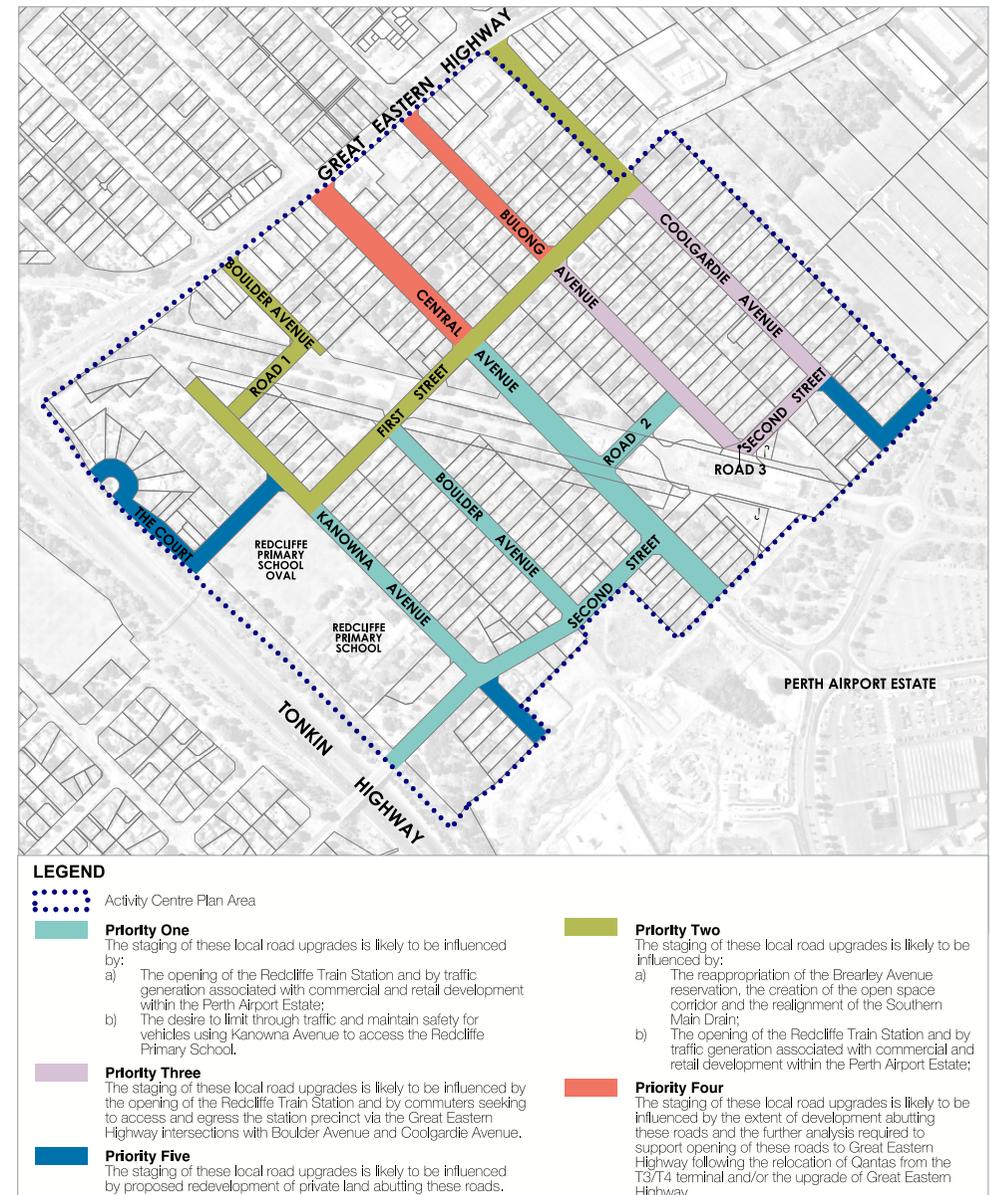


Figure 30: Indicative prioritisation of local road upgrades subject to ongoing traffic modelling and the local government capital works budget assessment.

STREET CHARACTER TYPE A

Reservation Width: 20m and 30m

Streets Included:

- Coolgardie Avenue between Second Street and Great Eastern Highway;
- Second Street between Coolgardie Avenue and Bulong Avenue;
- Bulong Avenue between Second Street and New Road 1;
- Central Avenue between New Road 1 and First Street; and
- First Street between Central Avenue and Coolgardie Avenue.

Key Design Considerations:

- Efficient and safe movement of vehicles;
- On street parking to provide visitor parking and slow traffic; and
- High quality pedestrian and cyclist infrastructure.

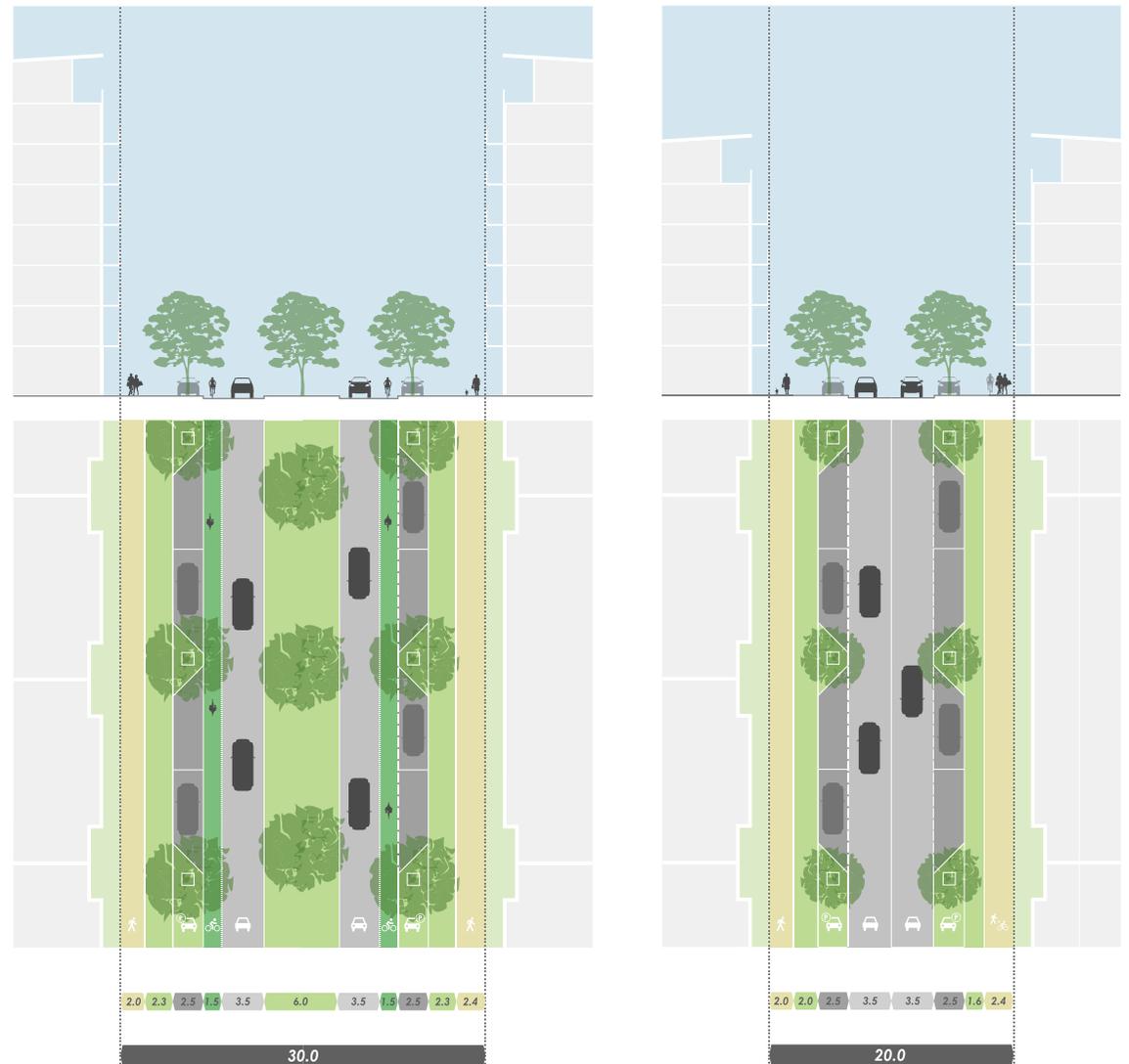
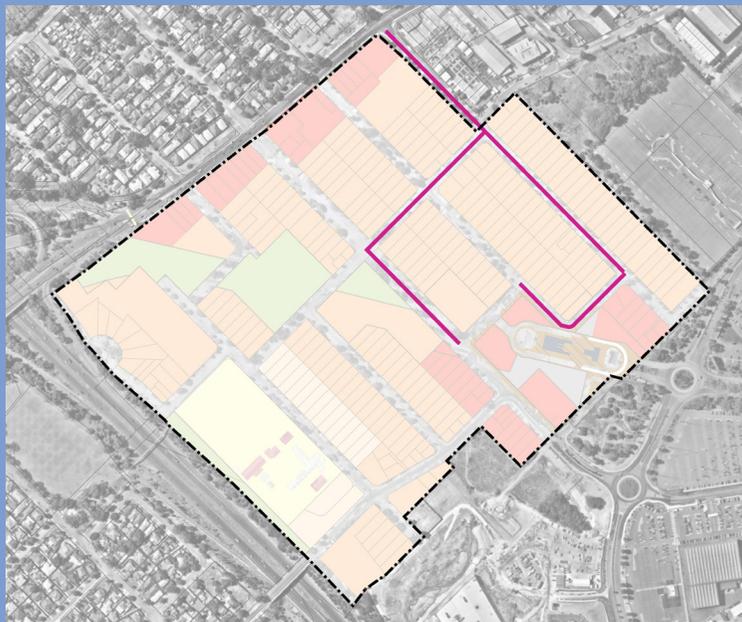


Figure 31: Concept design for road upgrades for identified 'Street Character Type A' roads.

STREET CHARACTER TYPE B

Reservation Width: 20m and 30m

Streets Included:

- Second Street between the Stanton Road Bridge and Central Avenue;
- Central Avenue between Dunreath Drive and New Road 1;
- New Road 2 between Central Avenue and Buloung Avenue.

Key Design Considerations:

- Carriageway designed to accommodate the movement of buses and cars without conflict;
- High quality pedestrian and cyclist infrastructure; and
- Clear directional signage and locational markers to assist in legibility of the public transport network.

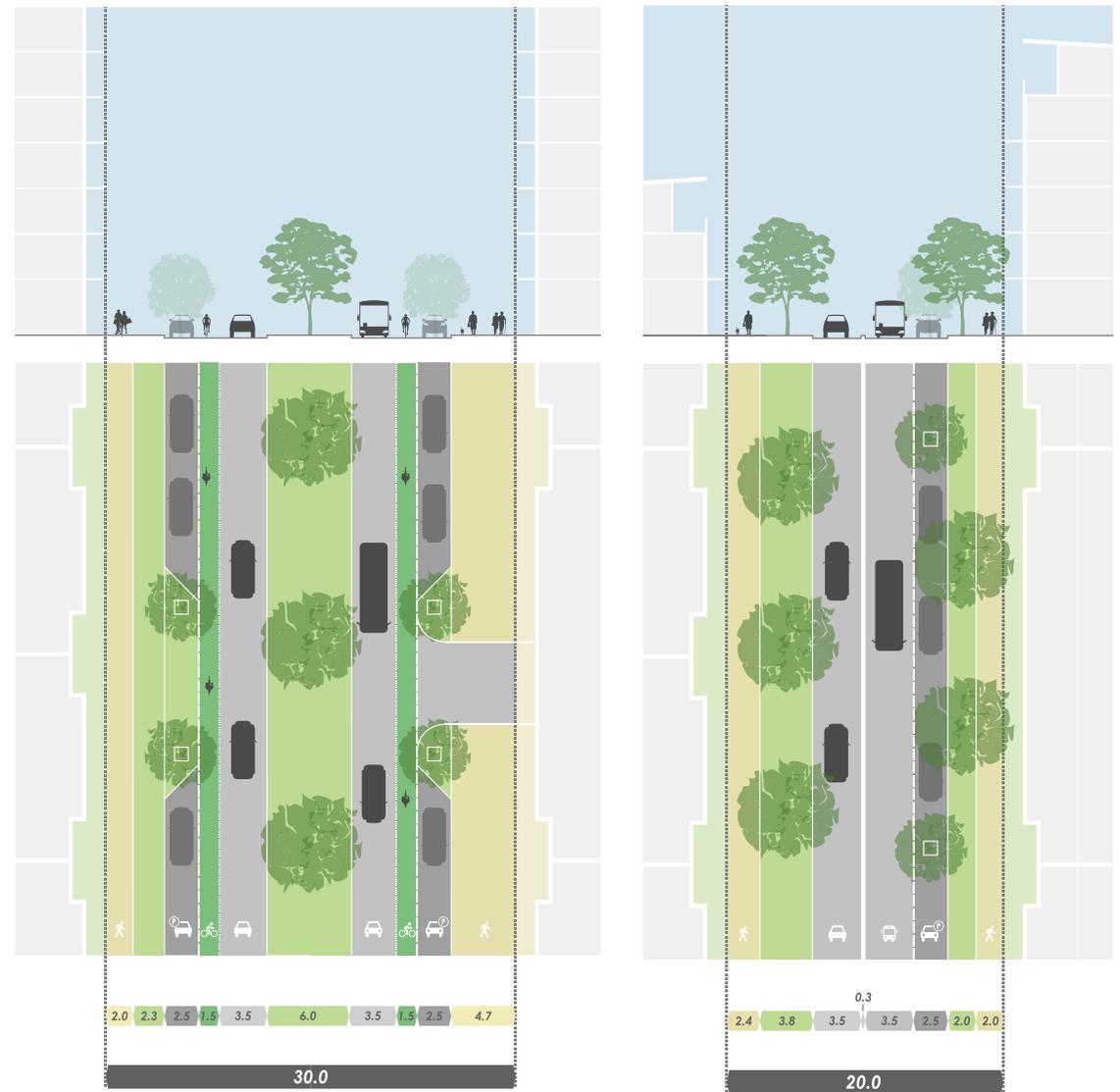
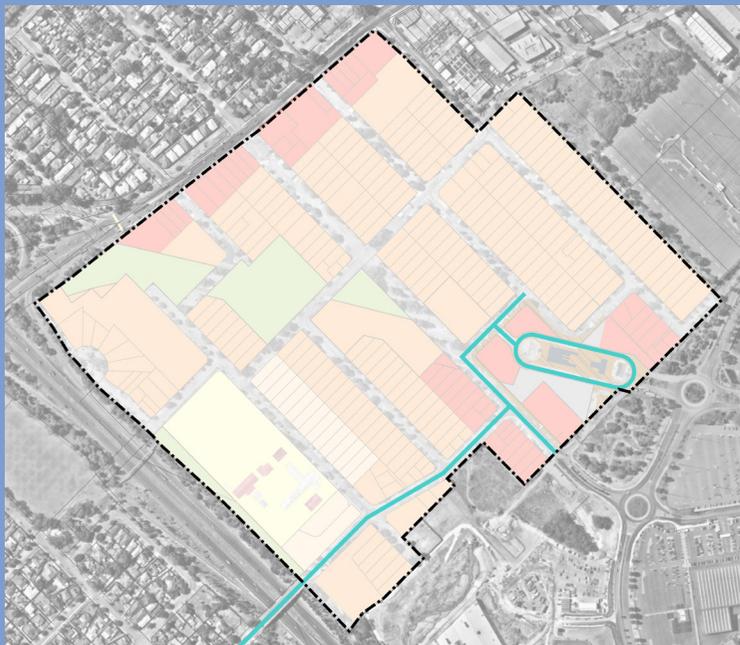


Figure 32: Concept design for road upgrades for identified 'Street Character Type B' roads.

STREET CHARACTER TYPE C

Reservation Width: 20m and 30m

Streets Included:

- All roads not designated as Street Character Type A and B Streets.

Key Design Considerations:

- A narrowed road carriageway designed to slow the speed of vehicles through deviations in its alignment, traffic calming devices and paving treatments;
- Onstreet parking to assist in slowing traffic and providing visitor parking for residents;
- High quality pedestrian infrastructure including footpaths, shade and shelter and street trees to ensure a high quality amenity and ease of use of the network; and
- Clear signage identifying that these are local roads not intended to be used as thoroughfares.

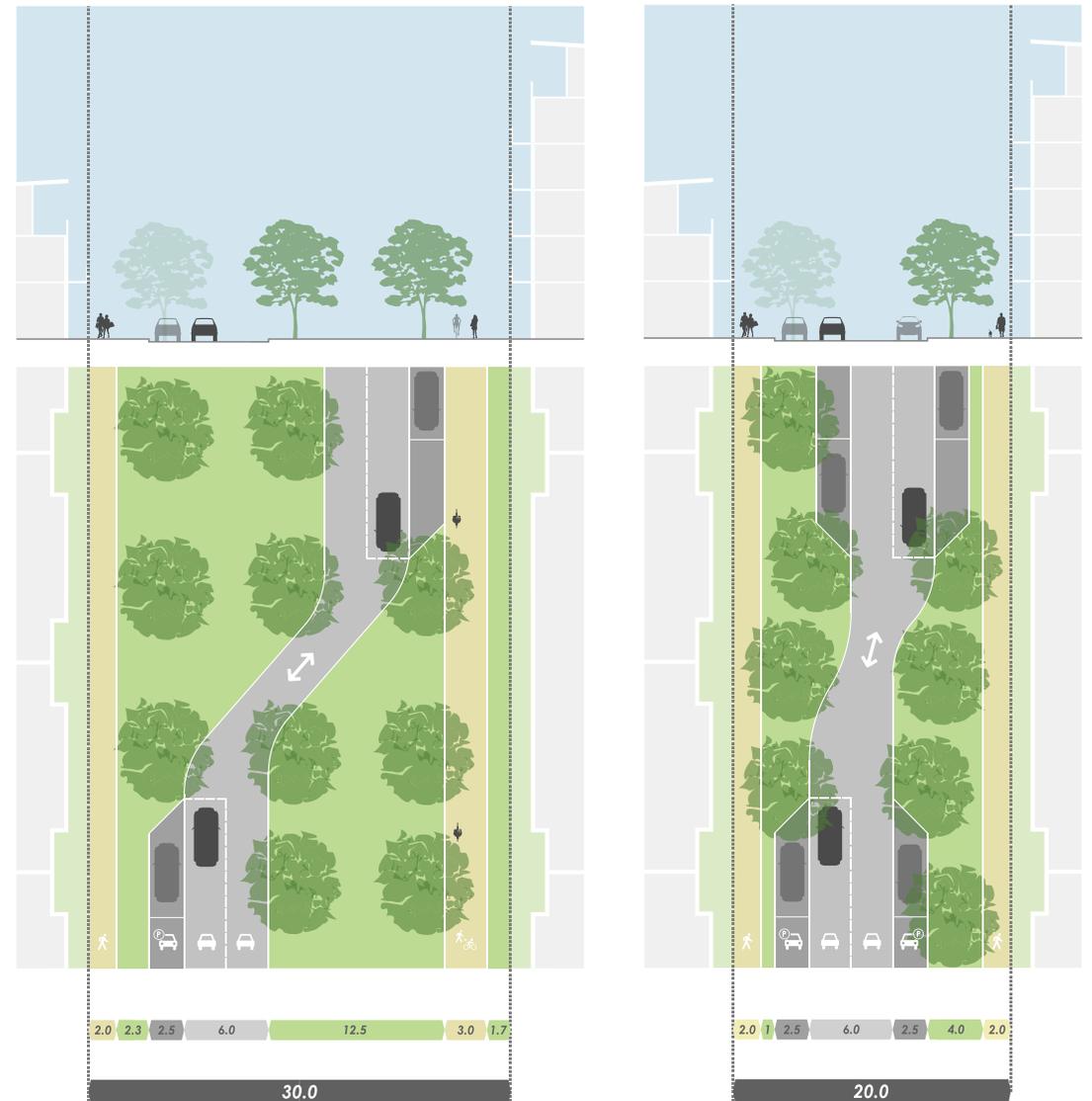
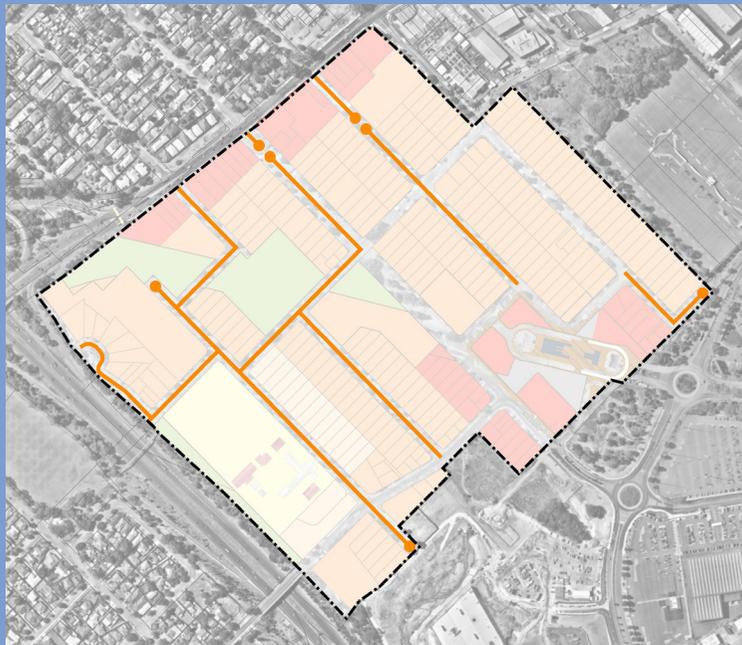


Figure 33: Concept design for road upgrades for identified 'Street Character Type C' roads.

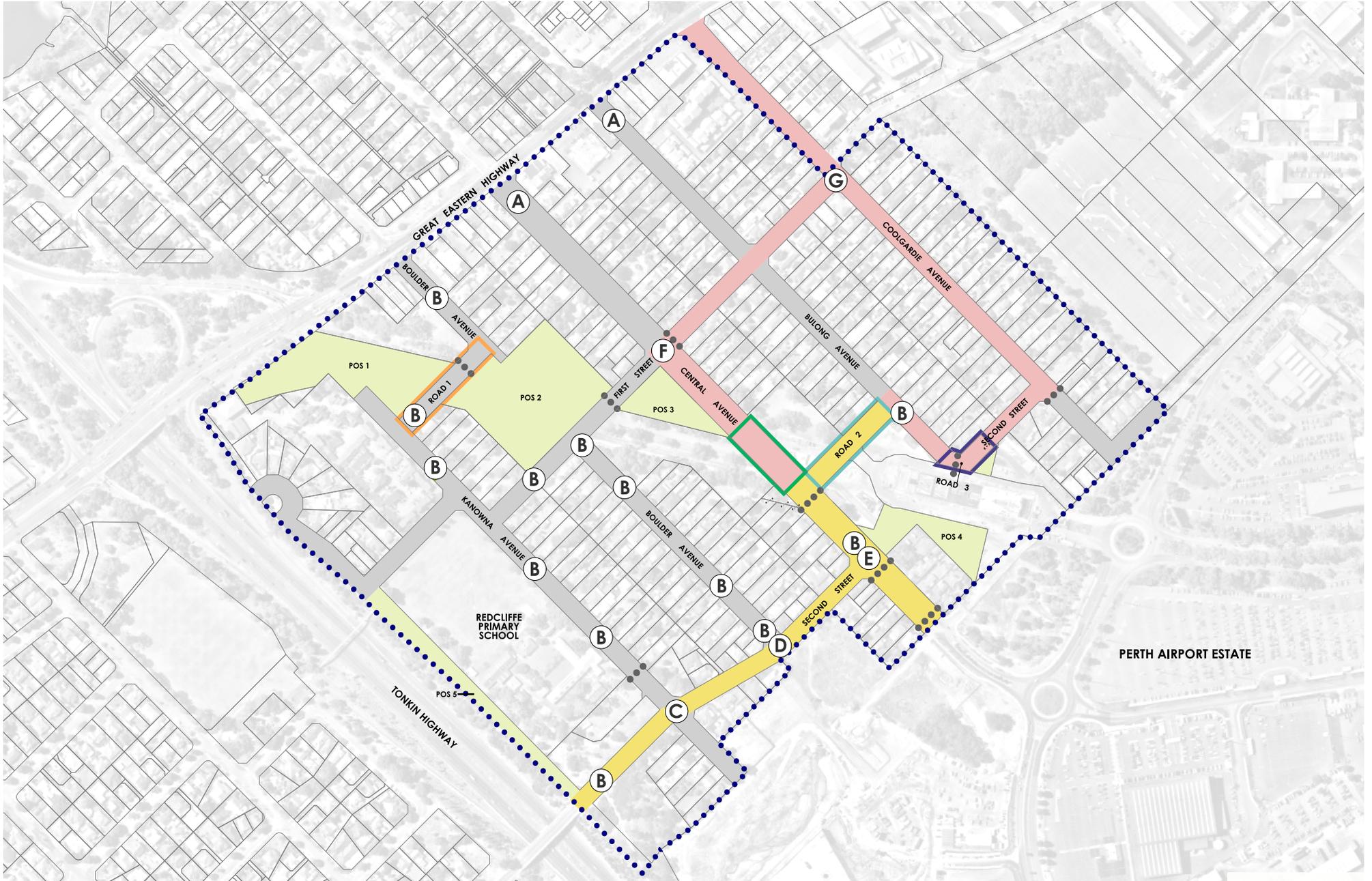


Figure 34: Local road upgrades concept plan for the purpose of preliminary cost estimates.

LEGEND



Activity Centre Plan Boundary



Public Open Space



Street Character Type A

Street Character Type 1 streets are intended to facilitate movement of vehicles between the station precinct and the signalised intersection of Coolgardie Avenue and Great Eastern Highway.

These streets will generally be designed with:

- A standard road carriageway to accommodate the movement of cars with limited conflict;
- On street parking to assist in slowing traffic and providing visitor parking for residents and businesses; and
- High quality pedestrian infrastructure including footpaths to both sides of the street and street trees to provide shade/shelter and ensure a high-quality amenity and ease of use of the network; and



Street Character Type B

Street Character Type 2 streets represent the key streets proposed to accommodate the movement of the bus network, connecting this to the new Redcliffe Station as the primary public transport node.

These streets will generally be designed with:

- A widened road carriageway to accommodate the movement of buses and cars without conflict and minimise delays to the movement of the buses;
- High quality pedestrian infrastructure including footpaths to both sides of the street and street trees to provide shade/shelter and ensure a high-quality amenity and ease of use of the network; and
- Clear directional signage and locational markers to assist in legibility of the public transport network.



Street Character Type C

Street Character Type 3 streets represent all other residential streets within the precinct where priority is to be given to pedestrians and cyclists over motorised vehicles.

These streets will generally be designed with:

- A narrowed road carriageway designed to slow the speed of vehicles through deviations in its alignment, traffic calming devices and paving treatments;
- On street parking to assist in slowing traffic and providing visitor parking for residents;

- High quality pedestrian infrastructure including footpaths to both sides of the street and street trees to provide shade/shelter and ensure a high-quality amenity and ease of use of the network; and
- Clear signage identifying that these are local roads not intended to be used as thoroughfares.



Road 1 (Kanowna Avenue to Boulder Avenue)

Road 1 is proposed as a new 20m wide road reserve linking Kanowna Avenue to Boulder Avenue, and allowing the removal of the temporary connection of Boulder Avenue to First Street via the former Brearley Avenue reservation.



Road 2 (Central Avenue to Bulong Avenue)

Road 2 is proposed as a new 20m wide road reserve linking Central Avenue to Bulong Avenue to the north of the train station, and allowing connection for buses into the bus-about within the station precinct;



Road 3 (Bulong Avenue to Second Street)

Road 3 is proposed as the connection of Bulong Avenue to Second Street to complete the loop network surrounding the station, rather than retaining two abutting cul-de-sacs.



Central Avenue Connection

The Central Avenue connection is proposed to extend the redesigned Central Avenue to connect across the former Brearley Avenue reservation. The road is designed as a median separated boulevard within the existing 30m wide reservation, inclusive of a dedicated cycle lane, footpaths on both sides and the potential for embayed car parking as development proceeds and crossovers are consolidated.



Key Pedestrian Crossing Point (Indicative Location)

Key pedestrian crossing points have been identified based on key desire lines throughout the precinct associated with the Redcliffe Train Station, Park and Ride, open space network and Redcliffe Primary School. These locations and the design of the crossing points are subject to detailed design to ensure that they align with the footpath and shared path network and effectively slow traffic and prioritise pedestrian movements.



Connections to Great Eastern Highway

The direct road connection of Bulong Avenue and Central Avenue to Great Eastern Highway will not be implemented until such time as Qantas relocates from Terminal 3 and Terminal 4 and/or the ultimate upgrade of Great Eastern Highway is completed, and traffic modelling demonstrates that the connections will be safe and not lead to increased 'rat-running' through the precinct.



Traffic Calming Device (Indicative Location)

These devices may include raised platforms, paving treatments, one-way treatments, wombat crossings or speed humps and will be subject to detailed design to ensure effectiveness in slowing traffic and minimising impacts on adjacent residents and pedestrian/cyclist movements.



Traffic Calming Device (Stanton Road)

The intersection of Stanton Road and Kanowna is anticipated to require treatment to slow vehicles entering the precinct via the Stanton Road bridge and ensure safe movement of vehicles exiting and entering Kanowna Avenue.



Roundabout (Second Street and Boulder Avenue)

The intersection of Second Street and Boulder Avenue is proposed to be modified to a roundabout to facilitate vehicle movements by residents from Boulder Avenue and Second Street and station patrons seeking to access the station precinct or the Park and Ride facility.



Intersection (Central Avenue and Second Street)

The intersection of Second Street and Central Avenue is currently constructed as a full movement intersection. It is anticipated that this intersection will require an upgrade in the short to medium term to a signalised intersection as a result of traffic volumes generated by the commercial development(s) in the airport estate and by the operation of the Redcliffe Train Station. Traffic will continue to be monitored to ensure the operation of this intersection remains high, and further modifications may be required should traffic volumes exceed that acceptable for unsignalised intersection.



Intersection (Central Avenue and First Street)

Intersection modification required at time of extension of Central Avenue to make Central the priority movement and make First Street approach a Give Way.



Intersection (Coolgardie Avenue and First Street)

Maintain current intersection design to prioritise movement from Coolgardie (north) into First Street, with Coolgardie (south) approach a give way.

Table 17: Proposed local road upgrades for the purpose of preliminary cost estimates.

Street (Section)	Street Character Type	Description of Upgrade Works	Preliminary Cost Estimate (Excl GST)
Coolgardie Avenue (Great Eastern Highway to Second Street)	Street Character Type A	<ul style="list-style-type: none"> Verge landscaping, stormwater drainage installation / upgrades and on-street parking. 	\$589,000
Coolgardie Avenue and Henderson Avenue (Second Street to Perth Airport Estate)	Street Character Type C	<ul style="list-style-type: none"> Verge landscaping, stormwater drainage installation / upgrades and on-street parking. 	
Bulong Avenue (Road 2 to Great Eastern Highway)	Street Character Type C	<ul style="list-style-type: none"> Redesign of carriageway to meander between First Street and Great Eastern Highway. Verge landscaping, stormwater drainage installation / upgrades and on-street parking. 	\$648,000
Bulong Avenue (Road 2 to Second Street)	Street Character Type A	<ul style="list-style-type: none"> Connection of Bulong to Second Street (subject to land acquisition). Installation of wombat crossings (2). Verge landscaping, stormwater drainage installation / upgrades and on-street parking. 	
Central Avenue (Perth Airport Estate to Second Street)	Street Character Type B	<ul style="list-style-type: none"> Installation of traffic calming devices. Incorporation of on-street car parking. 	\$890,000
Central Avenue (Second Street to First Street)	Street Character Type A and Type B	<ul style="list-style-type: none"> Removal of no through road. Construction of Boulevard style road with central median and cycle lanes. Incorporation of on-street car parking. Verge landscaping, stormwater drainage installation / upgrades and on-street parking. 	
Central Avenue (First Street to Great Eastern Highway)	Street Character Type C	<ul style="list-style-type: none"> Redesign of carriageway to meander between First Street and Great Eastern Hwy. Incorporation of on-street car parking. Verge landscaping, stormwater drainage installation / upgrades and on-street parking. Ultimate removal of no through road at Great Eastern Highway. 	
Boulder Avenue (Great Eastern Highway to New Road 1)	Street Character Type C	<ul style="list-style-type: none"> Installation of Traffic Calming Device. Verge landscaping, stormwater drainage installation / upgrades and on-street parking. 	\$384,000
Boulder Avenue (First Street to Second Street)	Street Character Type C	<ul style="list-style-type: none"> Installation of Traffic Calming Devices. Verge landscaping, stormwater drainage installation / upgrades and on-street parking. 	
Kanowna Avenue (POS1 to Perth Airport interface)	Street Character Type C	<ul style="list-style-type: none"> Redesign of carriageway to meander along extent of road. Installation of Traffic Calming Devices. Verge landscaping, stormwater drainage installation / upgrades and on-street parking. 	\$438,000

Street (Section)	Street Character Type	Description of Upgrade Works	Preliminary Cost Estimate (Excl GST)
The Court	Street Character Type C	<ul style="list-style-type: none"> Verge landscaping, stormwater drainage installation / upgrades and on-street parking. 	\$159,000
Road 1 (Kanowna Avenue to Boulder Avenue)	Street Character Type C	<ul style="list-style-type: none"> Construction of new road connection between Kanowna Avenue and Boulder Avenue. Installation of Traffic Calming Devices. 	\$319,000
Victoria Street	Street Character Type C	<ul style="list-style-type: none"> Verge landscaping, stormwater drainage installation / upgrades and on-street parking. 	\$178,000
First Street (Kanowna Avenue to Central Avenue)	Street Character Type C	<ul style="list-style-type: none"> Installation of Traffic Calming Devices. Verge landscaping, stormwater drainage installation / upgrades and on-street parking. 	\$294,000
First Street (Central Avenue to Coolgardie Avenue)	Street Character Type A	<ul style="list-style-type: none"> Verge landscaping, stormwater drainage installation / upgrades and on-street parking. 	
Road 3 (Central Avenue to Bulong Avenue)	Street Character Type B	<ul style="list-style-type: none"> Construction of new road connection between Kanowna Avenue and Boulder Avenue. Verge landscaping, stormwater drainage installation / upgrades and on-street parking. 	All costs to be attributed to Forrestfield Airport Link budget.
Stanton Road / Second Street (Stanton Road Bridge to Central Avenue)	Street Character Type B	<ul style="list-style-type: none"> Verge landscaping, stormwater drainage installation / upgrades and on-street parking. 	\$364,000
Second Street (Bulong Avenue to Coolgardie Avenue)	Street Character Type A	<ul style="list-style-type: none"> Verge landscaping, stormwater drainage installation / upgrades and on-street parking. 	
Brearley Avenue (Removal Works)	NA	<ul style="list-style-type: none"> Removal of remaining road infrastructure. 	\$200,000
Second Street / Bulong Avenue Intersection	Intersection Treatment	<ul style="list-style-type: none"> Upgrade of intersection to roundabout 	All costs to be attributed to Forrestfield Airport Link budget.
Second Street / Central Avenue Intersection	Intersection Treatment	<ul style="list-style-type: none"> Potential upgrade to signalised intersection (Central Avenue / Second Street) subject to traffic volume. 	\$248,000
Second Street / Kanowna Avenue	Intersection Treatment	<ul style="list-style-type: none"> Upgrade of intersection to install raised platform to slow traffic and facilitate full movement. 	\$44,000

2.3.2 PUBLIC TRANSPORT

As outlined in Section 2.1.2, public transport is currently limited to buses only and is primarily focussed on Great Eastern Highway, with only the 935 service directly traversing the precinct via Second Street and Central Avenue to Perth Airport (**Figure 36**). These services provide transport between Great Eastern Highway, Perth CBD and Kalamunda.

There are a number of public transport initiatives proposed as a component of the Activity Centre Plan which are outlined as follows:

2.3.2.1 Forreestfield Airport Link

Planning for the Forreestfield Airport Link commenced in 2008 as part of a desire to extend the suburban rail network to connect the eastern suburbs of Perth, and provide a direct rail connection to Perth Airport. In 2014 it was announced that the Forreestfield Airport Link (FAL) would be delivered through underground tunnels that would run from Bayswater Station on the Midland Line along Tonkin Highway and Brearley Avenue through Perth Airport Estate and on to Forreestfield.

As a component of this a station, subsequently named the Redcliffe Station, was announced as part of the FAL project, to be located within the closed Brearley Avenue reservation between Second Street and Dunreath Drive.

The opening of Redcliffe Station, along with the entire FAL spur line will significantly improve the public transport accessibility of the precinct. Redcliffe Station is anticipated to open in 2021, and will provide a 15-minute trip to Perth Station via Bayswater. Trains will run through Redcliffe Station in both directions every 10 minutes during the peak periods.

On opening, Redcliffe Station is forecast to accommodate over 2,000 one-way boardings comprising bus transfers, park and ride, kiss and ride and walking and cycling trips.

The forecast volume of boardings is anticipated to grow to around 3,000 by 2031, provided that land use outcomes around Redcliffe Station are delivered in accordance with the proposed vision and projected growth trajectory.

2.3.2.2 Bus Connectivity

Redcliffe Station will be supported by a review of bus network operations, which will be driven by the additional public transport services of the Redcliffe Station, as well as by the changing nature of network operations for Transperth with the introduction of high frequency routes that link key Activity Centres around the Perth Metropolitan Region.

As a component of reviewing the bus services based on increased demand from areas undergoing residential and commercial growth and the desirability of linking these services to major rail, the City of Belmont will seek greater direct connectivity between the Belmont Town Centre and the Redcliffe Station precinct.

Such a service would ideally access/egress the precinct via the Stanton Road bridge and connect the suburbs of Belmont, Cloverdale and Redcliffe between the two activity centres.

In addition the City is seeking greater public transport connectivity with the Kewdale Industrial Area, as the third largest employment area within the City. This will ideally be facilitated through high priority public transit routes which may ultimately link to Redcliffe Station Precinct.



Figure 35: Perspectives of the proposed Redcliffe Station with direct bus connections (Public Transport Authority, 2018)

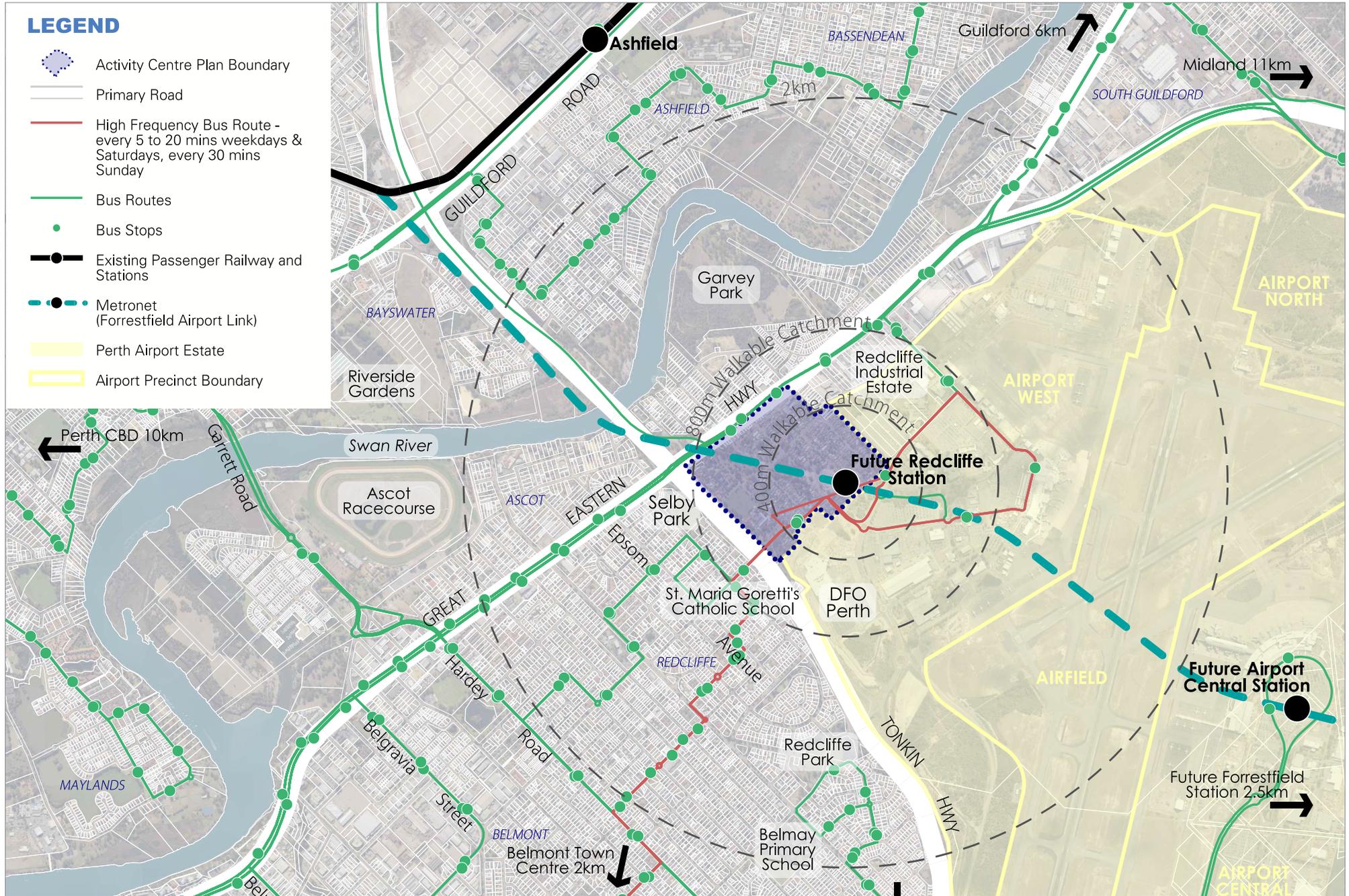


Figure 36: Public transport initiatives within the Redcliffe Station Precinct.

2.3.3 CYCLE NETWORK CONNECTIVITY

The existing cycle network within the precinct is limited to a number of existing shared use paths and connections to the wider area, particularly to the principal shared path adjacent the Tonkin Highway. The local street network also provides relatively safe on street cycling, as outlined within the network analysis contained in **Appendix 1**.

A range of initiatives are proposed to improve the cycle network throughout the precinct and better connect key attractors within and external to the precinct. These initiatives are outlined as follows:

- On street cycle lanes on Central Avenue between Great Eastern Highway and the Perth Airport Estate;
- Shared use paths on street character type A and B streets and throughout the linear open space network;
- Cycle friendly environments on street character type C encouraging residents to use both the path network and the carriageway for cycling;
- Connections to the wider shared use and Principal Shared Path (PSP) network at the Victoria Street Bridge, Second Street (Stanton Road Bridge) and Central Avenue (south towards Perth Airport Estate);
- Facilitation of improved connectivity for cyclists travelling by train to work within the Kewdale Industrial Area;
- Location of proposed bike parking facilities in open space throughout the main corridor from Great Eastern Highway to Redcliffe Station;
- Including bike parking in front of development lots within the Centre precinct and Urban Corridor precinct;
- Bike lockers within the entrance points of the Redcliffe Station to provide for cycle and ride patrons; and
- Incentivisation for the development of public and private end of trip facilities within mixed use development.

The key initiatives are outlined spatially in **Figure 37**.

2.3.4 PEDESTRIAN CONNECTIVITY

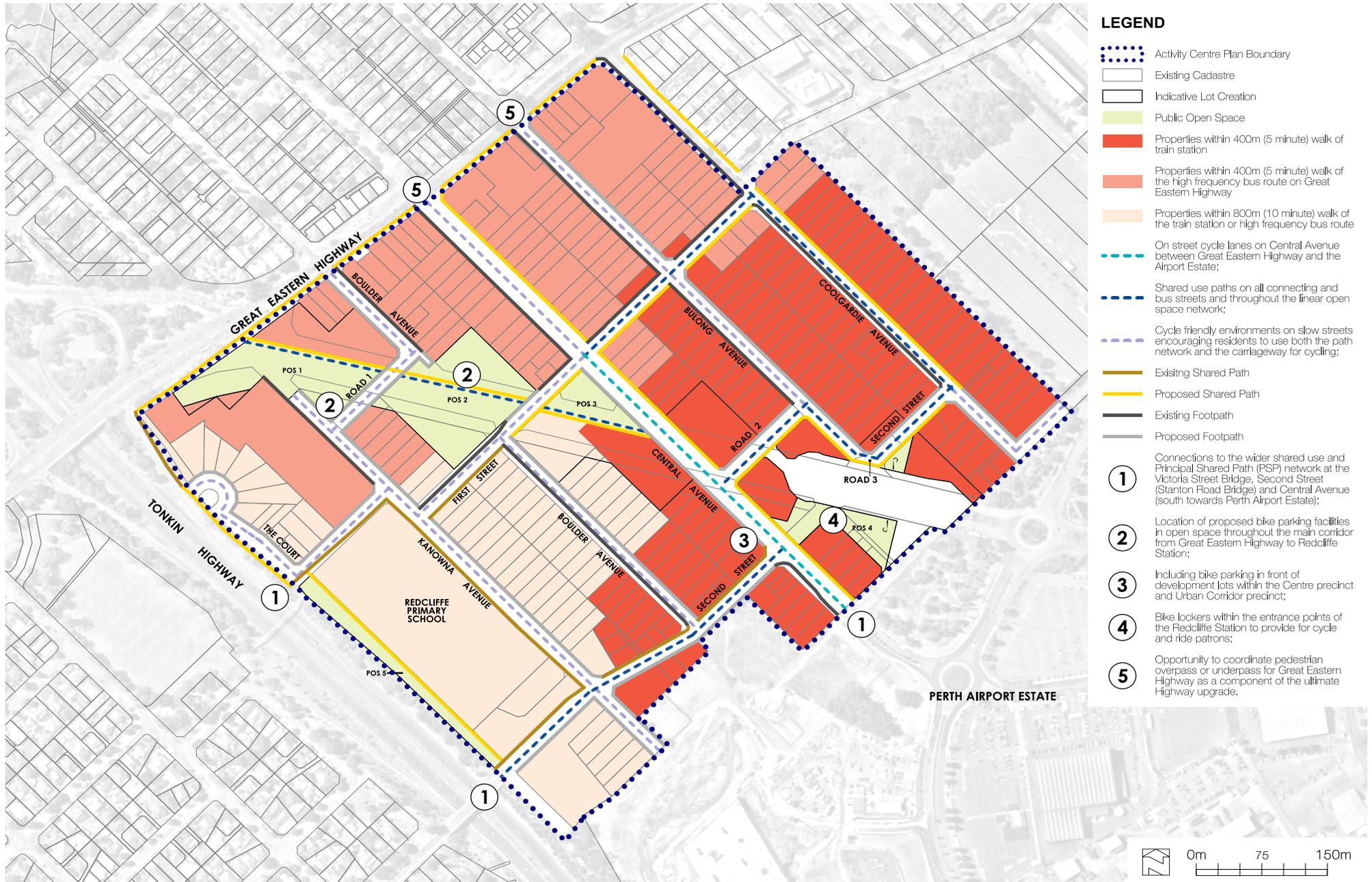
The existing pedestrian network is limited with many streets having a footpath on one side of the street and some sections of cul-de-sac not having footpaths at all. There are existing shared use classified paths along the Brearley Avenue corridor, Second Street and Kanowna Avenue, and connections on bridges across Tonkin Highway and via pedestrian crossing phases across Great Eastern Highway.

Of critical importance to the success of the precinct will be improvements to the walkability of the area, particularly between key attractors of the Redcliffe Train Station, commercial and retail areas, public open space, employment and activity within the Perth Airport estate, the Redcliffe Primary School and public transport available along Great Eastern Highway.

A range of initiatives are proposed to improve the walkability of the precinct and better connect key attractors within and external to the precinct. These initiatives are outlined as follows:

- Upgrading all local streets to include dedicated footpaths or shared use paths on both sides of the street and increasing shade/shelter and infrastructure to make walking more appealing;
- Ensuring the footpath network is complete throughout the network and designed to accommodate those with mobility constraints;
- Incorporating safe crossing points across Great Eastern Highway through consideration of pedestrian overpasses and/or underpasses as a component of the Great Eastern Highway upgrade, in accordance with the Great Eastern Highway Urban Corridor Strategy; and
- Incentivisation for the development of public and private end of trip facilities within mixed use development.

A walkable catchment analysis for the connectivity to the key public transport nodes is outlined in **Figure 37**, along with the key pedestrian connectivity initiatives to be undertaken as a component of the Activity Centre Plan.



LEGEND

- Activity Centre Plan Boundary
 - Existing Cadastre
 - Indicative Lot Creation
 - Public Open Space
 - Properties within 400m (5 minute) walk of train station
 - Properties within 400m (5 minute) walk of the high frequency bus route on Great Eastern Highway
 - Properties within 800m (10 minute) walk of the train station or high frequency bus route
 - On street cycle lanes on Central Avenue between Great Eastern Highway and the Airport Estate;
 - Shared use paths on all connecting and bus streets and throughout the linear open space network;
 - Cycle friendly environments on slow streets encouraging residents to use both the path network and the carriageway for cycling;
 - Existing Shared Path
 - Proposed Shared Path
 - Existing Footpath
 - Proposed Footpath
- 1 Connections to the wider shared use and Principal Shared Path (PSP) network at the Victoria Street Bridge, Second Street (Stanton Road Bridge) and Central Avenue (south towards Perth Airport Estate);
 - 2 Location of proposed bike parking facilities in open space throughout the main corridor from Great Eastern Highway to Redcliffe Station;
 - 3 Including bike parking in front of development lots within the Centre precinct and Urban Corridor precinct;
 - 4 Bike lockers within the entrance points of the Redcliffe Station to provide for cycle and ride patrons;
 - 5 Opportunity to coordinate pedestrian overpass or underpass for Great Eastern Highway as a component of the ultimate Highway upgrade.

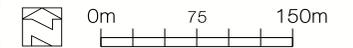


Figure 37: Walking and cycling initiatives within the Redcliffe Station Precinct.

2.4 SITE ACCESS AND PARKING MANAGEMENT

The following sections address site access and parking management considerations, and should be read in conjunction with the *Redcliffe Station Precinct Design Guidelines*.

2.4.1 SITE ACCESS - GREAT EASTERN HIGHWAY

As a result of the existing traffic volumes on Great Eastern Highway and to align with the proposed ultimate upgrade there is a strong preference against direct vehicle access to properties that front the highway reservation. As these properties have enjoyed direct access for many years this will be a challenging transition and one that needs to be managed in a coordinated manner.

The proposal to coordinate alternative access is structured around the creation of shared access arrangements at the side and rear of amalgamated development sites fronting the corridor as outlined in **Figure 38**. These indicative access alignments are shown in **Figure 13** of Part 1 for the Urban Corridor Sub-Precinct and also in **Figure 38**.

Applications which propose development fronting Great Eastern Highway will be required to demonstrate:

- The creation of a public access easement in the locations shown on **Figure 13** of Part 1, developed to the standards outlined within the Redcliffe Station Precinct Design Guidelines;
- Where the public accessway is proposed to differ in location from the alignment shown in **Figure 13** of Part 1, how the remainder of the accessway between the two side streets will be developed in a coordinated manner, taking account of existing and proposed development on land parcels within that street block and consultation with existing landowners;
- If interim direct access from Great Eastern Highway is required as a result of the development being located on a 'mid block' without immediate access to a side street, how this direct access/egress will be closed when the public accessway is connected, and how the redundant vehicle hardstand area fronting Great Eastern Highway may be re-purposed; and
- The coordination of the built form, car parking areas and the public access easement in the context of the *Redcliffe Station Precinct Design Guideline* requirements.

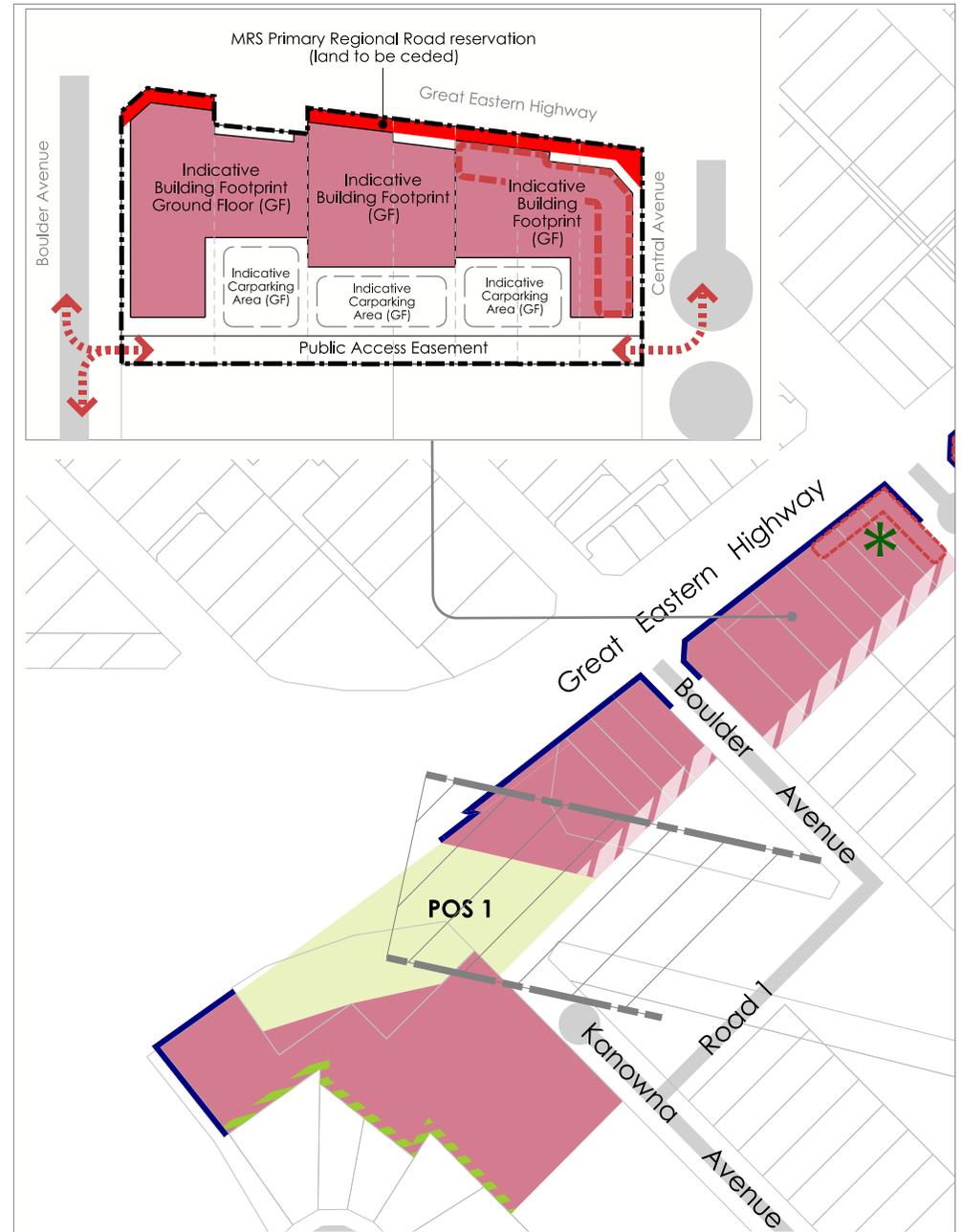


Figure 38: Indicative design of the public accessway requirement for sites that directly front Great Eastern Highway.

2.4.2 PARKING MANAGEMENT PRINCIPLES

The position of the ACP area adjacent to the Perth Airport Estate and its growing business and retail precinct, along with the development of the Redcliffe Train Station, is anticipated to place significant parking pressure on the area over the coming years. The management of both the supply and demand of parking will be necessary to ensure the right level of parking is available to meet local demand without negatively impacting on the function or design of the urban area.

The following principles will guide parking management within the Activity Centre Plan area:

- Encourage the efficient use of available parking resources and minimise land and capital investments in parking;
- Prioritise on street parking for short-term use by visitors to residential and mixed use areas;
- Maximise the efficient use of public car parking by ensuring a high level of turnover and availability;
- Ensure car park design does not hinder safe and secure pedestrian, cyclist and public transport access (including access on foot from public transport);
- Support shared use arrangements between landowners to maximise the efficient use of on-site car parking;
- Provide longer term parking for the station and businesses in dedicated locations on-site rather than within the public realm; and
- Ensure the parking demand created by development is predominantly provided on-site rather than reliant on public parking.

2.4.3 PARKING DEMAND MANAGEMENT

As a transit oriented development precinct, the activity centre is proposed to be designed to maximise the efficiency of walking, cycling and public transport through the investment in public infrastructure and coordinated design of this infrastructure. This is anticipated to greatly reduce demand for private vehicle usage, and in turn greatly reduce the reliance on private and public vehicle parking.

In order to encourage residents and visitors to reduce their demand for parking the City of Belmont will undertake an ongoing education campaign about the opportunities and benefits associated with walking, cycling and using public transport within the precinct.

2.4.4 PUBLIC PARKING SUPPLY MANAGEMENT

Public parking within the precinct is relatively limited, with informal on-street parking available on all local streets, and dedicated on-street parking on Kanowna Avenue abutting the Redcliffe Primary School.

In implementing the ACP further public parking will be provided in key locations to ensure that increased demand is met without detriment to the function of the area. In particular public parking will be focused on:

- **PTA Redcliffe Station Carpark:** This dedicated car parking will include 500 parking bays available for commuters parking at the station and travelling on the train.
- **PTA Kiss and Ride:** 25 short term and passenger set down bays adjacent to the station entrance.
- **On-Street Public Parking:** Upgrades to the road designs will include the creation of embayed parking on all streets to provide visitor parking opportunities for the adjacent sites and assist in slowing traffic through local streets. Concept designs for the upgraded road network have indicated the ultimate potential for up to 500 additional on street parking bays within the precinct subject to detailed design of the street network and crossover considerations. Timed parking is anticipated to be required within the Centre sub-precinct (surrounding the train station) upon the station opening to manage behaviour of commuters avoiding the park and ride facility. All other streets will need to be monitored to assist in identifying parking issues and may also require timed parking limitations.
- **Public Open Space Parking:** Upgrades and expansion of open space areas will include the creation of dedicated car parking for users of these areas who choose to travel by car rather than walking or cycling.
- **Redcliffe Primary School Parking:** Short term parking for drop-off and pick-up of students will be made available within the road reservation abutting the Redcliffe Primary School.

The above are outlined spatially in **Figure 39**.

The management of public parking will be critical in ensuring that there is sufficient availability of bays to meet local demands. To this end the parking supply management strategy outlined in **Table 18** has been prepared to guide a more detailed parking management strategy for the precinct.

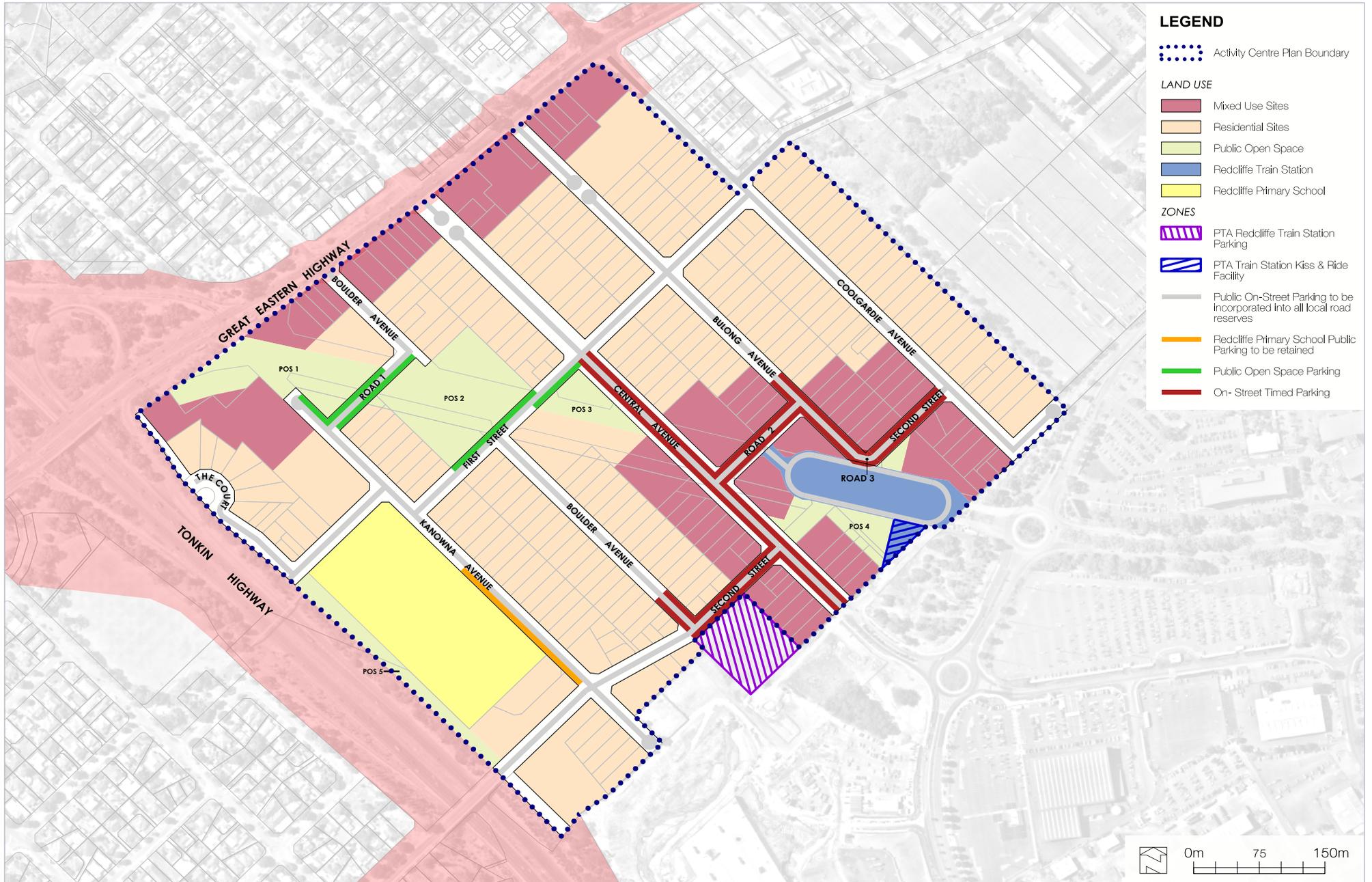


Figure 39: Public parking supply management initiatives within the Redcliffe Station Precinct.

Table 18: Summary of proposed public parking strategy initiatives and actions.

Public Parking Area	Key User Group(s)	Potential Management Measures	Responsibility for Implementation
PTA Redcliffe Station Car Park	Commuters travelling from regional areas seeking to continue their travel via train.	<ul style="list-style-type: none"> • Fee payable for use of the car park; • Requirement to use public transport as condition of use; • Time limitation to avoid long term parking. 	The Public Transport Authority will be responsible for the management of the Redcliffe Station Car Park.
PTA Kiss and Ride	Vehicle drivers seeking to drop-off or pick-up commuters using the train.	<ul style="list-style-type: none"> • Strict time limitation to avoid vehicles parking in the kiss and ride bays; • Ongoing monitoring of vehicle occupancy to ensure high turnover of bays 	The Public Transport Authority will be responsible for the management of the Kiss and Ride facility.
PTA Station Parking	<ul style="list-style-type: none"> • Commuters with mobility constraints; • Emergency vehicles; • PTA Service vehicles. 	<ul style="list-style-type: none"> • Ongoing monitoring of vehicle occupancy to ensure bays are being used by authorised user groups only. 	The Public Transport Authority will be responsible for the management of the PTA Station Parking.
On-Street Public Parking	<ul style="list-style-type: none"> • Residential visitors • Retail/commercial customers • Residents (off peak hour only) 	<ul style="list-style-type: none"> • Strict time limitation to avoid long-term parking (particularly within the Centre precinct surrounding the train station); • Paid parking within higher demand areas to encourage high turnover of bays; • Resident parking permits for residents outside of peak demand hours; • Monitoring and enforcement of time limitations. 	The City of Belmont will be responsible for management of on-street parking within local road reservations throughout the precinct. It is recommended that timed parking restriction be implemented within the Centre sub-precinct upon the opening of the station, and other streets be monitored to identify the need for similar restrictions.
Public Open Space Parking	Residents and visitors seeking to use the public open space facilities.	<ul style="list-style-type: none"> • Strict time limitation to avoid long-term parking; • Monitoring and enforcement of time limitations. 	The City of Belmont will be responsible for management of public open space parking throughout the precinct.
Redcliffe Primary School Parking	<ul style="list-style-type: none"> • Persons seeking to drop-off / pick-up students; • Short term visitors to the school 	<ul style="list-style-type: none"> • Strict time limitations during peak hour periods; • Parking permit system for key user groups to assist in enforcement; • Monitoring and enforcement of time limitations. 	The City of Belmont and the administrators of the Redcliffe Primary School will share responsibility for management of the public parking adjacent the Redcliffe Primary School.

2.4.5 ON SITE PARKING REQUIREMENTS

The City's *Local Planning Scheme No. 15* provides a ratio for the minimum on-site car parking requirements for each of the listed uses within the Scheme. In a transit oriented development precinct it is considered appropriate to reduce the supply of private parking to maximise the availability of land for development purposes and encourage residents and visitors to utilise more sustainable transport options of cycling, walking and public transportation.

In aligning with this principle it is proposed that on-site parking will be required to comply with a minimum and maximum ratio dependent on the proposed land use(s). In order to simplify these calculations the ratio has been outlined (**Table 19**) based on broader use classifications than the listed uses, as it is considered that the broad classifications create similar levels of demand for parking irrespective of the specific use being undertaken.

Table 19: Minimum and maximum car parking and minimum bicycle parking bay requirements per land use classification.

Land Use Category	Minimum Car Parking Bays	Maximum Car Parking Bays	Minimum Bicycle Parking Bays
Residential Uses	<p>Studio and 1 bed - 0.75 bay per dwelling / unit</p> <p>2 Bed and above – 1 bay per dwelling</p> <p>Visitors - 1 bay per four dwellings up to 12 dwellings, 1 bay per eight dwellings for the 13th dwelling and above</p>	<p>Studio and 1 bed – 1.5 bay per dwelling / unit</p> <p>2 Bed and above – 2 bays per dwelling subject to design outcomes</p> <p>Visitors - 1 bay per four dwellings up to 12 dwellings, 1 bay per eight dwellings for the 13th dwelling and above</p>	<p>1 bicycle parking space per dwelling/ unit</p> <p>0.25 visitor bicycle parking space per dwelling/unit</p>
Commercial and Retail Uses	3.5 bays per 100m ² of net lettable area	4.5 bays per 100m ² of net lettable area	1 bay per 200m ² of net lettable area
Civic, Community or other uses	To be determined by the City, having regard to the nature of the use and the known or likely volume of goods, materials or people moving to and from the site.		

Applicants seeking to exceed the maximum parking cap will need to provide justification as to the special circumstances that exist to warrant additional parking, and ensure that the design of on site car parking is capable of being converted to alternative on site uses at a later stage.

In addition to the requirement for on site car parking, applicants will also be required to provide a minimum number of bicycle parking bays dependent on the proposed land use. No maximum number of bicycle parking bays is applicable, and the design of bicycle parking facilities will be required to be in accordance with the *Redcliffe Station Precinct Design Guidelines*.

2.5 ACTIVITY CENTRE PLAN CHECKLIST - MOVEMENT

Section 2 of the explanatory report has been prepared in accordance with the guidance provided by *SPP4.2 Activity Centres for Perth & Peel*.

In accordance with this guidance a checklist has been prepared to delineate the sections of the ACP which are used to address each of the key SPP4.2 requirements, and this is outlined in **Table 20**.

Table 20: Activity Centre Plan Checklist - Movement

SPP4.2 Reference	ACP Requirement	Section of ACP addressing Requirement	Summary / Additional Comment
1	Identify gaps and deficiencies in the strategic transport network affecting the provision, efficiency and choice of access to the centre.	Section 2.2	The opportunities and issues analysis outlines the key gaps and deficiencies in the movement network, including the need for road upgrades, pedestrian and cyclist infrastructure and integration of public transport accessibility.
2	Define initiatives in consultation with transport agencies to improve access by all modes, particularly sustainable modes by (for example) service improvement, new/enhanced provision, priority measures, and congestion relief.	Section 2.3	The movement network initiatives section outlines all proposed improvements to the movement network to prioritise sustainable transport through pedestrian and cyclist infrastructure and accessibility to the key public transport nodes of Great Eastern Highway and the Redcliffe Train Station.
3	Map the main points of arrival and key sites within the centre boundary and assess their suitability in terms of centre function and role, legibility and accessibility.	Section 2.2 and Section 2.3	Figures 28, 29 and 37 outline the key existing and proposed points of arrival and key attractors within the area, and assesses the legibility of these based on the varying modes of transport. This is further outlined in Appendix 1.
4	Focus travel-intensive uses (i.e. offices, anchor retail, and commercial leisure) on sites which are (or will be) highly accessible by sustainable transport.	Section 2.3	The travel intensive uses are primarily focussed in the mixed use areas of the precinct, both of which are highly accessible due to their locations abutting Great Eastern Highway and the Perth Airport Estate.
5	Audit the public transport facilities within the centre boundary noting any deficiencies and hindrances in the service and infrastructure provision. Define initiatives in consultation with the PTA to address the shortfall in local public transport facilities.	Section 2.3.2 and Appendix 1	Public transport is currently limited to buses only and is primarily focussed on Great Eastern Highway, with one service traversing the precinct via Second Street and Central Avenue to Perth Airport. Key initiatives focus on the Forresterfield Airport Link connecting the precinct to major rail, and additional feeder bus services to ensure the optimal patronage for public transport.

SPP4.2 Reference	ACP Requirement	Section of ACP addressing Requirement	Summary / Additional Comment
6	<p>Audit the pedestrian and cycle facilities within the centre boundary noting gaps, deficiencies and hindrances in the service and infrastructure provision:</p> <ul style="list-style-type: none"> a) Define clear initiatives to address the shortfall in pedestrian and cycle facilities; b) Define cycle parking and end of trip standards for broad classes of development; and c) Promote linked sustainable journeys by providing for pedestrian, cycle and bus interchange at high-frequency transport hubs. 	Section 2.3.4	<p>The pedestrian and cycle facilities audit is outlined in Figure 27, noting some limitations in the existing pedestrian and cycle network imposed by a lack of amenity along most of the routes.</p> <p>Clear initiatives are proposed as part of Section 2.3.3 and 2.3.4, along with Figure 37, outlining upgrades to all streets and open space areas to accommodate improved amenity and connectivity, along with facilitation of end of trip facilities in public and private developments.</p>
7	Conduct a traffic assessment of the local street network to identify where capacity stress/surplus occurs.	Appendix 1	The traffic assessment is contained in Appendix 1, outlining proposed measures to address traffic stress points and redesign local streets.
8	Locate heavy freight generating uses such as distribution and warehousing away from congested central areas and preferably near the strategic road network.	NA	The precinct is not proposed to be zoned for heavy freight generating uses, as these uses are accommodated within the adjacent Perth Airport Estate and Redcliffe Industrial Precinct. The abutting Great Eastern Highway and Tonkin Highway are specifically designed to accommodate the movement of freight, and the precinct will not be designed to facilitate such movements.
9	Undertake an audit of the existing parking supply occupancy rates and patterns of use, and use the findings to identify opportunities for more efficient use.	NA	An audit of the existing public parking supply was not considered necessary as there are no existing public or private car parks within the ACP area.
10	Adopt a strategy that provides for upper parking limits, parking standards for people with a disability and a management plan.	Section 2.4 and Appendix 1	The proposed strategy for management of car parking moving forward is outlined in Section 2.4 and Appendix 1, focussing on the creation of public car parking areas adjacent the station precinct and open space areas, and management of all public parking to ensure appropriate use.

ACTIVITY

SECTION
3

3.1 EXISTING ACTIVITY

At the time of preparing this report the Redcliffe Station precinct is an area in transition. As a historic suburban area, the precinct has a well established residential character differentiated only by the commercial development fronting Great Eastern Highway (**Figure 40 and 41**). The removal of the Brearley Avenue connection between Perth Airport and Great Eastern Highway has quietened the area from a regional traffic perspective, though this has now been replaced with the construction of the new Redcliffe Train Station in the former Brearley Avenue reserve.

The area has long been identified as a precinct for future growth and activation. Its position adjacent to the Perth Airport Estate and regional roads, opportunities associated with the removal of Brearley Avenue and the potential for future heavy rail connection provided the catalyst for its identification as a 'Development Area' for the purpose of *Local Planning Scheme No. 15*.

This identification has, however, also meant the stagnation of growth in the suburb over the past 10 years. Landowners in the area have largely been restricted from redeveloping properties by the provisions of the Scheme, which provide a presumption against development and subdivision until such time as a structure plan is prepared and implemented. This coupled with the unknown future development potential of sites has made it challenging for landowners to determine the highest and best value for their land.

The preparation of this ACP, in addition to the broader elements of the planning framework, is intended to facilitate the future activation of the precinct consistent with the expectations of a modern transit orientated development precinct (**Figure 40**). This will not be without its challenges given the fragmented ownership of land within the precinct, competitive market for medium to high density development and the need for infrastructure delivery and public realm improvements.

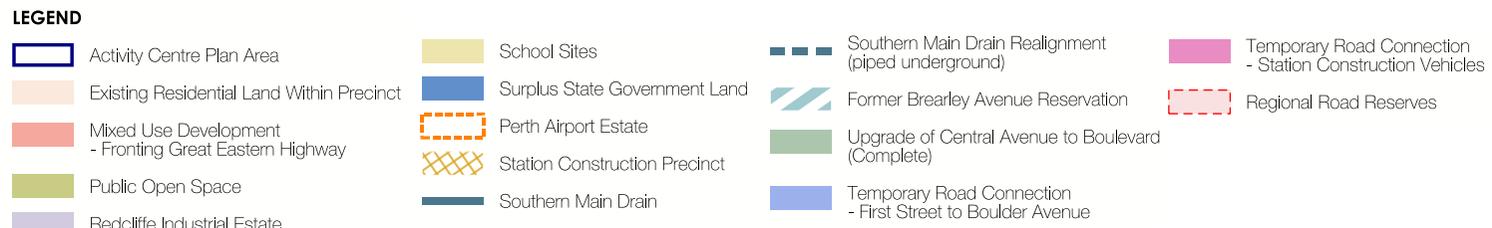
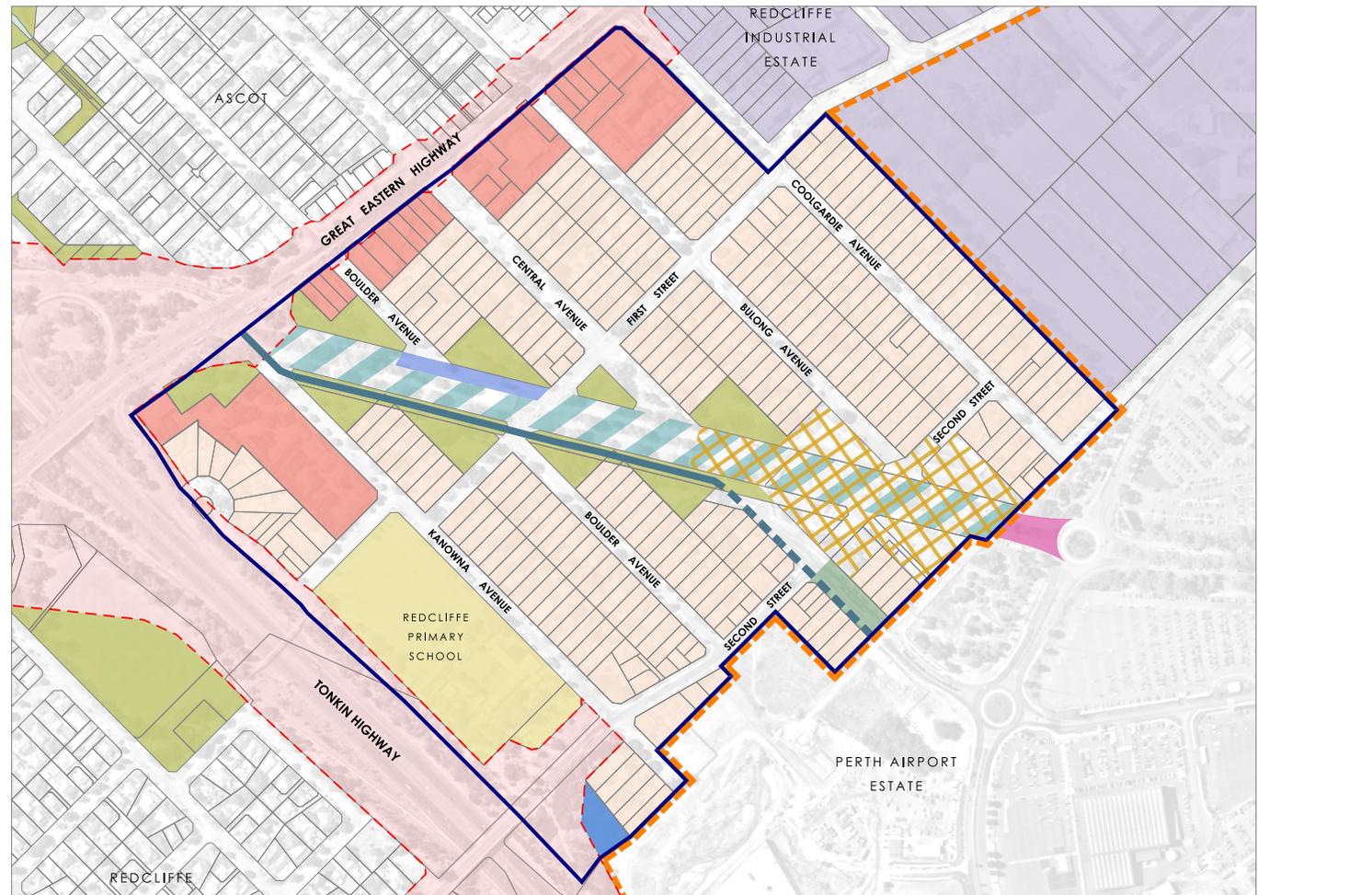


Figure 40: Existing land use characteristics of the precinct.

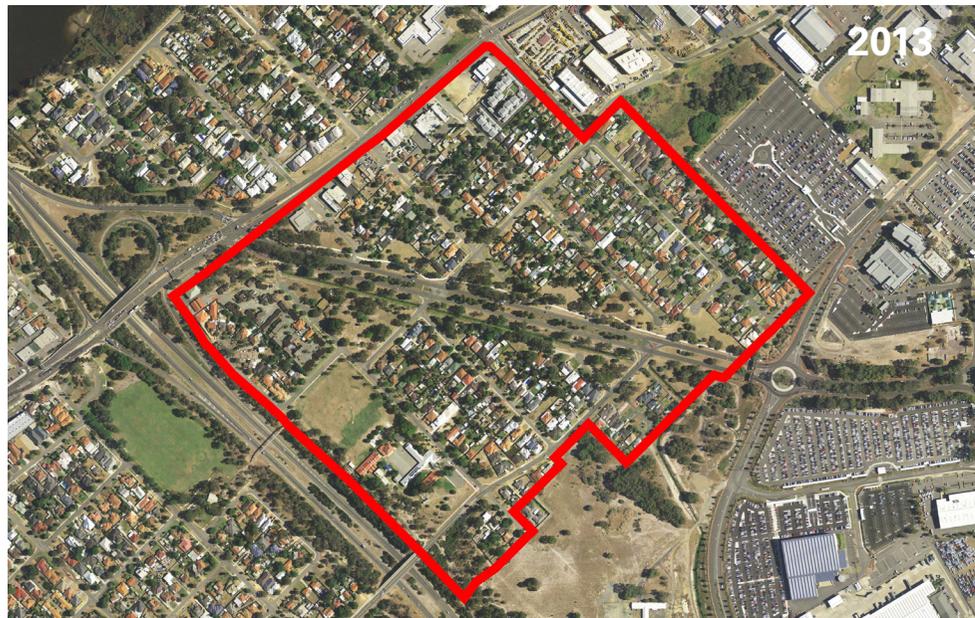


Figure 41: Historic aerial photography of the station precinct demonstrates its evolution from a rural area to a suburban residential area, and the more substantial changes since 2016 with the closure of Brearley Avenue and commencement of construction on the Redcliffe Train Station.

3.2 EXISTING LAND USES

This section provides an overview of the existing land use patterns within the precinct at the time of preparing the report.

3.2.1 RESIDENTIAL

The residential zoned areas of the precinct are coded R20 and have progressively been developed and redeveloped since the 1950's.

Residential lot sizes within the precinct are predominantly in the order of 800m² - 900m² with a width of approximately 15m and a depth of approximately 50m - 55m. There are also examples of larger lots which exceed 1,000m², particularly on the eastern side of Coolgardie Avenue, and smaller lots of 400m² - 600m², particularly on street corners where larger lots have been permitted to subdivide with frontage to both roads, as shown in **Figure 43**.

The residential built form is almost exclusively single storey single dwellings, and includes a range of dwelling construction types including 1950's fibro style cottages, brick and tile homes evident of the 1960's/70's to more modern homes of the 1990's/2000's (**Figure 42**).

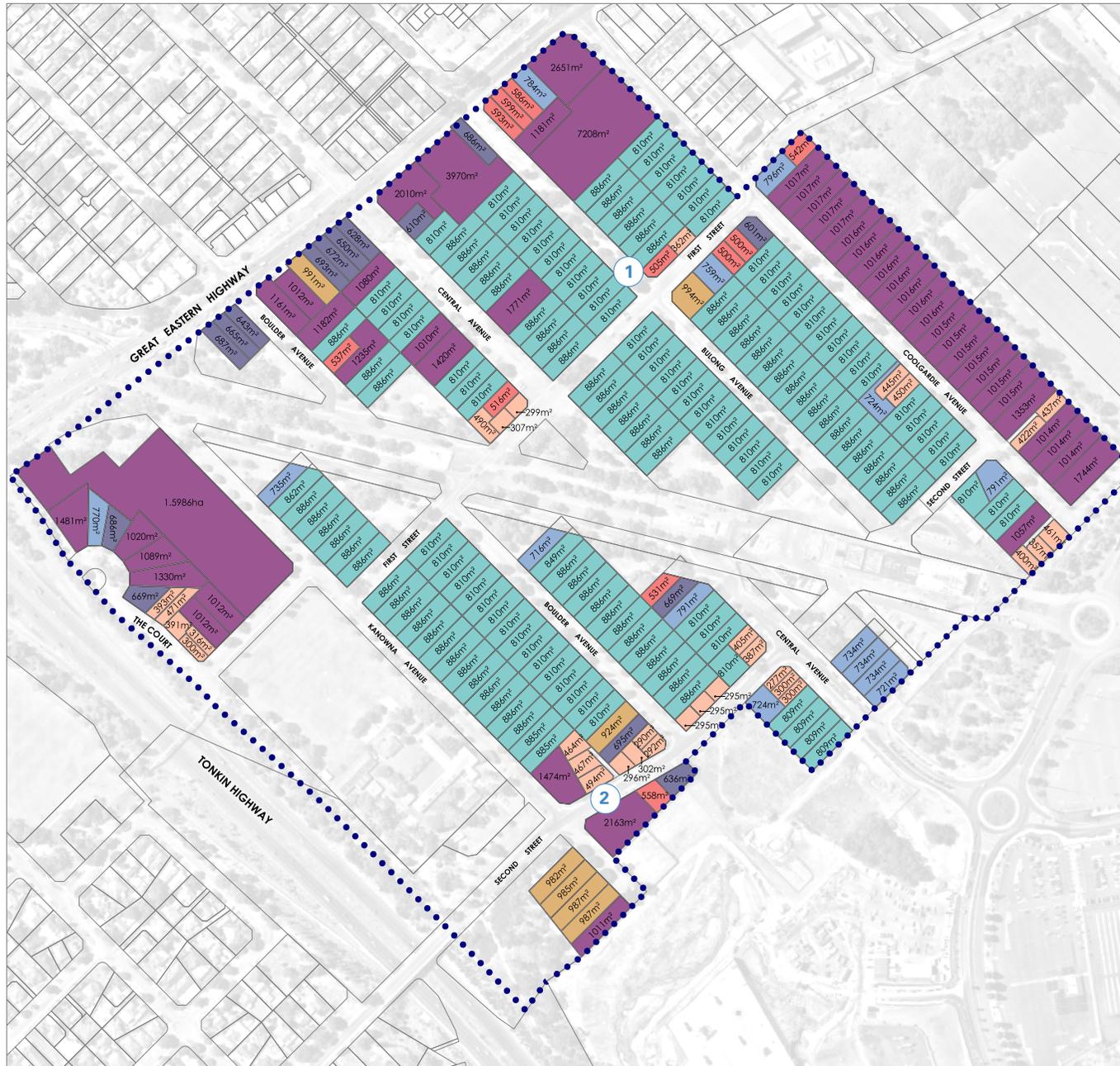
There are also less frequent examples of grouped dwellings throughout the precinct, which generally take the form of triplex style development with a common property driveway along a side boundary, as shown in **Figure 43**.

As outlined in Section 1, housing data sourced from the 2016 census indicated that:

- Redcliffe has the highest proportion of couple families with child(ren) (25.2%) compared to the surrounding suburbs of Belmont, Ascot and Rivervale and compared to City of Belmont (22.2%);
- Redcliffe has a lower proportion of couples without children (21.9%) in comparison to the City of Belmont (23.4%). One parent families make up 10% of the Redcliffe population;
- The profile of household size for Redcliffe is generally smaller than Greater Perth, with a higher proportion of one (1) person accounting for 29% of the households, (compared to 23%) and the number of two (33%), three (16%), four (14%), five (6%) and six or more person households (3%) is largely similar to Greater Perth; and
- The ownership profile for houses in Redcliffe demonstrates that 38% have a mortgage, 37% are rented and 21% were owned outright.



Figure 42: The built form throughout the residential area is almost exclusively single storey detached dwellings of a variety of periods from the 1950's through to the 2000's.



The most common lot size is 800m² - 900m², with a lot width of 15m and depth of 50m - 55m.



There are a small number of strata subdivided lots within the precinct which generally take the form of duplex or triplex style developments.

LEGEND

..... Activity Centre Plan Boundary

Lot Size

- Less than 500m²
- 500m²- 599m²
- 600m²- 699m²
- 700m²- 799m²
- 800m²- 899m²
- 900m²- 999m²
- More than 1000m²

Figure 43: The existing subdivision pattern of the precinct is predominantly comprised of residential lots between 800m² and 900m², in addition to lots greater than 1,000m² along the north-eastern interface with Perth Airport estate. There are also some examples of smaller lot strata subdivision, as shown in reference 2 above.

3.2.2 COMMERCIAL / RETAIL

Existing commercial and retail facilities are limited to the north-western component of the precinct fronting Great Eastern Highway. At the time of preparing this report the area consisted of a tavern, liquor store, hotel, serviced apartments, funeral parlour, medical centre, motor vehicle repairer, service stations, a range of small retail outlets and professional services and a religious institution, as shown in **Figure 44**

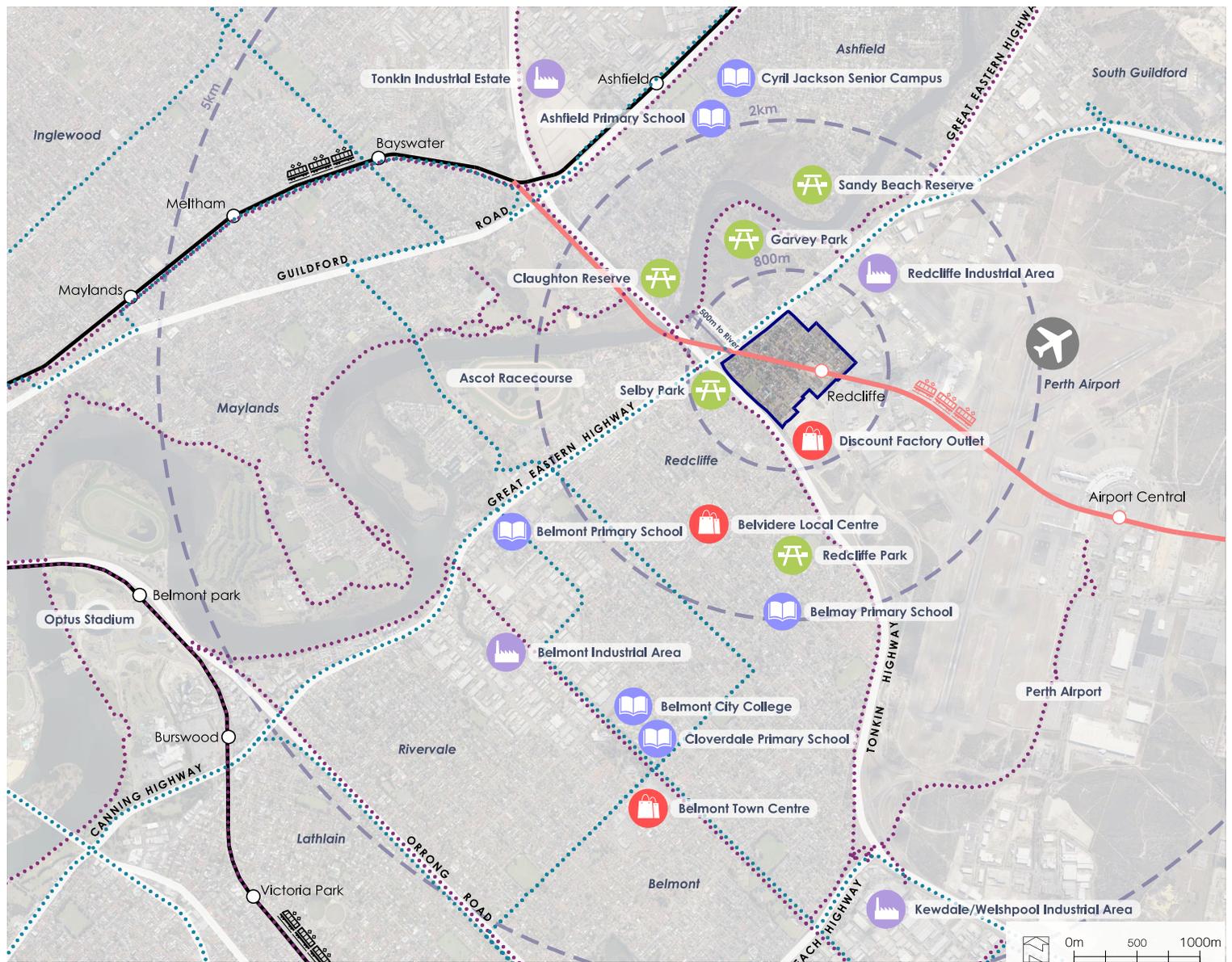
Within the surrounding area the closest shopping centre is the new Discount Factory Outlet within the Perth Airport Estate, which is 1.3km to the south of the precinct. Beyond this the nearest local centre is the Belvidere Street centre in Belmont, with Belmont Town Centre approximately 5km to the south, as shown in **Figure 45**.



LEGEND

- Activity Centre Plan Boundary
- Cadastre
- Professional Services
- Liquor Store
- Tavern (with abutting lunch bar & professional services)
- Service Station
- Motor Vehicle Repair
- Funeral Parlour
- Hotel
- Serviced Apartments
- Vacant Land (approval for service station and fast food)

Figure 44: The land use and built form along the existing commercial / retail frontage to Great Eastern Highway consists of predominantly single storey structures accessed directly from the Highway.



LEGEND

-  Activity Centre Plan Boundary
-  Passenger Rail Alignment and Stations
-  Passenger Rail Extension and Stations
-  Principal Shared Path
-  High Frequency Bus Route
-  Educational
-  Commercial/ Retail
-  Industrial
-  Open Space

Figure 45: The land use profile throughout the surrounding area provides a range of local and regional shopping, recreation and employment uses.

3.2.3 COMMUNITY, CIVIC AND CULTURAL FACILITIES

Community, civic and cultural facilities within the precinct are generally limited to the Redcliffe Primary School on Kanowna Avenue and a series of small parks adjacent the closed Brearley Avenue reservation and adjacent Great Eastern Highway to the north.

Within the surrounding areas there are:

- Five public primary schools, being Belmont, Carlisle, Cloverdale, Belmay and Rivervale Primary Schools;
- Two private primary schools, being St Maria Goretti's Catholic School and Notre Dame Catholic School;
- One Secondary College, being Belmont Secondary College; and
- Seven community centres, including Jacaranda, Redcliffe, Centenary Park, Harman Park, Miles Park and Rivervale Community Centres, in addition to the Belmont Mens Shed and a number of child care centres (such as that pictured below).

These facilities are shown spatially within **Figure 45**.

The precinct is also surrounded by extensive areas of local and regional open space, including:

- Garvey Park Regional Open Space;
- Ayres Bushland and Swan River Foreshore areas; and
- Selby Park and Redcliffe Park within the southern parts of Redcliffe.

Photos of some of the key community, civic and cultural facilities are shown in **Figure 46**.



Figure 46: The existing community, civic and cultural uses are generally limited to the Redcliffe Primary School (top), small parks adjacent the former Brearley Reserve (centre), with the surrounding area providing additional facilities including community halls, regional open space (bottom left) and other facilities such as child care centres (bottom right).

3.3 LAND USE DIVERSITY AND GAPS

3.3.1 RESIDENTIAL

The transition of the precinct from a traditional suburban area to a more urbanised transit oriented development will be one of the more challenging aspects of redevelopment of the Redcliffe Station Precinct.

The area currently contains limited diversity of dwelling types, and provides for a residential density which is vastly under that expected for a transit oriented development.

In attempting to establish a desirable pattern of residential development, both in terms of density and diversity, the following matters were researched and reviewed by the project team:

- Optimal density and catchment areas for transit oriented developments;
- Pattern of existing land ownership/subdivision and opportunities/issues for redevelopment;
- Estimated market demand for dwelling types; and
- Required lot characteristics for differing types of development outcomes.

The outcomes of this research have formed the basis of the residential requirements outlined in Part 1 and Section 3.2.5.

3.3.2 COMMERCIAL / RETAIL

To be a sustainable and functional transit oriented development there needs to be a level of activation in the public and private realm through the creation of local commerce and activity. The precinct currently provides very limited commercial and retail development, with only the Great Eastern Highway strip zoned for commercial development, and providing a variety of services predominantly catering for passing trade rather than for the local community.

To provide increased commercial and retail activity it is considered that land fronting Great Eastern Highway could continue to offer opportunity, albeit at an increased intensity with a greater variety of offerings responding to increased local demand within the precinct.

It is equally anticipated that the area immediately surrounding the station precinct provides opportunity for convenience retail and small scale commercial activities in the form of shops, cafes/restaurants, health and fitness studios, offices and other active uses which provide local services to residents, add local employment opportunities and encourage people to use public spaces.

3.3.3 OPEN SPACE

Whilst there are several areas of dedicated open space within the precinct, the functionality and usability of these spaces is often limited by their size and design. The small parks are predominantly located adjacent the former Brearley Avenue reserve, and development adjacent the open space is largely facing away from the spaces with back fences limiting the opportunity for passive surveillance or interaction.

In order to provide a high level of amenity for residents into the future, redesign and linkage of open space areas needs to be a priority. This would ideally focus on expanding upon the existing open space areas by making use of the redundant Brearley Avenue reserve, retaining the mature trees prevalent throughout the reservation area, and integrating the Southern Main Drain as a higher amenity drainage feature.

This would also need to focus on ensuring new development fronts the open space areas and is designed to provide passive surveillance and interaction necessary to improve the safety of the area and make it a more inviting place for the local community to recreate.

3.3.4 COMMUNITY FACILITIES

Community facilities within the area are primarily limited to playground equipment within open space and the existing Redcliffe Primary School, which is not generally open for public use either during or after school hours.

The redesign and linkage of open space areas provides an opportunity for investment in community assets through exercise and play equipment that encourages frequent use of public spaces. Improvement in the walkability of the local area through redesign and integration of pedestrian paths, shelter and other amenities will also be highly beneficial in encouraging residents to make active use of public areas.

Whilst there are no formal community buildings currently proposed for construction within the precinct, the City will continue to monitor demand for community facilities throughout the municipal area to determine whether further upgrades or new facilities are required.

3.4 LAND USE PLAN

The land use plan for Redcliffe Station precinct is based on four main strategic planning principles that specifically guide the future redevelopment as follows:

- Facilitate the transition of the place from a low density suburban area to a medium to high density residential precinct which optimises the investment in public transport and public realm infrastructure;
- Integrate mixed use commercial and retail development in key locations to provide easy access to goods and services for local residents and encourage activation of the public realm;
- Recognise the likely fluctuations in market demand and ensure the land use requirements do not unreasonably stifle development potential in the short to medium term; and
- Facilitate the creation of great public spaces which capitalise on the existing natural assets of mature vegetation, drainage integration and surrounding recreation areas.

In recognition of the above objectives the land use plan outlined in **Figure 47** has been prepared to guide the allocation of zoning and reservations in **Part 1** and in the ultimate statutory instrument.

The plan is broadly summarised as follows:

- The **Residential** zone has been proposed across the majority of the precinct, which is consistent with the current zoning under LPS15. The allocation of coding differs based on the proximity to key influences, including the Great Eastern Highway corridor, Redcliffe Train Station and Redcliffe Primary School.
- The **Mixed Use** zone is proposed to front Great Eastern Highway and envelope the Redcliffe Train Station area as the key areas considered best suited to accommodate commercial and retail uses which will activate the public realm.
- The **Public Open Space** reservation is proposed along the extent of the proposed open space corridor, incorporating existing and proposed open space areas and integrating the Southern Main Drain as a component of the open space design.
- The **Railways** reservation is proposed to reflect the area controlled by the Public Transport Authority to operate and maintain the railway station and its immediate forecourt and 'Kiss and Ride' area.
- The **Public Purpose - Primary School** reservation is proposed to remain over the full extent of the Redcliffe Primary School site.

LAND USE PLAN NOTES

- 1 Parking within the precinct needs to be actively managed as a component of public and private development to optimise the use of public transport.
- 2 Mixed use development is located adjacent to the station and is proposed to comprise of retail and commercial uses at ground and lower floors, with residential apartments on upper levels. Areas of mandated non-residential ground floor development to contribute to the activation of the public realm and reinforce the main entrance to the station. Non-residential ground floor uses will encourage social interaction and pedestrian activity and assist in supporting the economic viability of the locality.
- 3 Mandatory adaptable ground floor development is identified in various locations surrounding the station to ensure the street network can accommodate a greater range of active, non-residential uses on the ground floor at a time in the future subject to improved market conditions. This will contribute to an active pedestrian oriented precinct surrounding the station.
- 4 Residential development of a smaller scale will range in height from 2 to 3 storeys, to provide an appropriate interface with the Redcliffe Primary School.
- 5 A network of open space is provided through the centre of the precinct, retaining existing mature trees and creating a legible pedestrian connection towards the station, whilst providing residential amenity and contributing towards the broader enjoyment of the precinct.
- 6 Mixed use development is located along the Great Eastern Highway which will benefit from the strategic location within an Urban Corridor with high accessibility to industrial areas such as Redcliffe Industrial Estate, Hazelmere and Welshpool. Uses proposed to include a variety of commercial, retail and community service uses at ground level with office and residential development on upper levels.
- 7 Residential development is proposed between the Great Eastern Highway Urban Corridor and the higher density residential development area closest to the station. This area will provide a greater diversity of dwelling sizes and types to provide accommodation choice within the precinct and cater for the needs of the community.
- 8 Higher density residential development is located in proximity to the station, capitalising on the immediate access to high frequency public transport.
- 9 Proposed amendments to the Metropolitan Region Scheme to remove the Primary Regional Road classification surplus to the needs of the State will free up land for alternative purposes.

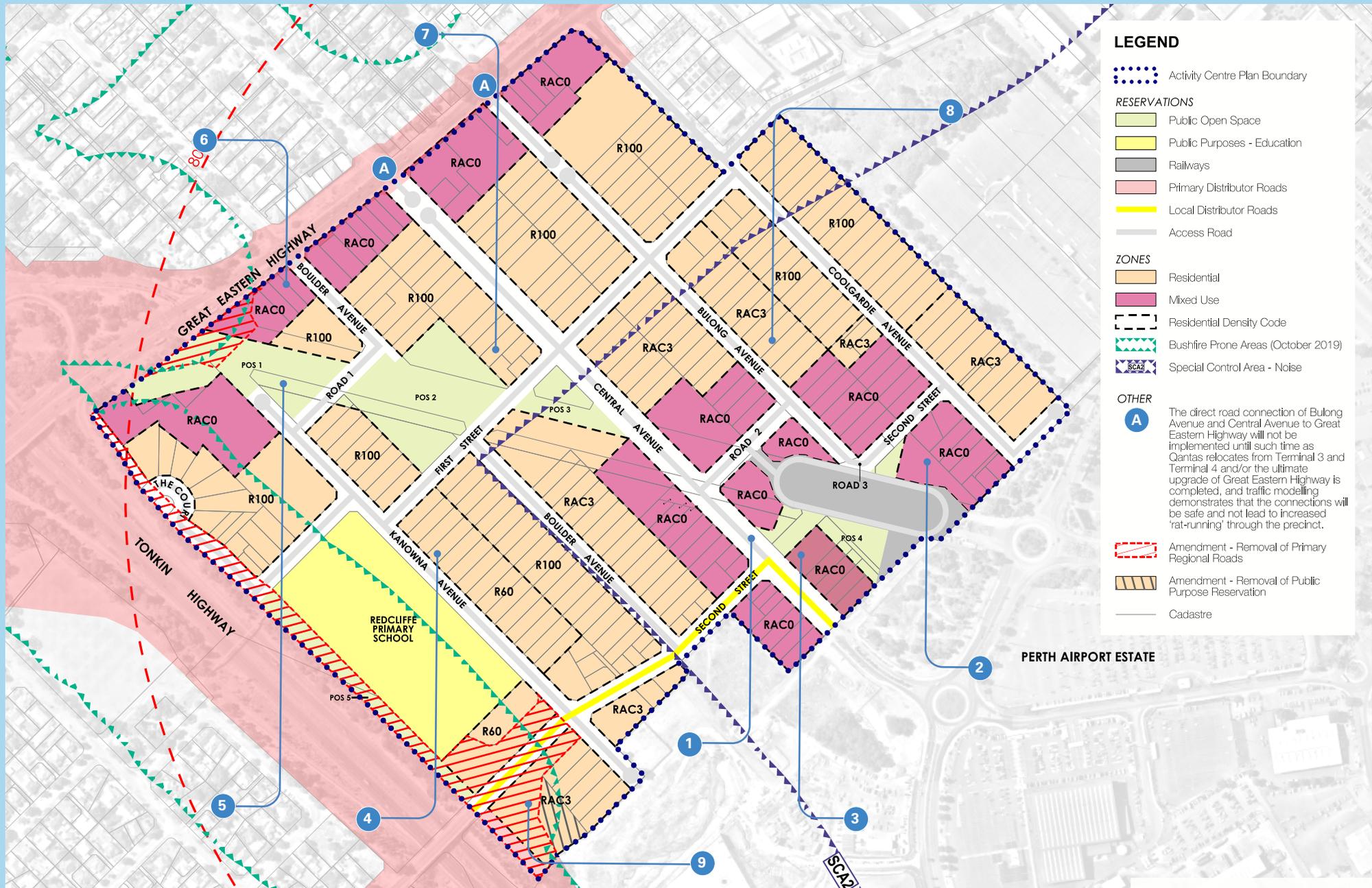


Figure 47: Land use plan for the Redcliffe Station Precinct.

3.4.1 SUB-PRECINCTS

The subject area has been divided into five sub-precincts based on the intended character and function of the local areas, key attributes and urban design vision. The sub-precincts (**Figure 48**) have assisted in formulating the proposed land use zoning for the area and differentiating the built form and urban design considerations outlined in Section 4.

The sub-precincts are described as follows:

3.4.1.1 Centre Sub-Precinct

The Centre sub-precinct is centred around the new Redcliffe Station and focuses intensification around the primary activity node within the Activity Centre.

It is intended that this precinct will become the thriving heart of the local area as a focal point for daily commuting, entertainment and dining, accommodating a broad range of uses including daily shopping needs, restaurants, cafes, speciality shops, offices and apartments, in addition to civic uses.

New built form within the precinct will focus on mixed-use, multi-storey development to provide a level of intensity and activity consistent with an urban transit oriented development precinct.

Development of the Centre sub-precinct is guided by the following objectives:

- a) To ensure that a variety of retail and commercial uses are provided to support convenience needs of the local community;
- b) To provide active uses on the ground floor in key locations to encourage public realm activity and interest, and to retain opportunity to expand active uses on the ground floor throughout the sub-precinct over time;
- b) To facilitate high density residential development in close proximity to the rail station;
- d) To maximise the retention of existing mature trees within development sites and within the public realm; and
- e) To ensure on site landscaping provides amenity and benefit to the users of the site and the broader community.

3.4.1.2 Centre Transition Sub-Precinct

The Centre Transition sub-precinct is first stage of transition from the Centre sub-precinct to the surrounding residential area, and will promote predominantly on medium to high density residential development.

New built form within the precinct will primarily focus on the provision of apartments to provide residential opportunity in close proximity to the station precinct and Perth Airport Estate, with ground floor development to be designed to transition to mixed use development over time.

Development of the Centre Transition sub-precinct is guided by the following objectives:

- a) To facilitate medium to high density residential development in close proximity to the rail station;
- b) To maximise the retention of existing mature trees within development sites and within the public realm; and
- c) To ensure on site landscaping provides amenity and benefit to the users of the site and the broader community.

3.4.1.3 Residential Core Sub-Precinct

The Residential Core sub-precinct is the core residential area transitioning between the Urban Corridor sub-precinct and the Centre sub-precinct, and will promote medium density residential development.

New built form within the sub-precinct will focus on the provision of apartments and terrace homes to provide a broad variety of residential opportunities in close proximity to open space, regional amenities and the Redcliffe Primary School.

Development of the Residential Core sub-precinct is guided by the following objectives:

- a) To facilitate medium density residential development between the rail station and Great Eastern Highway;
- b) To maximise the retention of existing mature trees within development sites and within the public realm; and
- c) To ensure on site landscaping provides amenity and benefit to the users of the site and the broader community.

3.4.1.4 School Interface Sub-Precinct

The School Interface sub-precinct will focus on medium density residential development surrounding the Redcliffe Primary School. New built form within the precinct will be designed to complement the school environment through lower scale buildings and more generous front setbacks.

Development of the School Interface sub-precinct is guided by the following objectives:

- a) To facilitate medium density residential development adjacent to and opposite the Redcliffe Primary School;
- b) To provide built form at a scale that complements the Redcliffe Primary School to assist in transition to the surrounding medium to high residential density environment; and
- c) To maximise the retention of existing mature trees within development sites and within the public realm.

- d) To ensure on site landscaping provides amenity and benefit to the users of the site and the broader community.

3.4.1.5 Urban Corridor Sub-Precinct

The Urban Corridor sub-precinct will promote higher density mixed use development fronting Great Eastern Highway to leverage the exposure and public transport availability of the transport corridor, and the close proximity to the Swan River and Garvey Park.

New built form within the precinct will focus on commercial development at lower levels and residential apartments above.

Development of the Urban Corridor sub-precinct is guided by the following objectives:

- a) To facilitate high density, high quality mixed use development abutting Great Eastern Highway;
- b) To facilitate shared access via side streets and rear lane ways and restrict access direct from Great Eastern Highway;
- b) To provide commercial and retail uses on the ground floor in key locations to encourage public realm activity and interest, and to contribute to the local employment opportunities within the precinct;
- b) To facilitate residential development above the ground level to leverage off proximity to public transport and Garvey Park;
- e) To ensure on site landscaping provides amenity and benefit to the users of the site and the broader community; and
- f) To manage the design of on site parking to facilitate a high amenity streetscape.

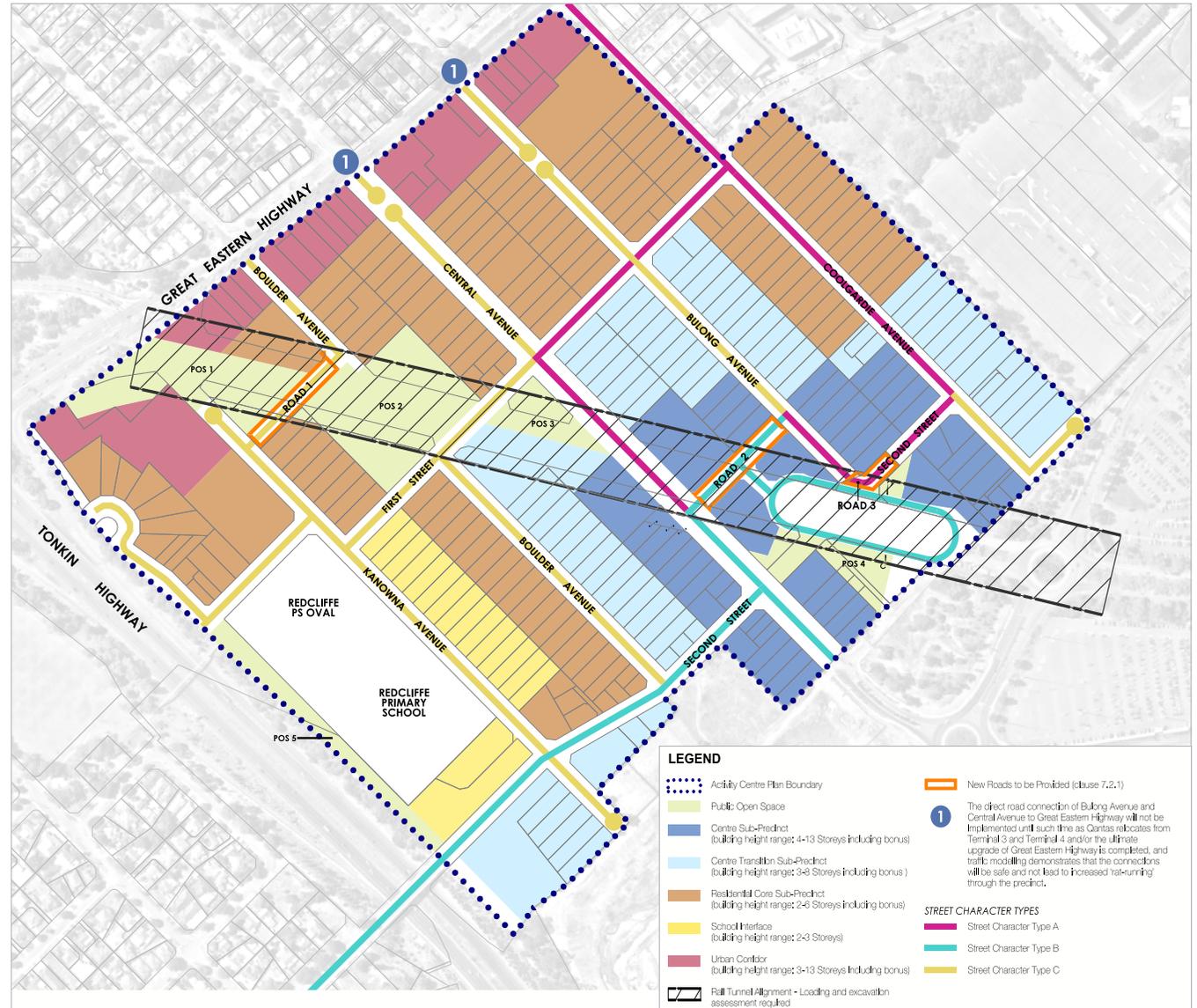


Figure 48: Sub-Precinct Plan for the Redcliffe Station Precinct Activity Centre Plan.

3.4.2 RESIDENTIAL DEVELOPMENT

Residential development within the precinct is proposed to focus on the increased intensity and diversity of dwelling types throughout the area, and in accordance with the character objectives and built form parameter outlined in Section 4.

3.4.2.1 Minimum Density Requirement

Current guidance provided by the WAPC recommends a minimum density requirement within transit oriented development precincts and other similar sized centres of approximately 25-30 dwellings per hectare.

In reviewing academic research undertaken locally and internationally there is evidence that the functionality of transit oriented developments is substantially improved by densities much higher than that required by the WAPC policy. In considering a minimum residential development target a variety of different development scenarios were considered to identify the likely yield outcomes based on:

- Localised opportunities and constraints to increased residential density;
- Anticipated market take up of development opportunities; and
- Feasibility of built form outcomes to achieve proposed density.

Review and refinement of the development scenarios led to the preparation of the preferred residential density plan, inclusive of the minimum density requirements, shown in **Figure 49** and **Table 21**. This plan identifies the proposed minimum residential dwelling ratio, which is expressed as a total number of dwellings per 100m² of gross site area.

The intent is to achieve a minimum average density across the precinct of 50 dwellings per hectare, with the actual density achieved per precinct differing due to the differing development potential within these precincts. The estimated minimum dwelling yield per precinct, based on the minimum development ratio applied, is outlined in **Figure 49** and **Table 21**.

It is proposed that each individual site will be required to meet the minimum residential dwelling ratio based on their proposed site area, generally in accordance with the following:

$$\text{(Total Site Area (m}^2\text{) / 100m}^2\text{) x Minimum Residential Dwelling Ratio} \\ = \text{Minimum Number of Dwellings Required}$$

An applicant will be required to demonstrate compliance with the minimum residential dwelling ratio. To this extent it is noted that the minimum residential dwelling ratio for the 'Urban Corridor' precinct may include 'serviced apartments' as dwelling units, given the opportunity for this use abutting Great Eastern Highway.

Table 21: Projected ultimate dwelling yields based on the minimum dwelling ratio applicable.

Precinct	Developable Area	Minimum Dwelling Ratio	Projected Ultimate Dwelling Yield	Anticipated Residential Form
Centre	5.1 Hectares	1.25	640 Dwellings	Apartments
Centre Transition	7.6 Hectares	0.88	660 Dwellings	Apartments; Grouped Dwellings or Single Dwellings
Residential Core	12.6 Hectares	0.66	830 Dwellings	
School Interface	2.0 Hectares	0.55	110 Dwellings	
Urban Corridor	3.5 Hectares	0.875	310 Dwellings	Apartments
Total			2,550 Dwellings	

3.4.2.2 Dwelling Diversity

It is anticipated that there will be market demand for a broad range of dwelling types within the precinct, including single dwellings, grouped dwellings and multiple dwellings.

In order to ensure minimum dwelling targets are met, and the built form response suitably reflects the local characteristics and opportunities within the precinct, single houses and grouped dwellings have been restricted within the Centre and Urban Corridor sub-precincts via this ACP and ultimately via the Scheme.

There is, however, a strong desire for transit orientated precincts to provide for:

- A broad range of dwelling sizes to cater for single people, young couples without children, families, empty nesters and retirees, in addition to alternative living patterns such as multi-generational housing;
- Universally accessible housing to cater for demand from an aging population and ensure inclusivity of the precinct; and
- Flexibility in design outcomes to ensure that housing is designed to be fit for purpose now and in the future, as technological changes improve the efficiency of land use and the ways in which people choose to live.

It is anticipated that the market is likely to provide a range of dwelling types in any event due to the varying opportunities within the precinct and the time period over which redevelopment is likely to be undertaken. To assist in ensuring a level of diversity is provided, however, the *Redcliffe Station Precinct Design Guidelines* will provide guidance on desirable range of dwelling sizes, universal access requirements and site design considerations.

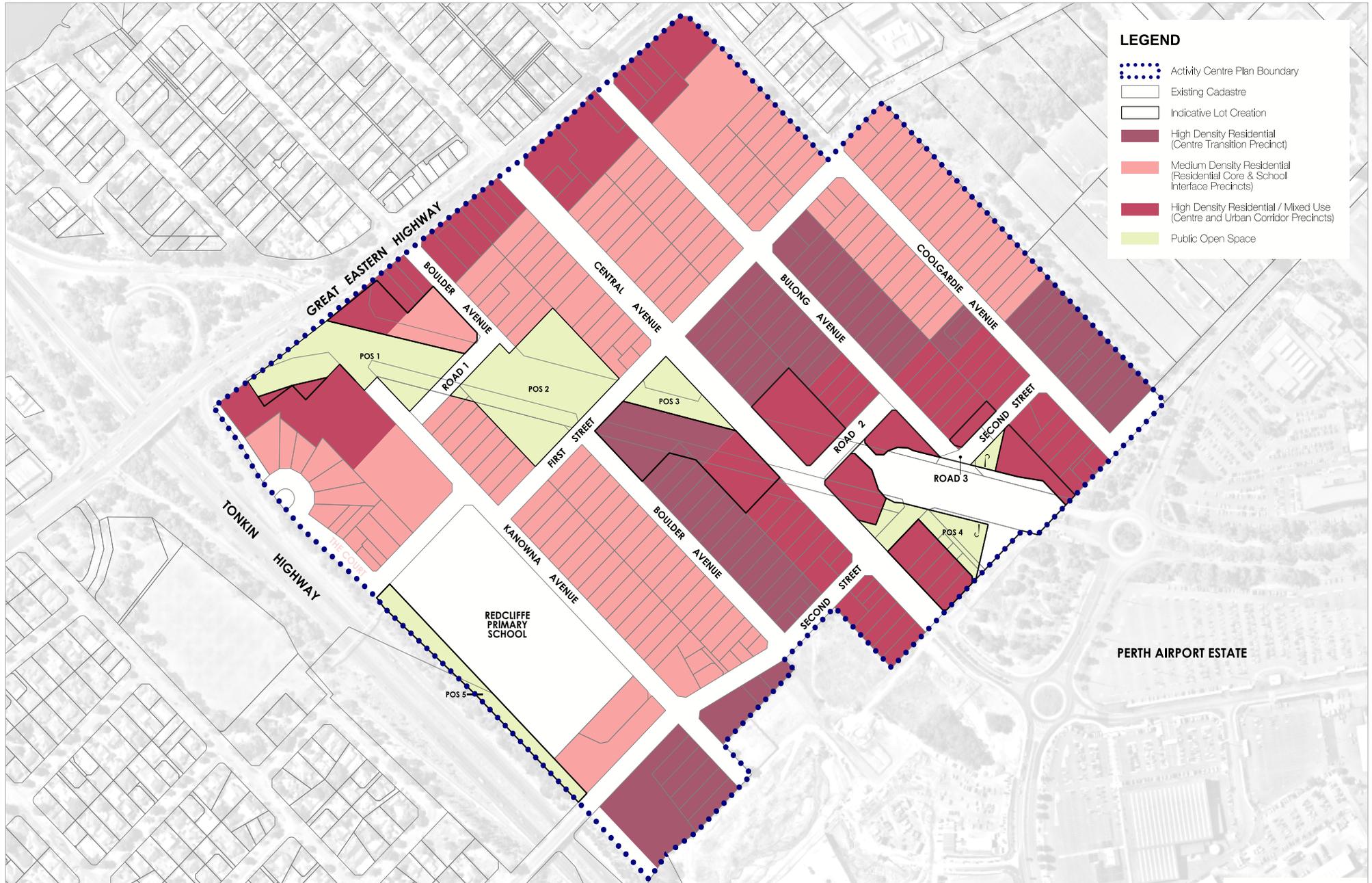


Figure 49: Proposed development potential for residential purposes in the context of the residential dwelling growth targets established by Part 1.

3.4.3 COMMERCIAL AND RETAIL DEVELOPMENT

Redevelopment of the precinct creates the opportunity for a wide variety of business/commercial uses surrounding the train station and along Great Eastern Highway that are compatible with and support the broader residential development.

3.4.3.1 Employment Projections

The Redcliffe Station Precinct is anticipated to accommodate a broad variety of commercial and retail opportunities to provide local employment and services both to local residents and commuters moving through the area. The areas with the potential to generate employment through the accommodation of commercial or retail uses are located within the Centre Precinct and the Urban Corridor Precinct.

Both precincts are proposed for mixed use development and it is not anticipated that individual sites will be developed solely for commercial or retail purposes alone. This expectation is reinforced by the site requirement for residential density which requires a mixed use outcome.

The mixed use nature makes it difficult to anticipate the extent of commercial and retail floorspace, and thereafter the anticipated employment generation. In preparing the ACP the a conservative view has been taken on the likely demand for non-residential floorspace given the significant competing opportunities for similar development within the Perth Airport Estate and along the Great Eastern Highway corridor.

The non-residential floorspace estimates and corresponding employment generation estimates for the precinct are outlined in **Table 22**. These estimates are to be further considered and refined as a component of the review the City's *Commercial Centres Strategy*, and if necessary will be revised to reflect the more detailed analysis undertaken.

3.4.3.2 Perth Airport Estate

Whilst outside of the Redcliffe Station Precinct, Perth Airport Pty Ltd has progressed its planning for commercial and retail development within the Airport West precinct with:

- a) The construction of the Discount Factory Outlet (DFO) to the south of Kanowna Avenue, which opened in 2017 and has a metropolitan wide catchment due to the extent of its retail offering;
- b) The announcement of Western Australia's first Costco development further to the south of the DFO, which is proposed to be open by 2020 and will also have a metropolitan wide retail offering; and
- c) The anticipated planning for a neighbourhood shopping centre to the east of the DFO to provide local retail opportunities to service the growing catchment of employees within the Airport West precinct and the growing resident catchment within the Redcliffe Station precinct.

3.4.3.3 Active Frontage Requirements

In order to ensure that the key public spaces and areas of interest are provided with a level of activation a requirement for active uses has been identified for key sites as shown in **Figure 50**. This requirement will be implemented in conjunction with design requirements in the *Redcliffe Station Precinct Design Guidelines* to ensure activation of frontages.

The requirement relates to the permissible land uses which front the street across these sites, and limits the permissibility to uses considered to provide a suitable level of activation and interaction with the adjacent public space. The listed uses included as active uses are outlined in Part 1, and other uses not listed may be considered based on their demonstrated ability to activate the adjacent public space.

3.4.3.4 Adaptable Ground Floor Areas

Whilst activation of street frontages throughout the precinct is desirable it is anticipated that demand for commercial and retail floor space is likely to be slow in the early stages of development, until such time as a sufficient residential catchment is achieved to increase demand for local goods/services and employment.

To ensure that landowners are not unreasonably burdened by a requirement for the creation of commercial and retail spaces which are not economically viable, a requirement for 'adaptable ground floor' areas has been included in this ACP, which will allow the interim use of these areas for residential purposes, but ensure flexibility is built in to transfer to commercial or retail uses as the precinct grows.

The requirement applies to all lots fronting key streets identified with the annotation 'adaptable ground floor area required' on **Figure 9** in Part 1 of the ACP, and requires the incorporation of a minimum finished floor to ceiling height of 4m to provide flexibility to accommodate a variety of commercial or retail uses within the ground floor into the future.

Further guidance on the design of adaptable ground floor areas is provided by the *Redcliffe Station Precinct Design Guidelines*.

3.4.3.5 Residential Use Restrictions

A restriction on residential uses at the ground floor fronting Great Eastern Highway is included as a component of Part 1 as:

- a) The street level fronting the Highway is not considered to be an attractive environment for residential uses due to the amenity impacts of the highway function; and
- b) It is anticipated a level of commercial and retail development will provide greater activation and contribute to a higher quality environment for pedestrians using the highway corridor.

The proposed restriction only applies to properties fronting the Highway to a depth of 50m from the reservation, such that residential development fronting any side street beyond this distance is able to be considered.

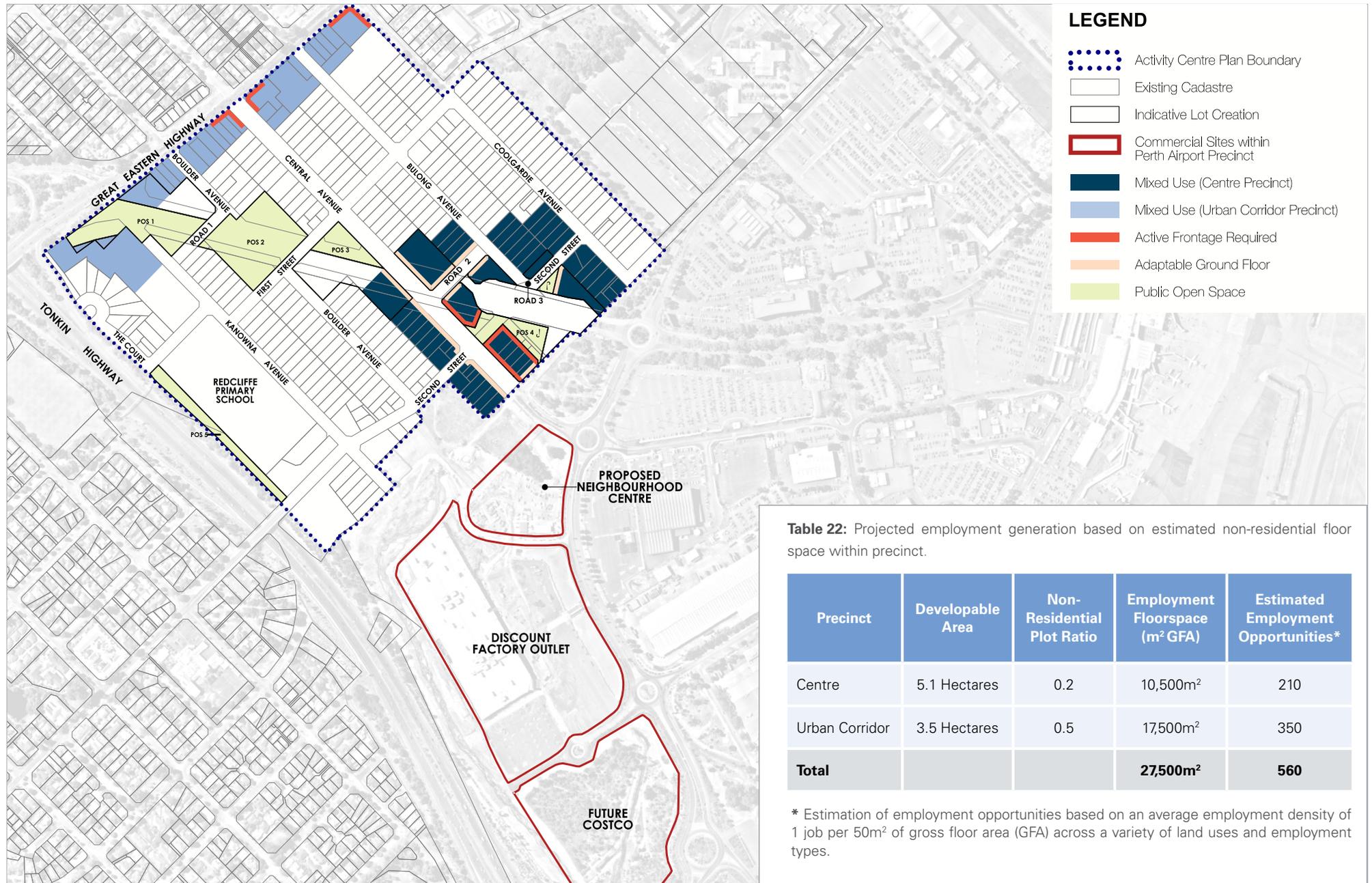


Figure 50: Proposed development potential for commercial and retail development within mixed use zoned areas in accordance with Plan 1, in addition to major commercial developments within the Perth Airport Estate.

3.4.4 COMMUNITY, CIVIC AND CULTURAL FACILITIES

The design and delivery of community infrastructure will form an important component of maintaining and growing a sense of community cohesion and to optimise the use of public spaces.

3.4.4.1 Open Space Network

The primary opportunity for the development of community and cultural facilities within the precinct arises from the potential to combine and expand upon the open space network.

The redesign and integration of this public space provides opportunity for the installation of community infrastructure, including:

- Integration of pedestrian and cyclist infrastructure throughout the open space network to provide a high amenity route between Great Eastern Highway and the station precinct, and encourage local residents to use the parkland for commuting and recreation;
- Installation of play equipment for children to encourage families to be active within the local area and make use of open space; and
- The potential design and integration of specialised infrastructure, including consideration of an enclosed 'dog park' to cater for pet owners looking for a place to socialise and exercise their dogs, an 'adventure playground' designed for more expansive play opportunities for children or the installation of specialist play equipment for children with special needs.



Figure 51: The redesign of the open space network could potentially include the installation of specialist play equipment to meet community needs.

3.4.4.2 Redcliffe Primary School

Redcliffe Primary School (shown in **Figure 52**) provides a service to the local community through the provision of public schooling from Kindergarten to Year 6. The facilities provided by the school are generally closed to the public as assets maintained by the school for use by the students.

There is, however, an opportunity for the future shared use, management and maintenance of the school oval as open space. Whilst currently closed to the public by virtue of fencing and restrictions imposed by the school, an agreement between the school, the Department of Education and City of Belmont may be reached whereby:

- The school oval is redesigned for broader use by the public through relocation of fencing to secure the school area but allow free access for the broader public to the oval;
- Maintenance responsibility and associated ongoing costs are shared based on the proportionate use of the open space area; and
- Exclusive use of the oval space for school purposes during school hours is provided.

This provides an excellent opportunity to optimise the use of the existing open space asset and to reduce the school's maintenance and works burden for the open space area.

3.4.4.3 Community Facilities in Mixed Use areas

The use permissibility within mixed use precincts provides the flexibility to create space for community events, gatherings and uses in developing commercial and adaptable spaces (**Figure 50**).

Such facilities may take the form of publicly available end of trip facilities, shared office spaces, function rooms, lecture theatres, exhibition spaces or other publicly available spaces.

Such facilities may also take the form of temporary place making activities within public spaces or temporary public spaces within State Government development sites prior to their development. The City will further investigate place making opportunities as part of the opening of the Redcliffe Train Station and broader development of the precinct.

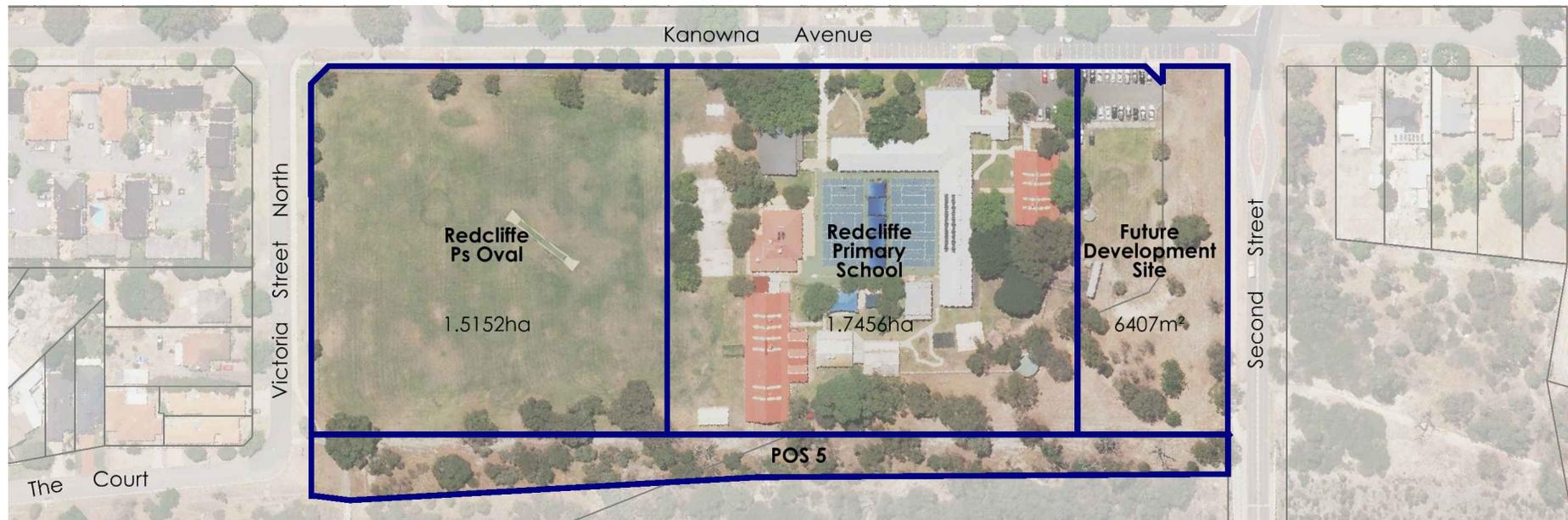


Figure 52: Potential for shared use of the Redcliffe Primary School Oval should be further investigated by the School, City of Belmont and Department of Education.

3.5 ACTIVITY CENTRE PLAN CHECKLIST - ACTIVITY

Section 3 of the explanatory report has been prepared in accordance with the guidance provided by *SPP4.2 Activity Centres for Perth & Peel*.

In accordance with this guidance a checklist has been prepared to delineate the sections of the ACP which are used to address each of the key SPP4.2 requirements, and this is outlined in **Table 23**.

Table 23: Activity Centre Plan Checklist - Activity

SPP4.2 Reference	ACP Requirement	Section of ACP addressing Requirement	Summary / Additional Comment
1	Review the existing land use patterns within the centre boundary and identify any complementing use clusters and define these as discrete character areas.	3.1 and 3.2	<p>As a historic suburban area, the precinct has a well established residential character differentiated only by the commercial precinct fronting Great Eastern Highway.</p> <p>The closure of Brearley Avenue and commencement of construction of the Forrestfield Airport Link and Redcliffe Train Station has reformed the precinct into an area of transition.</p> <p>Character areas have been formed as sub-precincts which reflect existing and future key influences, including Great Eastern Highway, the Redcliffe Train Station, the Redcliffe Primary School and the residential suburban character.</p>
2	Record the existing uses and document any gaps in the land use mix. Identify the requirements to address the diversity performance target.	3.2 and 3.3	<p>Existing land uses and gaps in the land use mix are summarised as follows:</p> <ul style="list-style-type: none"> Residential development is almost exclusively single storey single dwellings on lots between 800m² and 1100m², with only a handful of examples of smaller lot strata subdivision to accommodate grouped dwellings. There is a significant gap in dwelling diversity and residential density, particularly in the context of a major transit oriented development precinct. Commercial and retail development is limited to development fronting Great Eastern Highway which provides a range of goods and services aimed primarily at passing trade. There is a gap in local retail and commercial development which supports higher intensity residential development, including cafes and restaurants, shops, local services and offices. <p>The City will continue to monitor the diversity of dwelling types and commercial/retail uses development within the precinct as the redevelopment of the precinct progresses and assess whether the diversity targets outlined in the <i>Redcliffe Station Precinct Design Guidelines</i> are being met, and whether any further planning controls are required.</p>

SPP4.2 Reference	ACP Requirement	Section of ACP addressing Requirement	Summary / Additional Comment
3	Assess existing community, civic and cultural facilities within the centre boundary. Make allowance for their provision relative to the scale and type of centre.	3.4.3	<p>Community facilities within the area are primarily limited to playground equipment within open space and the existing Redcliffe Primary School, which is not generally open for public use either during or after school hours. There is opportunity for expansion of local facilities through the:</p> <ul style="list-style-type: none"> • Consideration of shared use of the Redcliffe Primary School oval; • Provision of exercise and play equipment within the expanded open space network; and • Integration of spaces available for broader community use within mixed use precincts.
4	Where required by the activity centres policy, conduct a retail sustainability assessment or retail needs assessment.	NA	<p>As a Neighbourhood Centre a Retail Sustainability Assessment or Retail Needs Assessment is generally not required, but it is noted that the subject area is not currently identified as a centre for the purpose of the Local Planning Strategy. To this extent the City is undertaking a review of the Commercial Centres Strategy which includes a City wide Retail Needs Assessment, and the anticipated retail development within the Redcliffe Station Precinct will be considered as a component of this work.</p>
5	Maximise pedestrian benefit by locating new retail along accessible streets and areas that can support high foot fall.	3.4.3	<p>Commercial and retail development are proposed along key routes of Great Eastern Highway and the streets surrounding the Redcliffe Station Precinct, with:</p> <ul style="list-style-type: none"> • Mandatory active ground floor uses required in key areas; and • Adaptable ground floor areas required to facilitate future retail and commercial expansion into the future.
6	Identify employment sectors (retail and non-retail) and formats (i.e live-work) and estimate the number and types of jobs provided by the centre.	3.4.3	<p>A conservative estimate of the take-up of commercial and retail development within the mixed use precincts has been used given the extent of competing space within Perth Airport estate and along Great Eastern Highway. An estimate of the employment opportunities created by the new commercial and retail spaces has been provided, and will be further considered as a component of the work undertaken by the City in reviewing the Commercial Centres Strategy.</p>
7	Assess the housing densities required within the walkable catchment to meet the residential density targets in the Policy.	3.4.2	<p>A minimum residential density per site has been proposed to ensure that an appropriate minimum residential density within the precinct is achieved, particularly given the proposed walkability of the precinct and excellent access to public transport into the future.</p>



URBAN FORM

SECTION 4

4.1 URBAN STRUCTURE

4.1.1 EXISTING URBAN STRUCTURE

The existing urban structure of the precinct is predominantly characterised by single storey built form and a grid pattern road network common within 1950's and 1960's residential subdivisions.

4.1.1.1 Existing Built Form and Open Space

The most common built form within the precinct is the single storey detached single dwelling, which accounts for the vast majority of privately owned land within the precinct and includes a range of dwelling construction types including 1950's fibro style cottages, brick and tile homes evident of the 1960's/70's to more modern homes of the 1990's/2000's.

There are also less frequent examples of grouped dwellings throughout the precinct, which generally take the form of triplex style development with a common property driveway along a side boundary.

Existing commercial and retail facilities are limited to the north-western component of the precinct fronting Great Eastern Highway, and are generally single storey structures, many of which are tilt-up concrete developments.

The open space network is comprised of multiple 'pocket parks' of approximately 1,500m² - 4,000m² in size adjacent the former Brearley Avenue reserve. These parks all comprise of turf and contain significant mature trees, but are generally partially fenced in by adjacent development; they previously provided limited amenity when Brearley Avenue was operational due to their frontage to this road and the high volume of regional traffic passing through the area.

4.1.1.2 Future Change and Opportunity

The redesign of the urban structure provides significant opportunity for change and redevelopment. The key changes and opportunities are shown in **Figure 53** and outlined as follows:

- The closure of Brearley Avenue provides opportunity to reallocate the redundant Crown land for the purpose of public open space connections, new local streets and future development sites.
- Expansion of existing pocket parks to join across the former Brearley Avenue reserve provides opportunity for larger open space areas, retention of mature trees within the former reserve, and investment in public infrastructure to provide greater amenity to the local community (**Reference 1**).

- Reconnection of the grid road network across the former Brearley reservation provides more efficient internal movement and reconnects the local community (**Reference 2**).
- The relocation and integration of the Southern Main Drain as a feature within the open space network will remove the existing barrier to pedestrian movement and provide a higher level of amenity to users of the open space (**Reference 3**).
- The identification of developable land from the former Brearley Avenue reservation provides significant development ready land parcels usable as demonstration projects and catalysts for private sector investment in the area (**Reference 4**).
- The existing commercial development fronting Great Eastern Highway is considered highly likely to be redeveloped due to the relatively low capital investment in many existing buildings and the significant intensification opportunities available (**Reference 5**).
- The large area of privately owned vacant land on Kanowna Avenue provides an excellent opportunity for redevelopment consistent with the built form vision and fronting the new major open space area (**Reference 6**).
- Existing residential lots are considered likely to develop progressively over time as land amalgamation opportunities arise and demonstration projects start to activate the area.
- Opportunity to improve pedestrian, cyclist and vehicle connections to the future Redcliffe Train Station, the open space areas, the School and the Airport commercial precinct, which are key landmark sites (**Reference 7**).
- Opportunity to improve legibility through the precinct by reintroducing the grid network, and closing Brearley Avenue (**Reference 8**).
- Opportunity to improve connectivity to the future Redcliffe Train Station site through upgrades to Central Avenue (**Reference 9**).
- Opportunity to improve pedestrian connectivity throughout the precinct by providing a complete footpath network, on both sides of each road.
- Opportunity to embrace existing views to the Swan River through taller development along Great Eastern Highway (**Reference 10**).

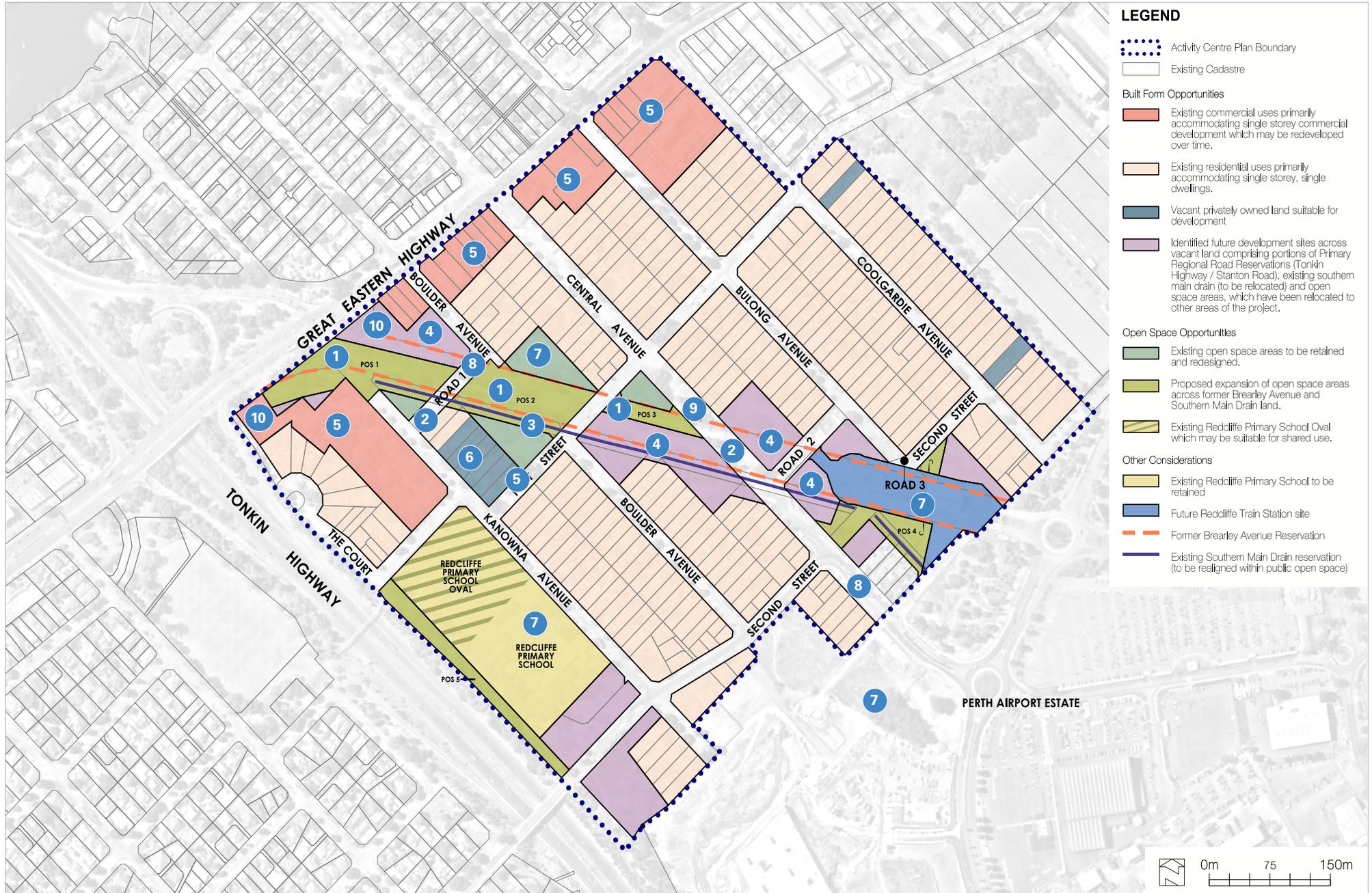


Figure 53: Opportunities for change to the urban structure of the ACP area.

4.1.2 URBAN DESIGN VISION

The inspiration for the Redcliffe Station Precinct is to create an 'Urban Village in a Landscaped Setting'. The precinct will form a new pocket of urban life in the Central Metropolitan sub-region, in walking distance of the Swan River, Redcliffe Train Station and on the door step of the consolidated Perth Airport which is one of Perth's largest mixed employment hubs.

It is intended as a place for all ages, incomes, lifestyles and families with a mix of spaces for relaxation and enjoyment for the entire community, encompassed by a variety of economic and employment opportunities.

The vision involves the reintroduction of great streetscapes that will reconnect an area which has long been divided and allow the precinct to truly integrate with itself and its surrounds. A regeneration that will allow people to enjoy safe and inviting movement by foot, bicycle, rail, bus and car, through a pedestrian friendly environment.

The area can be easily distinguished into three main areas, the Residential Neighbourhood, the Station Plaza and Great Eastern Highway interface. The vision is further described in the following sections.

4.1.2.1 Residential Neighbourhood

The Residential Neighbourhood incorporates the majority of the residential development within the activity centre via the Centre Transition, Residential Core and School Interface sub-precincts, and is the focus for community life in the area. The area will comprise a variety of residential densities and housing typologies from townhouses and smaller scale apartment complexes to higher intensity apartment buildings (**Figure 54**).

The design of the residential neighbourhood has prioritised:

- Integration of built form with its surrounding context to consider and respond to adjacent existing and future built form, opportunities for integration with commercial development in mixed use areas and opportunities for views to the Swan River, Perth CBD and Darling Scarp;
- The provision of high quality living opportunities for future residents via the creation of a diverse range of dwelling types and sizes, the provision of well designed indoor and outdoor living spaces and integration of on site landscaping and communal open space; and
- The design of residential buildings to integrate with the public realm of the street and open space through built form and site design that promotes passive surveillance and interaction with the public spaces.



Figure 54: A broad range of residential development will be facilitated throughout the precinct, including medium density townhouses and smaller apartment complexes (top), larger apartment buildings (centre) and mixed use developments incorporating commercial and retail opportunities at ground level (bottom).

4.1.2.2 Station Plaza

The Station Plaza will be the central transit hub for the precinct and surrounding areas, as shown in **Figure 55**. The Station Plaza will be the major urban space in the precinct and will be the nexus of transit activity for the locality. The Plaza will accommodate the Redcliffe Station and the high frequency bus interchange that connects to the surrounding suburbs. The Station Plaza will provide a safe, vibrant public space surrounding the station, supported by active uses and pedestrian-friendly pathways connecting with the surrounding residential neighbourhood.

The key objectives for the development of the Station Plaza include:

- Optimisation of access from the new residential development and the existing residential neighbourhood;
- Activation of streets and pedestrian pathways around, and leading to, the Plaza;
- Provision of safe, direct and legible pedestrian and cycle connections with the residential neighbourhood and surrounding commercial precinct;
- Provide an engaging, vibrant public destination for workers and residents, and a setting for local convenience retail activity; and
- Minimising traffic impacts on Dunreath Drive by enhancing the boulevard with potential for on-street vehicle parking, abundant street trees, and safe pedestrian crossing opportunities.

The Station Plaza will incorporate the bus pick-up/drop-off area and 'Kiss and Ride' parking will be provided alongside. An at-grade 'Park and Ride' parking facility is located within the immediate walkable catchment.

Active uses such as retail, cafes, short-stay accommodation and commercial development are part of the vision for Station Plaza, providing activation of the public domain outside of business hours. Movement through the Station Plaza should have 24-hour access, promote activation and be family-friendly and safe.



NOTES

- 1 Major Station Plaza (3,000m²+) which provides direct physical and visual links between station entrance and key arrival points, and accommodates organised events and informal activity gatherings.
- 2 Western Gateway which forms the main arrival point for local residents and provides opportunities for outdoor dining areas and space for urban children's play features.
- 3 Joining space (15m wide) designed to safe, direct connection to the station entrance and accommodate north-facing outdoor dining areas.
- 4 Northern entry plaza designed to accommodate patrons arriving from the northern section of the precinct and facilitate activity from retail tenancies operating along the eastern edge.
- 5 Eastern gateway space, designed to form a pedestrian and cycle linkage between the station and the Airport West precinct

Figure 55: The urban design vision for the station plaza, incorporating indicative built form based on ideal development site configurations and identifying the key public realm outcomes envisioned.

4.1.2.3 Great Eastern Highway

The Great Eastern Highway interface will be a key opportunity for mixed-use development, taking advantage of the high exposure of this location and possible Swan River views.

Great Eastern Highway is currently an unappealing urban environment, and a key aim for this area is to provide better conditions for pedestrians, cyclists and businesses, by introducing street trees, improved footpaths, shared paths for cyclists and safe pedestrian crossings at the Tonkin Highway and Coolgardie Avenue intersections.

Mid-rise buildings are supported along the highway edge, with landmark taller buildings being proposed as an entry statement to the area, located at the beginning of the open space corridor to emphasise the arrival to the locality (Figure 56).

A key focus for the renewal of Great Eastern Highway is to establish a commercial front address for the activity centre precinct, with residential being provided within mixed-use developments. Parking areas will be located to the rear of development and service access ways (extending from Coolgardie Avenue to Boulder Avenue) will be provided to allow for easy access and egress of vehicular movements to and from the mixed-use sites.

Development along Great Eastern Highway will be positioned within a parkland setting, with

buildings setback from the highway and provided with a landscaped frontage, similar to the St John Ambulance building further to the west on Great Eastern Highway in Belmont. This will provide an attractive streetscape for the locality and complete the landscaped frame surrounding the residential neighbourhood.

NOTES

- 1 Mid rise buildings are supported along the highway edge, with landmark taller buildings proposed as an entry statement to the area at Coolgardie Avenue and the open space corridor.
- 2 Parking areas will be located to the rear of the development and service accessways will be provided to facilitate easier access and egress via side streets rather than via Great Eastern Highway.
- 3 Key entry points will be required to have active ground floor uses to provide amenity and activation to the corridor area and invite people into the precinct.
- 4 Improved pedestrian and cyclist crossings for Great Eastern Highway required to facilitate greater connectivity between northern residents seeking to access the precinct and precinct residents

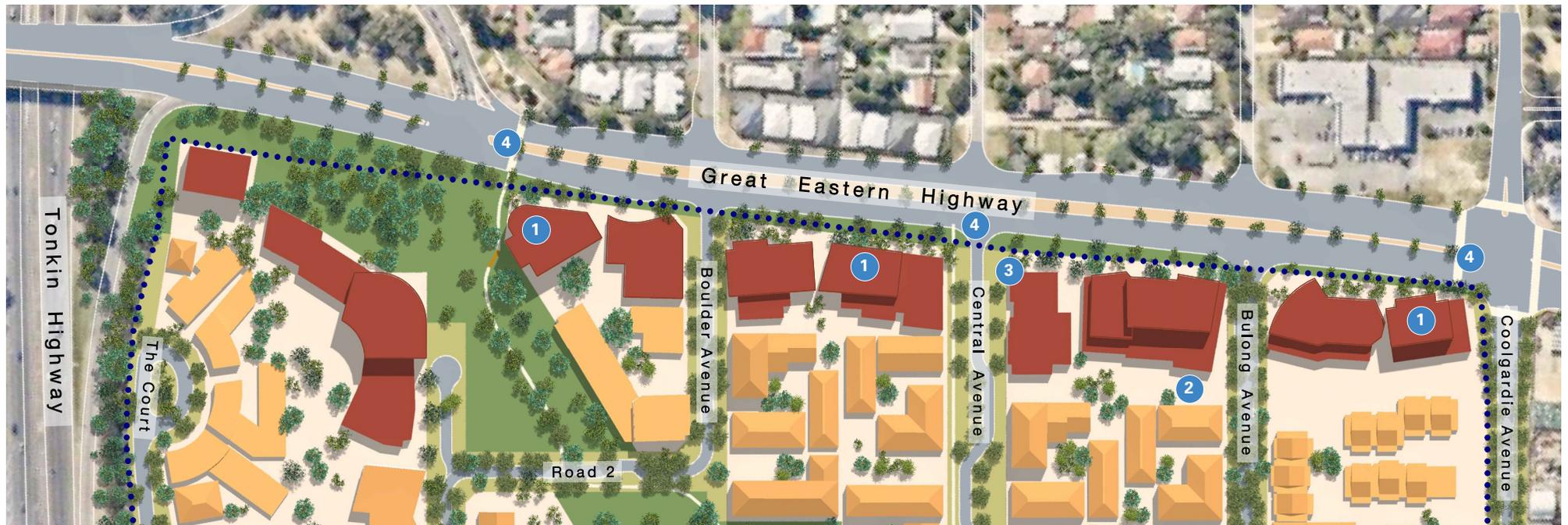


Figure 56: The urban design vision for the Great Eastern Highway interface, incorporating indicative built form based on ideal development site configurations and identifying the key public realm outcomes envisioned.

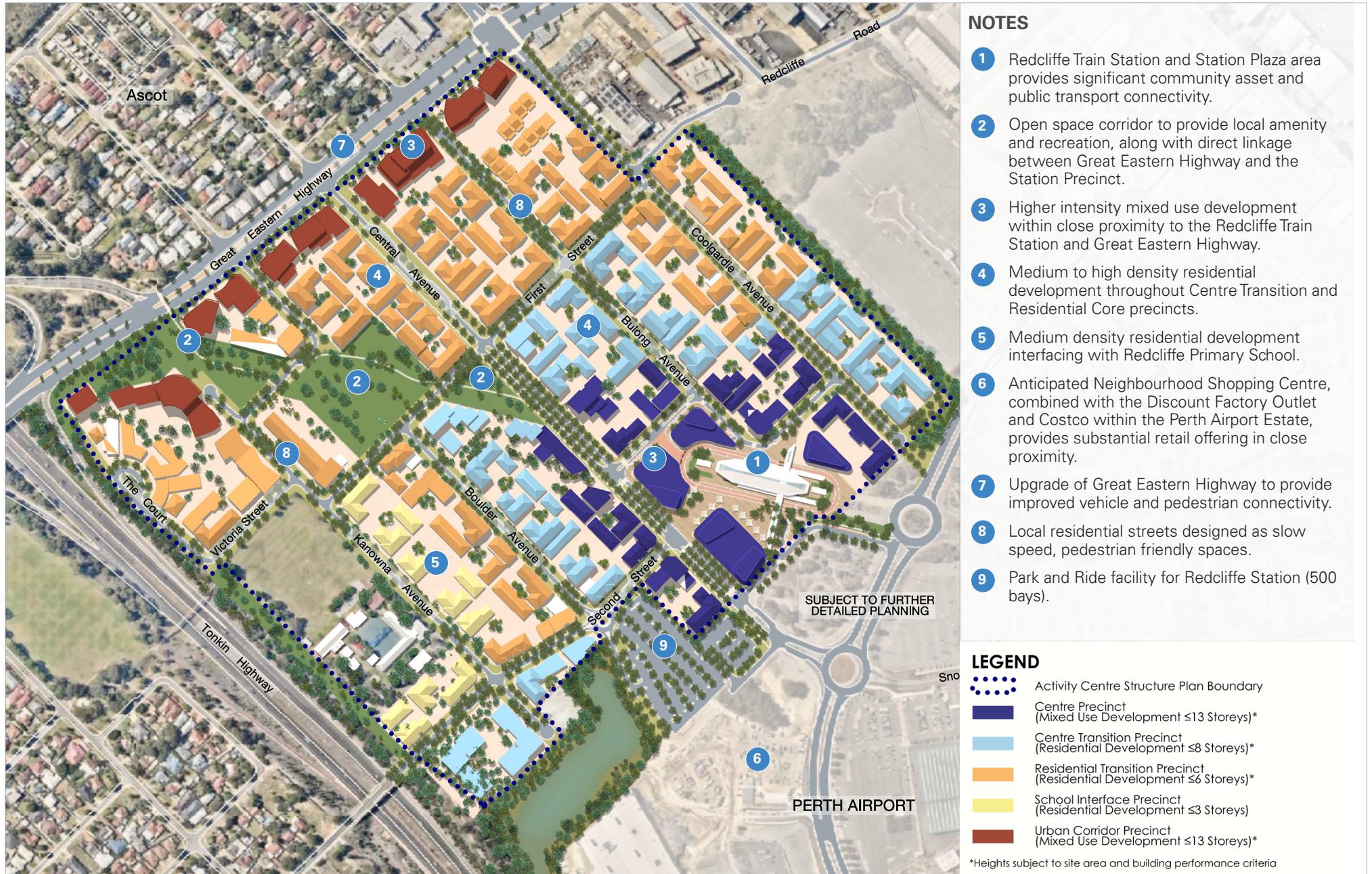


Figure 57: The urban design vision for the broader Activity Centre Plan precinct, incorporating indicative built form based on ideal development site configurations and identifying the key public realm outcomes envisioned.

4.1.3 OPPORTUNITIES AND ISSUES

As a component of preparing the vision for the urban structure of Redcliffe Station Precinct a range of opportunities and issues were analysed. The key issues and opportunities, and the way in which the ACP has responded, are outlined in **Table 24 and 25**.

Table 24: Key issues in achieving the urban structure proposed for the Redcliffe Station Precinct.

KEY ISSUES	ACTIVITY CENTRE PLAN RESPONSE
The current diversity of land uses within the precinct is limited to low density residential development which is not conducive to a modern transit oriented development.	The Activity Centre Plan will provide for a range of residential and mixed use densities aimed at facilitating redevelopment consistent with the vision of a medium to high density transit oriented development precinct.
Land ownership within the area is significantly fragmented and it will be challenging for developers to acquire sufficient land to facilitate redevelopment in accordance with the vision.	The City will work with landowners to facilitate amalgamation and cooperation to achieve the minimum site area and site frontage requirements through design assistance and guidance.
The financial viability of redevelopment is likely to be constrained in the short to medium term due to competition for similar housing product within other development precincts throughout the metropolitan area.	The Activity Centre Plan has been designed to ensure that minimum development standards are not unnecessarily onerous for developers within the precinct, but still provide for development which is consistent with the vision for the precinct.
The delivery of infrastructure within the precinct will require significant up front investment to ensure it occurs in a coordinated manner and does not constrain or inhibit redevelopment.	The City and State Government agencies will work together to prepare a comprehensive plan for cost-effective and timely delivery of the infrastructure required to support redevelopment of the precinct.
Public open space within the precinct is limited to small pocket parks adjacent the former Brearley Avenue reservation which are restricted in their usability and functionality.	The Activity Centre Plan proposes the integration of small pocket parks adjacent Brearley Avenue as more substantial and coordinated open space areas forming a corridor between Great Eastern Highway and the Station Plaza.
The current configuration of the Southern Main Drain restricts movement and provides an unattractive area of open space which divides the precinct.	The Activity Centre Plan proposes the integration of the Southern Main Drain as an urban stream running throughout a series of culverts and open space areas, providing for a more attractive and functional drainage network.
Accessibility to the precinct is limited to three primary access points only which may result in congestion during peak hour movements.	The City and State Government agencies will work together to ensure that the access/egress points are well designed to facilitate movement of residents and employees within the precinct, but limit the desirability of movement of commuters through the precinct to gain access to the regional road network or airport precinct.
The alignment of the underground rail corridor will result in limitations to building height along the corridor without additional engineering solutions.	The City will work with landowners within the area impacted by the rail corridor to fully understand the limitations on built form that may be put in place to protect tunnel infrastructure.

Table 25: Key opportunities in achieving the urban structure proposed for the Redcliffe Station Precinct.

KEY OPPORTUNITIES	ACTIVITY CENTRE PLAN RESPONSE
The delivery of a new underground train station will provide a significant catalyst for redevelopment of the precinct.	The Activity Centre Plan seeks to leverage off the investment of the new station by providing substantial opportunity for medium to high density mixed use development within the surrounding areas.
The closure of Brearley Avenue provides an opportunity to reconnect the precinct through the removal of a high volume of traffic and reconnection of open space and local roads.	The Activity Centre Plan proposes a range of local road connections and open space connections along the closed Brearley Avenue reservation, in addition to the creation of a small number of development sites adjacent open space.
There are significant mature trees located within the former Brearley Avenue reserve and the adjacent parkland that provide amenity for local residents and visitors.	The Activity Centre Plan proposes to retain a substantial number of the mature trees within the open space and road network to provide immediate and ongoing amenity to local residents and visitors.
Redcliffe Primary School is highly regarded as a local public school and will be a significant asset for families looking to live within the precinct.	The Activity Centre Plan proposes to retain the Redcliffe Primary School site as is, and ensures that built form adjacent and opposite the school site is sensitive to its continued operation.
Perth Airport Estate is a significant employment generator, and the redevelopment of the Airport West area will provide an increasing diversity of opportunities within walking distance of the Redcliffe Station precinct.	The Activity Centre Plan proposes to ensure that pedestrian and cycle connections to the Airport Estate are prioritised as this is likely to be a significant attractor of movements from the precinct in the short term, as a result of the retail development recently undertaken, and the long-term as opportunities continue to grow. This will occur through upgrades to all local roads to provide footpaths/shared paths to both sides of the street and cycle lanes on Central Avenue.
The proximity to major regional roads is highly beneficial to residents commuting to work provided connections to and from this network are efficient.	The Activity Centre Plan proposes to ensure that the access/egress points are well designed to facilitate movement of residents and employees to and from the precinct through ongoing monitoring of traffic volumes and upgrades where appropriate to prioritise local traffic movements whilst reducing the desire for 'rat-running'.
The precinct is in close proximity to regional recreation assets including the Swan River and Garvey Park.	The Activity Centre Plan proposes to ensure that connectivity for pedestrians and cyclists to the regional recreation assets on the northern side of Great Eastern Highway are prioritised as an infrastructure investment.
The majority of the residential built form throughout the precinct is of an age suitable for redevelopment.	The Activity Centre Plan provides for a broad range of residential development opportunities to capitalise on the increased value of land within the precinct as a result of the ongoing public infrastructure investment.

4.2 BUILT FORM

The built form provisions are divided based on the land use sub-precinct delineation outlined in Plan 2 and Table 1 of Part 1 and are comprehensively described in section 3.4.1 of Part 2. For the purpose of succinctness the sub-precinct delineation has not been repeated in this section. This section will instead focus on the individual elements that make up the built form controls as follows:

4.2.1 LAND ASSEMBLY

One of the critical elements to being able to achieve the built form vision is the need for land assembly within the precinct. The most common land parcel size throughout the precinct is in the order 800m²-1000m², which on its own may be suitable for redevelopment, but due to the narrow frontage (15m) and significant depth (50m+) provides a very constrained site for development proposals which exceed two storeys.

In order to address this issue and ensure that development is facilitated in accordance with the vision, the provisions of Part 1 require a minimum site area and width to undertake development. The minimum site area and frontage requirement is considered essential to:

- Achieve the level of residential density and mixed use intensity envisioned;
- Provide opportunity for more extensive open space, landscaping and built form setbacks; and
- Provide greater efficiency of built form across the site in comparison to developing several small sites.

The minimum site area requirement is set at 1,600m² with a minimum street frontage of 30m for the majority of sub-precincts, which will generally be achieved through the amalgamation of no more than two existing land parcels (Figure 58 and 59). There are some situations, however, where three or even four sites will be required to achieve the minimum site area and frontage requirements, to create a site of sufficient size to achieve the expected built form outcome or to ensure logical progression of development based on existing land use and development patterns, as shown in Figure 58 and 59.

To assist in identifying and managing the land assembly process the 'preferred amalgamation scenario' has been shown in Figure 59. This plan identifies one method of assembling land parcels to achieve the minimum requirements across the entire precinct without compromising any existing landowners ability to achieve the land assembly requirement.

In preparing a land assembly proposal as part of development landowners should consider this plan and, where seeking to deviate from the preferred scenario, assist the City in identifying alternative scenarios for the abutting land parcels to achieve the minimum requirements.

Part 1 also includes provisions which seek to restrict vacant lot subdivision or subdivision prior to gaining development approval which creates sites with an area less than the minimum lot size also, as this is considered counter-productive to the desire for land assembly and will only work to restrict the ability to achieve the expected built form intensity.



Figure 58: Preferred land assembly outcomes to meet the minimum requirements based on existing lot dimensions, the logical progression of development and existing land use and development patterns.

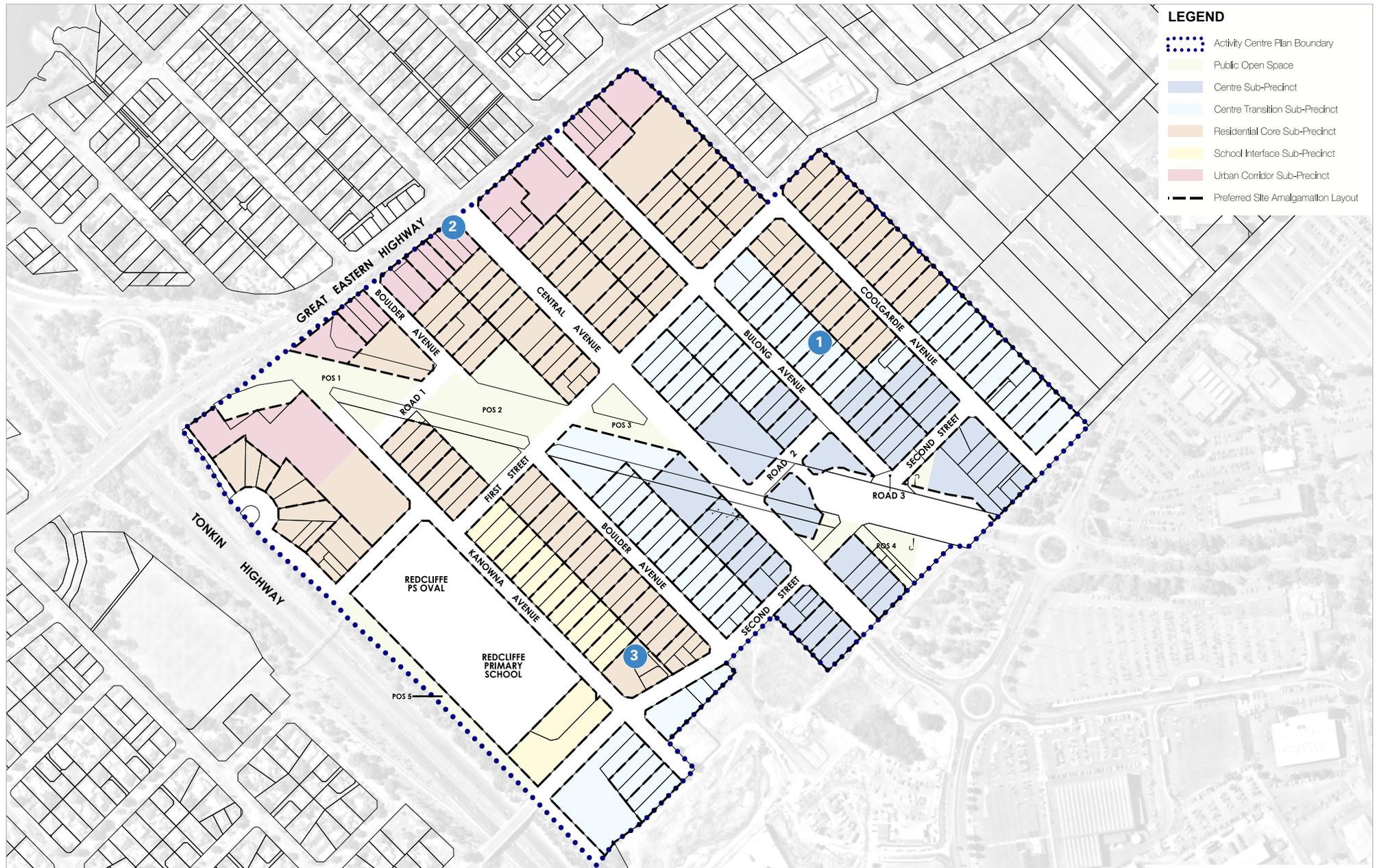


Figure 59: Preferred land assembly outcomes across the entire precinct to ensure that all landowners are able to achieve the minimum requirements.

4.2.2 BUILDING HEIGHT AND PLOT RATIO

Differentiation in building height and plot ratio throughout the ACP area is intended to:

- Assist in establishing the legibility of important places in the urban fabric;
- Support more intensive and diverse uses and activity in particular locations; and
- Ensure that existing and proposed community assets and areas of public realm are framed by built form at an appropriate scale and mass.

4.2.2.1 Minimum Building Heights

Minimum building heights are proposed to ensure that new development supports an urban interface with the street and contributes towards passive surveillance of the public realm. The minimum building height is only applicable to:

- The portion(s) of the building that front the primary street, such that the remaining frontage is available for gradation of built form to the minimum height and for site access and open space within the overall frontage width; and
- A minimum depth of 8m on the basis that this is the approximate minimum depth applicable to one dwelling unit.

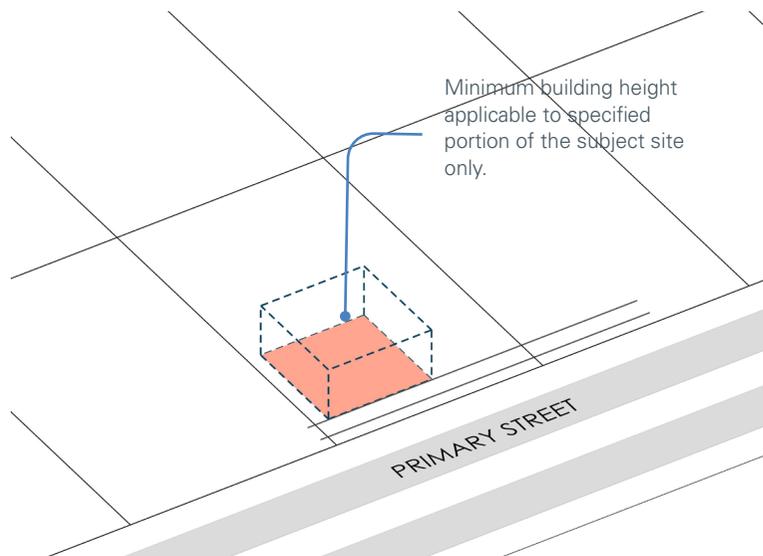


Figure 60: The minimum building height requirement outlined in Table 1 applies only to a minimum depth of 8m beyond the maximum primary setback line for the portions of building that front the primary street.

4.2.2.2 Maximum Building Heights and Plot Ratio

Maximum building heights and plot ratio are proposed to ensure that the ultimate built form design does not exceed a scale inconsistent with the vision of the sub-precinct and does not conflict with the scale of adjacent development.

The maximum building height and plot ratio is applicable:

- Within the building envelope created by the maximum height and the applicable site boundary setback requirements of **Table 1**;
- Subject to performance against the provisions of the *Redcliffe Station Precinct Design Guidelines*; and
- Subject to potential height and plot ratio bonuses outlined within clause 5.6 of Part 1 and further discussed in Section 4.2.7 of Part 2.

The application of building envelopes in the context of the maximum height, bonus height and boundary setbacks is outlined within **Figures 60 and 61**, and the overall maximum heights for each of the precincts is outlined within **Figure 62**.

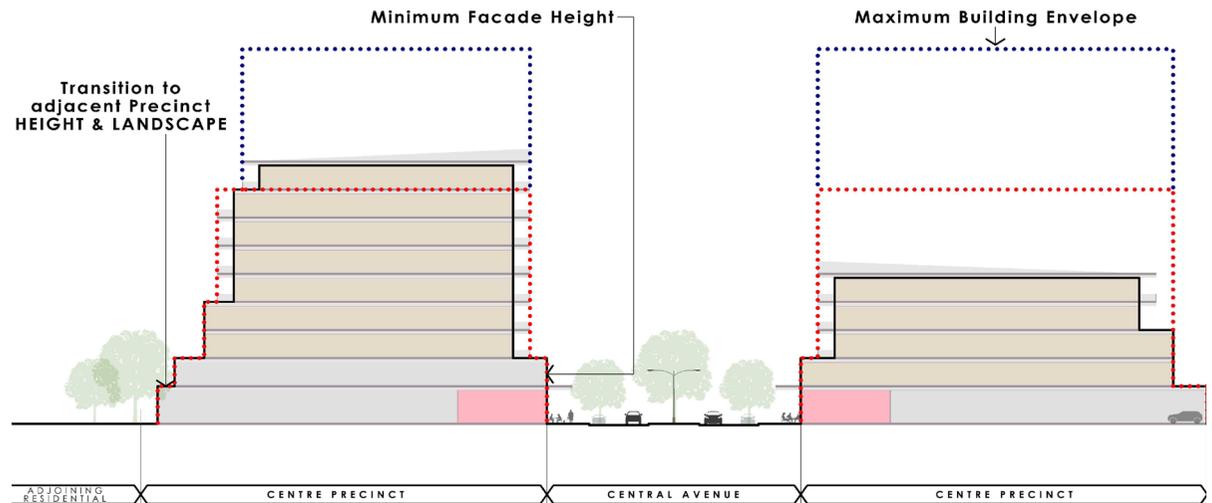


Figure 61: The maximum building height and required building setbacks impose a 'building envelope' for the purpose of new development.



LEGEND

Buildings up to ≤3 storeys

Buildings up to ≤6 storeys
(Possible bonus height to 8 storeys)

Buildings up to ≤8 storeys
(Possible bonus height to 13 storeys)

Buildings up to ≤4 storeys
(Possible bonus height to 6 storeys)

Buildings up to ≤8 storeys
(Possible bonus height to 13 storeys)

Figure 62: Outline of the maximum building heights within the precinct and indicative built form outcomes within the height limitations.

4.2.3 BUILT FORM SETBACKS

Built form setbacks are intended to control the bulk and scale of a building so as not to unreasonably impact on neighbouring landowners or occupiers and ensure that the building complements the streetscape character.

4.2.3.1 Primary and Secondary Street Setbacks

Primary and secondary street setbacks are differentiated based on the intended character of the differing sub-precincts and their relationship with the streetscape. Within the Centre and Urban Corridor sub-precincts, which are envisioned as areas of mixed use and higher intensity development, setbacks are established at a minimum of nil and a maximum of 2m at the ground level to facilitate buildings directly interfacing and framing the public realm, with the requirement to provide awnings and shade/shelter for the public realm. Development above two storeys is to be setback a minimum of 4m to ensure the scale of buildings within these precincts is not too imposing on the streetscape. These setbacks will be varied where publicly accessible private open space (PAPOS) is provided to ensure the built form can respond appropriately to the open space area.

Within the Centre Transition, Residential Core and School Interface sub-precincts, which are envisioned as residential areas of differing scale, the primary and secondary street setbacks are more generous to provide private space between the street and building and support landscaped areas which positively contribute to the streetscape.

4.2.3.2 Side Boundary Setbacks

Side boundary setbacks for all buildings are to generally be in accordance with those stipulated in the Residential Design Codes Volume 1 (Single and Grouped Dwellings) and Volume 2 (Apartments) as amended, inclusive of mixed use developments.

Whilst stand alone commercial developments are not generally supported by the provisions of the ACP, setbacks for such a development will be considered based on their surrounding context and the likely impact on existing and potential adjacent development.

4.2.3.3 Rear Boundary Setbacks

Rear boundary setbacks for all buildings are directly responsive to the proposed height of the building, with a gradation of setbacks required depending on the proposed building height (**Figure 58**). This gradation is proposed to minimise the impact of building height on the rear neighbouring property, and is particularly important in situations where the rear boundary is the transition point between land use precincts.

For the majority of precincts a ground level minimum setback of 2m with an average setback of 4m is required to provide opportunities for adequate deep soil areas, as this will assist in softening the interface between rear neighbours and provide open space areas for the

enjoyment of future residents. The setback area is to be identified as common property for the purpose of strata-subdivision, and is to be designed in accordance with the guidance provided by the *Redcliffe Station Precinct Design Guidelines*.

Within the Urban Corridor sub-precinct, however, the ground level setback is identified as a minimum of 6m to accommodate shared access arrangements for lots fronting Great Eastern Highway. The standards for development of this access arrangement are further outlined within the Redcliffe Station Precinct Design Guidelines.

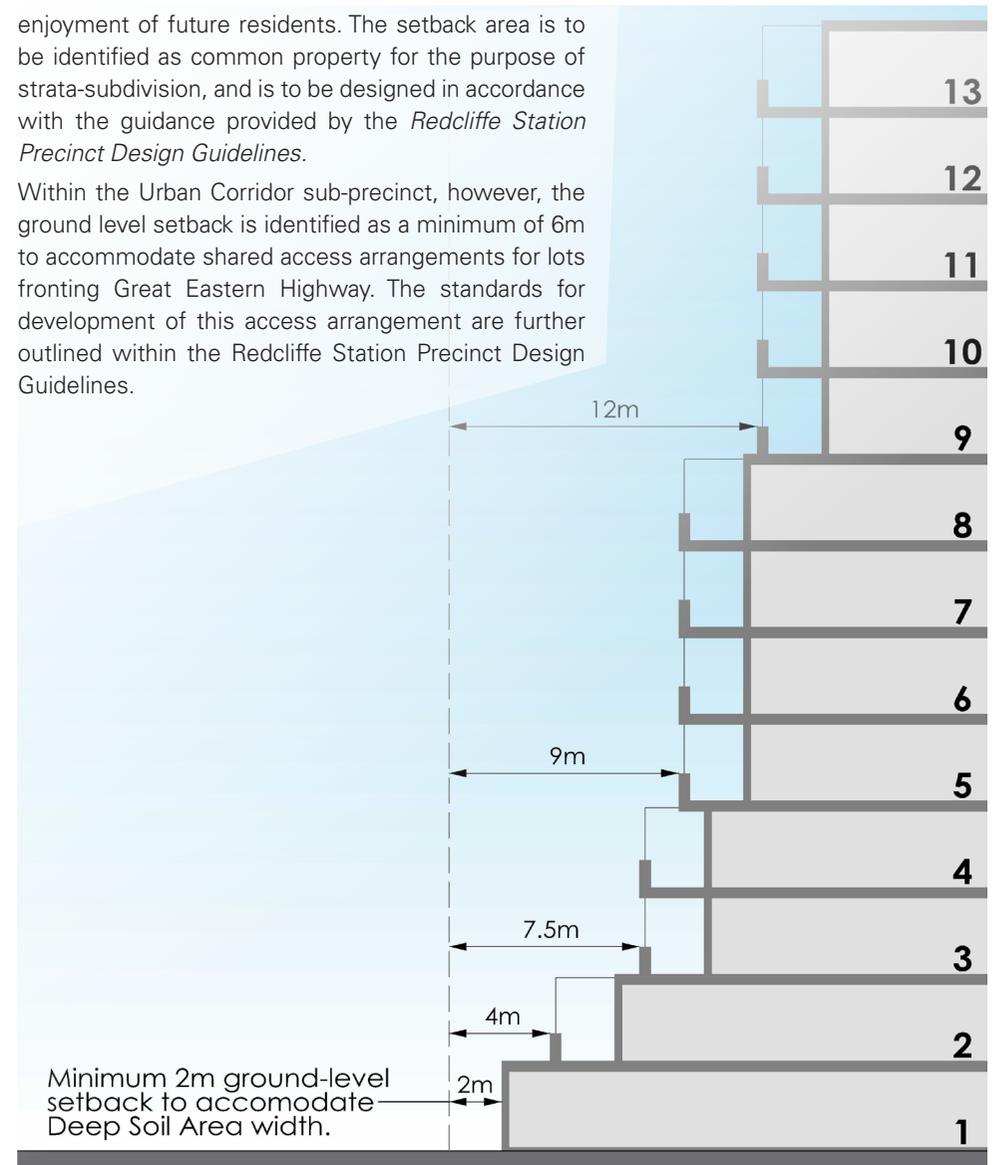


Figure 63: Proposed rear building setback arrangement based on building height and the requirement for deep soil zone at ground level for the majority of sub-precincts.

4.2.4 ACTIVE AND ADAPTABLE SPACES

4.2.4.1 Active Frontage Requirements

The Active Frontage Requirements outlined in Part 1 (section 3.3.1 and **Figures 9 and 13**) have been identified to ensure that street activation of these locations is required as a component of development.

The identified areas are considered to be the highest priority in terms of activation due to their status as key entry points to the precinct or key entry points to the station plaza, and landowners will need to work with the City to ensure that the land use response to public infrastructure investment is appropriate and facilitates the desired outcomes.

Section 3.3.2 identifies a range of uses considered to be 'active' for the purpose of the Activity Centre Plan, generally focussing around retail, community, food and beverage and other hospitality and entertainment uses (**Figure 64**).

The list outlined in 5.3.3.2 is not considered exhaustive, and the City may consider uses not listed as 'active' based on the applicants justification and the further design considerations outlined within the *Redcliffe Station Precinct Design Guidelines*.

4.2.4.2 Adaptable Ground Floor Requirements

Whilst activation of street frontages throughout the precinct is desirable it is anticipated that demand for commercial and retail floor space is likely to be slow in the early stages of development, until such time as a sufficient residential catchment is achieved to increase demand for local goods/services and employment.

To ensure that landowners are not unreasonably burdened by a requirement for the creation of commercial and retail spaces which are not economically viable a requirement for 'adaptable ground floor' areas has been included in the ACP.

The requirement applies to all lots fronting key streets identified with the annotation 'adaptable ground floor area required' on **Figure 9** in Part 1 of the ACP, and requires the incorporation of a minimum finished floor to ceiling height of 4m to provide flexibility to accommodate a variety of commercial or retail uses within the ground floor into the future (**Figure 65**).

Further guidance on the design of adaptable ground floor areas is provided by the *Redcliffe Station Precinct Design Guidelines*.



Figure 64: Active land uses are to generally focus on retail, community, food and beverage and other hospitality and entertainment uses.

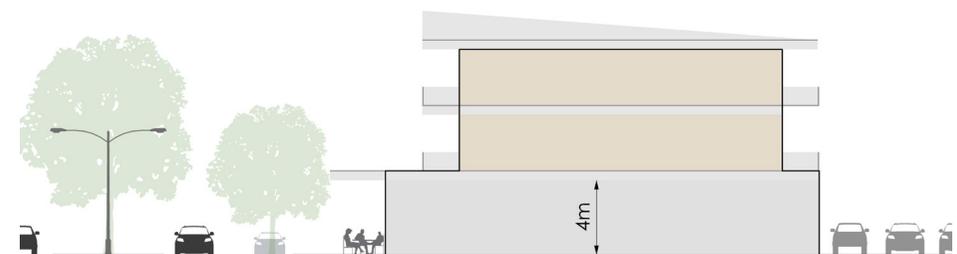


Figure 65: The minimum floor to ceiling height is 4m for the ground floor of development within areas annotated as 'Active Frontage Required' or 'Adaptable Ground Floor Required' in **Figure 9** and **Figure 13** of Part 1.

4.2.5 BUSHFIRE CONSIDERATIONS

A portion of the subject site is identified as Bushfire Prone on the WA Map of Bush Fire Prone Areas (DFES, 2019), (refer **Figure 66**) and has been identified on Plan 1 of Part 1 of this ACP.

A BMP is required to be prepared to identify the bushfire protection measures to be applied to subdivision and development on the subject site to accommodate compliance with:

- State Planning Policy 3.7 Planning in Bushfire Prone Areas (SPP 3.7);
- Guidelines for Planning in Bushfire Prone Areas; and
- Australian Standard for the construction of buildings in bushfire-prone areas (AS3959-2009).

The purpose of the BMP is to:

- Provide guidance on how to plan for and manage the bushfire risk to future life and property assets of the project area through implementation of a range of bushfire management measures;
- Outline how future on-site assets can be protected during the summer months when the threat from bushfire is at its peak, particularly when existing fire appliances in the area may be unable to offer an immediate emergency suppression response and therefore, development planning and design should aim to provide mitigation strategies that protect future life and property from bushfire as a priority; and
- Achieve consistency with the objectives and requirements of the current bushfire risk management planning regulations, policy and guidelines.

A BMP will be prepared for this precinct prior to finalisation of the formal draft of this ACP.

As the precinct is an inner urban area with reticulated water supply and a high degree of permeability in the event of an emergency, it is not anticipated that the BMP would require anything beyond the potential for an increased construction standard under AS3959.

Given the majority of the bushland identified as a potential hazard sits within the Tonkin Highway reservation, which is identified as subject to change as a result of the highway upgrade proposal, the excision of reservation land for the purpose of creating Public Open Space 5 and the potential development of land abutting the Stanton Road bridge, the risks associated with bushfire may be mitigated through removal of some vegetation or reduction of fuel loads, which will assist in minimising any additional bushfire planning requirements on landowners within proximity.

4.2.6 NOISE CONSIDERATIONS

Special Control Area 2 has been included on Plan 1 of Part 1 of this ACP (and is also identified in **Figure 66**) to identify where an assessment is required against the provisions of *State Planning Policy 5.4: Road and Rail Noise* (SPP5.4).

The Special Control Area has been defined based on the trigger distances identified in SPP 5.4. The purpose of the further assessment is to identify the impact of traffic noise from Great Eastern Highway and Tonkin Highway, along with rail noise from the Redcliffe Train Station, on sensitive land uses and/or development, by addressing site-specific criteria including topography and natural environment; existing and proposed built environment; and site-specific noise mitigation measures.

The noise assessment will include a noise exposure forecast to provide an estimate of the potential noise impacts on noise-sensitive land-use and/or development within Special Control Area 2.

Where it is determined that noise impacts on noise-sensitive land-use and/or development within Special Control Area 2 is likely, then a noise level contour map is required to illustrate the likely noise levels and associated noise exposure categories.

If the noise level contour map identifies that no part of the site is estimated to be affected by noise levels above the criteria, no further measures are required, otherwise a noise management plan is required to outline the proposed noise mitigation measures.

To inform further requirements for landowners, a noise exposure forecast analysis will be undertaken for the precinct prior to the final formal draft of this ACP.

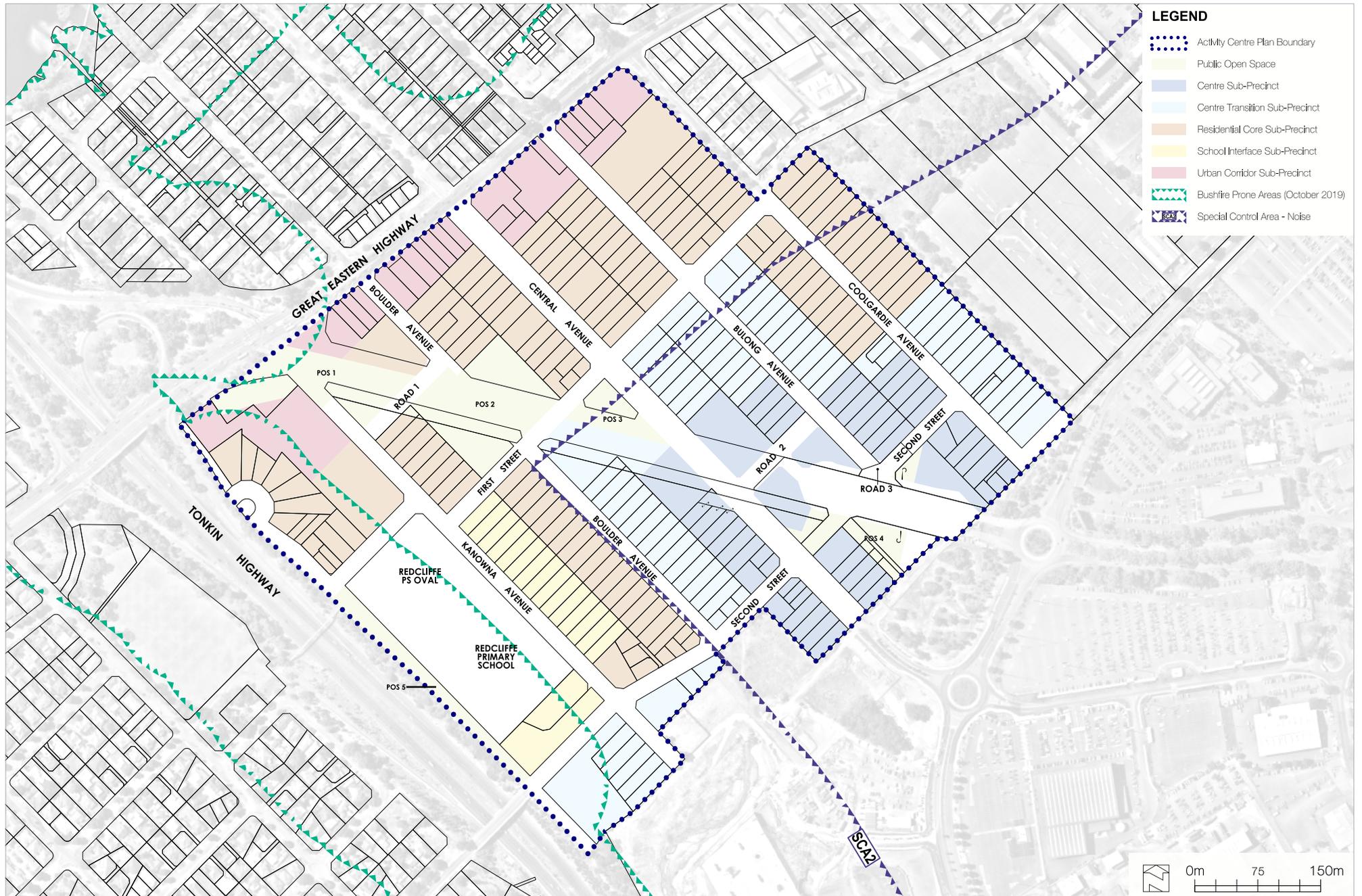


Figure 66: Special Control Areas for Bushfire and Noise Considerations.

4.2.7 DEVELOPMENT BONUSES

Part 1 of the ACP provides for development bonuses in the form of additional building height and additional plot ratio above the otherwise specified maximum limits.

The development bonus shall only be applicable to a site at the discretion of the determining authority where an applicant can demonstrate that a proposal meets one or more of the criteria in the following sections.

The extent of the bonus height and/or plot ratio granted will be dependent on the scale of the proposed development, scale of additional bonus sought, and the extent of public benefits provided by the proposal, at the absolute discretion of the determining authority.

4.2.7.1 Publicly Accessible Private Open Space

The precinct plans outlined in Part 1 identify preferred locations for Publicly Accessible Private Open Space (PAPOS) as a component of development proposals (Figure 67).

PAPOS are encouraged in the general vicinity of the locations shown on the Centre sub-precinct plan (Figure 9) and the Urban Corridor sub-precinct plan (Figure 13). In order to be considered as a sufficient community benefit for the purpose of justifying bonus building height or plot ratio a PAPOS must comply with the requirements outlined in Part 1.

These areas are intended to provide a meaningful contribution to the open space and public realm throughout the precinct and be directly usable by the broader public. In designing the open space areas provision should be made for:

- High quality interfaces between the built form adjacent to the public open space through appropriately active uses (restaurants, cafes, community uses, etc);
- Awnings and other shelter to provide shade and shelter;
- Alfresco eating areas adjacent the open space; and
- Substantial landscaping to provide a high level of amenity.

These considerations are further outlined in **Figure 67** and will be further guided by the *Redcliffe Station Precinct Design Guidelines*.

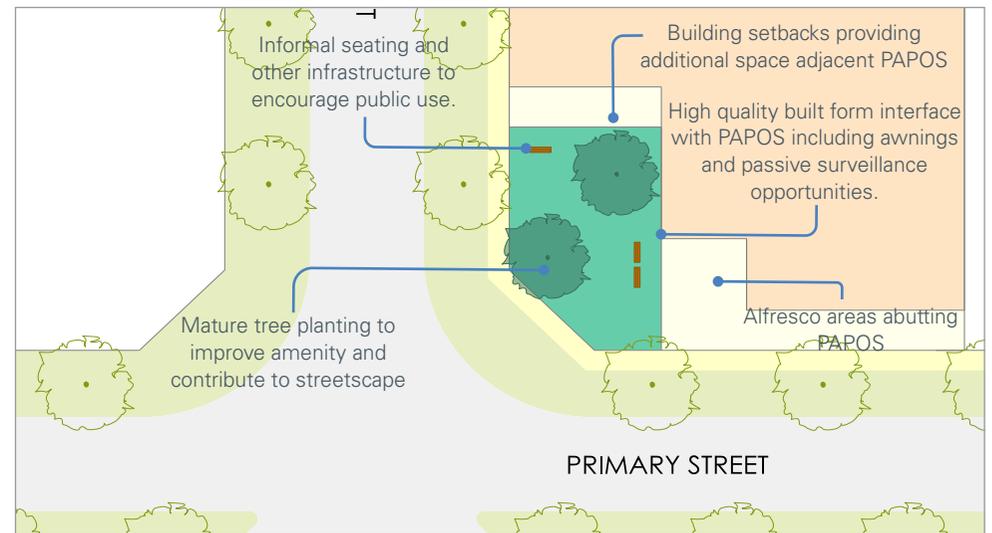


Figure 67: Examples of publicly accessible private open space (PAPOS) envisioned to occur within the vicinity of the locations shown in Figure 8 and Figure 12 in exchange for height and plot ratio bonuses.

4.2.7.2 General Community Benefit

Bonus building height and/or bonus plot ratio may be granted for a proposal which provides for the development of a use or facility which can be demonstrated as sufficiently beneficial to the broader community (**Figure 68**).

Such uses or facilities may include the following, subject to use permissibility and site/built form design requirements:

- The provision of a dwelling type identified as a priority such as aged and dependent dwellings, one-bedroom apartments, key-worker dwellings or other innovative housing models to meet demand;
- The provision of affordable housing in collaboration with the State Government or not for profit housing provider;
- Retention of an existing large tree or planting of a large tree in accordance with the requirements of SPP7.3 - Volume 2;
- Dwellings to meet universal design requirements to:
 - a minimum Platinum level for 20% of all dwellings proposed; or
 - a minimum Silver Level for 40% of all dwellings proposed.

In accordance with the *Liveable House Design Guidelines* (Liveable Housing Australia).

- A commercial use with wider community benefits such as a child day care centre, after school care, educational establishment or other use having wider community benefits;
- Visiting cyclists' end-of-trip facilities including secure bicycle storage facilities, change rooms, clothes lockers and showers, for use by visitors to the proposed building;
- One or more facilities such as a shared office space, meeting room, boardroom, function room or lecture theatre available for use by external community groups, small businesses or individuals;
- A dedicated room for use as a community exhibition gallery for display of artworks or for other exhibitions; or
- Any other use and/or facility which can be demonstrated as providing a broader community benefit.

Alternatively proponents may identify community infrastructure upgrade(s) within the abutting or surrounding public realm that they may undertake as an in kind contribution in exchange for a building height or plot ratio bonus, or provide a cash contribution to the local government for such community infrastructure in lieu of the in kind provision.

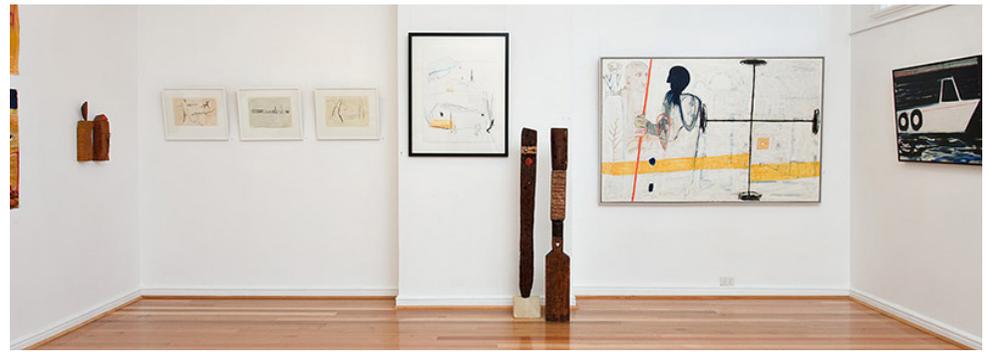


Figure 68: General Community Benefits are identified as land uses and/or facilities that are of benefit to the broader community, and may include uses such as end of trip facilities (top), gallery or exhibition space which is made available for the use of the broader public (centre) and/or shared office space (bottom).

4.3 STREET INTERFACE

The paths and public access through the Redcliffe Station Precinct will undergo significant improvements of their spatial characteristics, safety, walkability, legibility, and landscape treatments. Of most importance are the improvements to connectivity, particularly along the Brearley Avenue alignment. Now decommissioned, the old road corridor, which was a physical barrier that divided pedestrian movement, can become the main pedestrian connector. It is also important to retain and accommodate the needs of pedestrians and cyclists, with special consideration to the Swan River and future employment and activity on the Airport Estate.

Specific attention will be given to appropriate street lighting, signage and public realm requirements on these paths.

Trees should dominate the streetscape, providing protection and shelter along all streets. Road hierarchies and overall legibility of the precinct will be reinforced by the type of tree planting associated with the scale of the road. The paving in all streets and roads will be consistent with the material palette of the Parkland Network reinforcing a distinctive character of this place.

Large existing mature trees along Brearley Reserve should be respected and retained where possible. These existing mature trees currently provide a strong vibrant green canopy and should be supplemented by further regular street tree planting in existing and new streets to form a consistent theme and relief throughout the area. Trees should be the dominant green landscape providing shade shelter and softening building height and scale.

Objectives

- Improve connectivity of vehicle, pedestrian and cycle movement through the residential neighbourhood;
- Provide a safe, enjoyable, well connected pedestrian network to key destinations;
- Evenly-distributed, slow-speed and easy to navigate traffic movement within residential neighbourhood;
- Pedestrian and cycle links should be direct and legible from the wider urban context to the Redcliffe Train Station and Station Plaza; and
- Create urban tree canopy, in compliance with The City of Belmont's Urban Forest Strategy (2014) and Street Tree Plan (2017).

4.3.1 30M WIDE STREETS (BOULEVARD)

Central Avenue will form a major transport corridor through the site, with vehicle lanes, cycle lanes, and key pedestrian paths. The Central Avenue Boulevard provides a major link from Dunreath Drive into the precinct, and will facilitate bus route connections to the Redcliffe Train Station.

Whilst Central Avenue will be largely vehicle dominated, the landscape aesthetic will be dominated by tree planting of larger species, creating a canopy along its length.

Verge and median planting will create a formalised corridor of canopy trees that are recognisably different to the scale and nature of other streetscapes in the precinct, as shown in **Figure 69**.

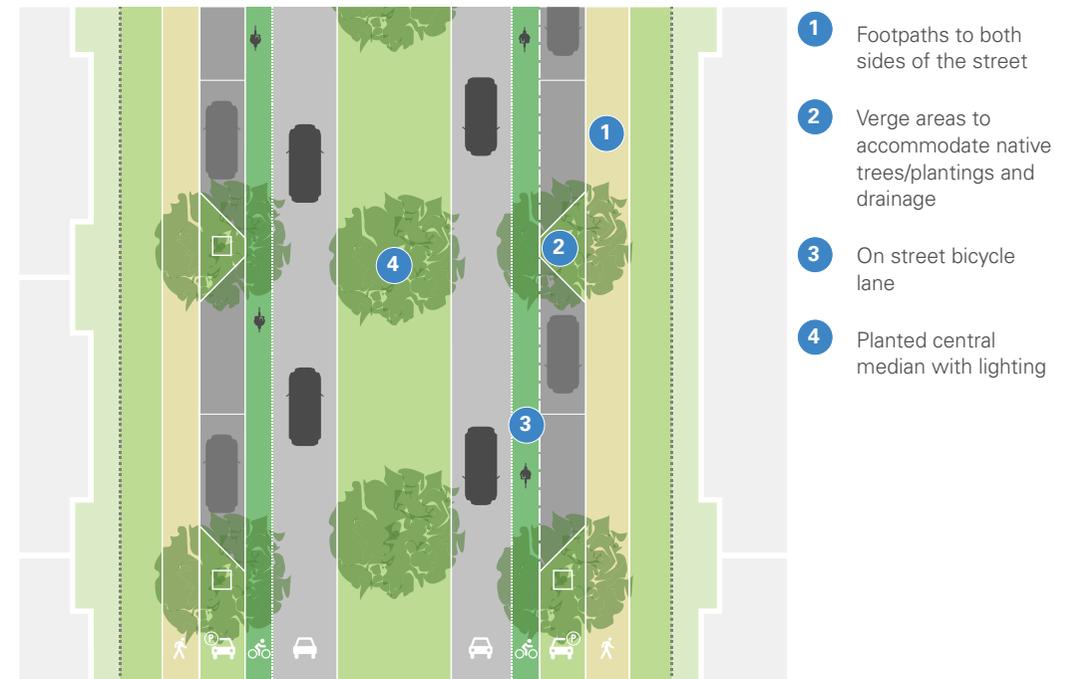


Figure 69: Indicative concept design for landscaping and movement network for Central Avenue Boulevard (30m wide road reserve).

4.3.2 20M WIDE STREETS

The existing 20m wide streets will be designed as slow speed pedestrian-friendly spaces. Spatial capacity within the road corridor will support the integration of drainage swales / rain gardens, and tree retention where possible. Substantial mixed tree planting will form pockets of dynamic and varied canopy to create a shady and attractive streetscape environment (Figure 70).

Corners and junctions provide opportunities for multi-functional urban elements. Integrated drainage swales / rain gardens, street trees, street furniture and incidental public art make an important contribution to the character and vibrancy of the public realm and should be encouraged to maximise and activate these spaces.

At key intersections and linkages between public spaces, paved road treatments and raised crossings and road platforms form integrated traffic calming devices which blend with adjoining public realm treatments, facilitating slow speed pedestrian-friendly street spaces and contributing to the creation of a high quality and attractive urban environment.

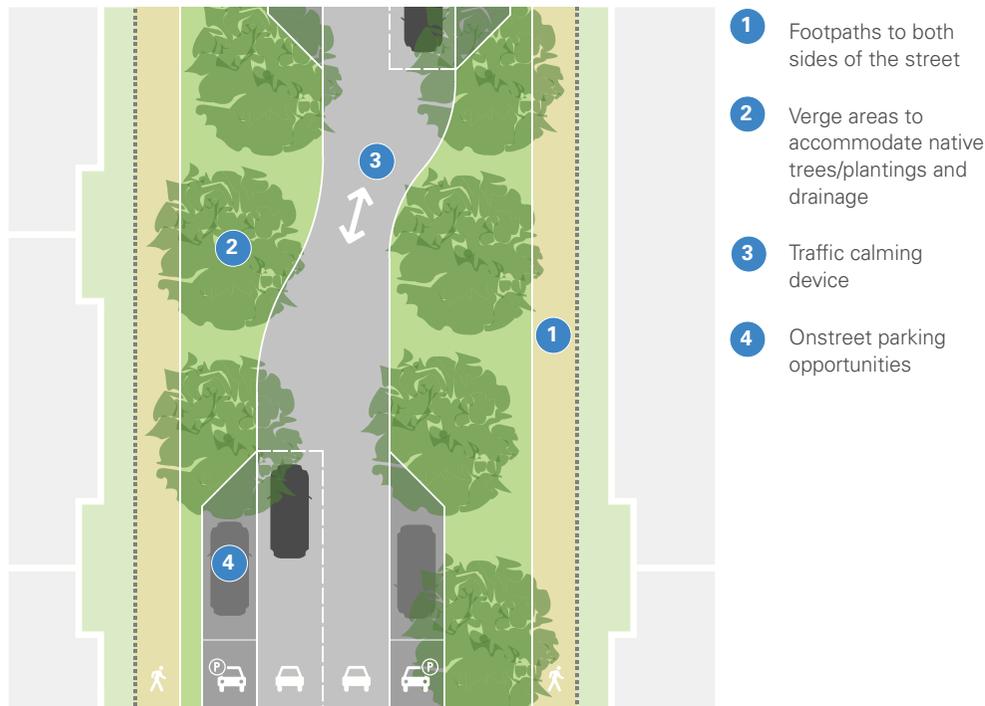


Figure 70: Indicative concept design for landscaping and movement network for 20m wide streets.

4.3.3 STREET DESIGN

Intervention in the street design helps to establish overall legibility, defining the character of the precinct, hierarchy of streets and spaces, and an enhanced urban appearance.

4.3.3.1 Roads and Crossings

Roads will utilise a conventional asphalt material treatment as is appropriate for the location and economics of the development. Paving highlight treatments at locations such as pedestrian crossings and key intersections will introduce an element of interest and will emphasise the overall precinct character. Paving detailing can be used to provide traffic calming and to add texture to the urban streetscape reinforcing a character that promotes pedestrian safety (Figure 71).

Cycle lanes throughout the site will be red asphalt except where they are incorporated into areas of feature pedestrian paving where colour differentials will relate to paving patterns, and if necessary, lanes defined by studs. Paving material changes will be used to accentuate areas such as major pedestrian road crossings, civic areas and hazards. Parking bays should be differentiated from the road reserve through the use of alternative paving treatments.

The materials used for road pavement and car bays can assist with drainage management within the area. This may include the use of permeable paving and/or porous brick paving and/or porous asphalt. These materials can play a significant role in managing drainage in a water sensitive manner and where 'soft' open space is not an extensive feature of this location.



Figure 71: Images of road and intersection treatment styles envisioned for the precinct.

4.3.3.2 Street Trees

Street trees have an important role in the urban environment, improving microclimate and urban heat sink characteristics, reducing stormwater runoff rates and contributing to the character and qualities of neighbourhoods.

The precinct has a substantial amount of large existing trees, predominantly focused along the Brearley Avenue road corridor. This reinforces the importance and value of positioning open space areas along this alignment which in turn provides the opportunity for extensive tree retention to create public open spaces that have an abundance of shade, a feeling of instant maturity, and retained natural character (**Figure 72**).

Trees should align with the vision and targets of the City of Belmont Urban Forest Strategy (2014), with the aim to maximise tree canopy coverage, which will result in a range of benefits to the precinct and its residents which can include enhanced local environments and micro climates through cleaner air, reduction in heat sink effect, reduced stormwater runoff, and improved mental wellbeing and physical health.

Street tree species should relate to the scale and height of built form and streets, and be selected in accordance with the City of Belmont Street Tree Plan (2017).



Figure 72: Images of street tree integration envisioned for the precinct.

4.3.3.3 Paths and Surfaces

Pedestrian paths and hard urban spaces provide opportunities for economic use of enhanced surface treatments, to highlight the importance of the pedestrian path network and emphasise the overall precinct character (**Figure 73**).

Paving treatments such as insitu exposed aggregate concrete and unit paving will be strategically arranged to highlight connections and spaces, complementing the associated gardens, street furniture and other park infrastructure.



Figure 73: Images of paths and urban spaces envisioned for the precinct.

4.3.3.4 Street Furniture and Public Art

Street furniture should be a consistent and complementary suite across the site, urban in style and incorporating a balance of comfort and aesthetic qualities. The suite of street furniture will contribute to the overall character and presentation of the precinct public realm.

Street furniture should be located where it can function as more than a single use. For example, seats and benches should be located in a manner to restrict undesired errant access to protect and guide pedestrians as well as performing their obvious use. All furnishing will be from the same suite so that bicycle storage, seats and bollards are seen as one cohesive design style. Smart Furniture to be considered for maintenance monitoring and integration of technologies such as power supply and WiFi.

Public art should be introduced in key locations to enhance spaces, add to the community enjoyment of a space and have a significant role to play within the Precinct. Public art can be of a scale that in itself is a focal point of interest, defining character and being a reason for space. Public art can also be an intimate smaller installation that relates to people when using areas of rest and repose, such as seating areas. The creation of 'place' can be enhanced through a sense of identity provided by the artworks. The creation of identifiable landmarks that can be observed and experienced as both a pedestrian and vehicle user can aid in legibility of the development. Importantly, in this location, creative installations could interpret the cultural and historic narrative of the area and enable strong connections with its context.

4.3.3.5 Lighting

Lighting must be designed in accordance with airport restrictions, and best practise design should be applied in respect of minimising light pollution and energy consumption. The public realm should feature smart lighting that responds to usage, enhancing safety and engagement while reducing energy consumption. Lighting within the station precinct should explore the opportunity of being an urban feature to provide a distinctive place at night.

4.3.4 DRAINAGE DESIGN

The use and promotion of Water Sensitive Urban Design (WSUD) techniques and approaches are to be utilised wherever possible throughout DA6. The space for nutrient stripping is limited through the streetscapes however as the urban area is not expected to produce a large nutrient load the focus is on slowing runoff and reducing hydrocarbons.

The use of linear and incidental 'rain gardens' and 'nutrient sinks' can be implemented discretely within paving in street verges and medians, and open space. These devices should be fully integrated with the road drainage promoting passive irrigation of street tree vegetation and controlling hydrocarbon runoff (**Figure 74**).

Within the context of the dense urban areas, the design of these WSUD devices need not be natural in appearance but can be incorporated within the urban public realm infrastructure as contemporary features which will passively irrigate trees and other vegetation.

The use of permeable pavements and porous asphalt treatments in key locations possibly associated with lower level threshold treatments of road junctions, should be incorporated as a component of the approach to integrated drainage management.



Figure 74: Images of integrated road drainage envisioned for the precinct.

4.4 PUBLIC SPACES

The provision of high quality public spaces is an essential component of the vision for the ACP. The following sections outline the proposed network of open space and the design and functionality of these spaces.

4.4.1 PUBLIC SPACE CONSIDERATIONS

As a component of the identification of local open space opportunities a review of the open space network within the precinct and within the surrounding region was undertaken.

4.4.1.1 Local Open Space Opportunities

In identifying the expansion of open space areas there are a variety of different opportunities that were considered, including:

- **Utilisation of redundant Brearley Avenue reservation land for open space purposes:** This was identified as the preferred option, as the existing parklands sit adjacent the Brearley Avenue reservation, which provides opportunity for expansion and connection of these small spaces to create much larger open space areas;
- **Utilisation of other State Government owned land within the precinct:** This was considered to be a good opportunity where the spaces were well located and of a size suitable for open space and recreational uses; and
- **Acquisition of privately owned land within the precinct for open space purposes:** This was considered to be a difficult scenario, due to the relatively small lot sizes and lack of coordination of land ownership, would require the acquisition of multiple landholdings at significant cost.

On the basis of the above the preferred local open space scenario was identified, accommodating a mix of open space expansion into the Brearley Avenue reservation and reuse of land currently accommodating the Southern Main Drain. These open space areas are further outlined in sections 4.4.2, 4.4.3 and 4.4.4.

4.4.1.2 Additional Open Space Opportunities

In considering other local open space options there are a number of opportunities suitable for further consideration subject to negotiation with the owners/caretakers of these sites, including:

- **Redcliffe Primary School:** As outlined in section 3.4.4.2 there is an opportunity for the future shared use, management and maintenance of the Redcliffe Primary School oval as open space, subject to an agreement between the school, Department of Education and the City of Belmont regarding access arrangements, exclusive use rights and ongoing maintenance;

- **Perth Airport Southern Main Drain Basin:** The redesigned southern main drain basin to the south of Kanowna Avenue has the potential to offer significant amenity both to visitors of the airport's commercial precinct and to residents within the ACP area. Any improvements to the foreshore of the basin require further consideration and planning by Perth Airport and will be subject to separate approval processes; and
- **Perth Airport Redcliffe Road Bushland:** There is an existing area of bushland within Perth Airport Estate to the north of the ACP precinct abutting Redcliffe Road. Improvements to this space may provide additional passive recreation opportunities for residents and visitors to the area, subject to further consideration and planning by Perth Airport and subject to separate approval processes.

The City of Belmont will continue to work with key stakeholders in progressing opportunities for these sites, and are shown spatially in **Figure 75**.

4.4.1.3 Regional Open Space Connectivity

As outlined in Section 2, there are extensive regional open space areas within a 10 min - 12 minute walk of the subject site, including Selby Park to the southwest and the Swan River Foreshore, Ayres Bushland and Garvey Park to the north.

To ensure that future residents are able to take greater advantage of these assets it is of critical importance to improve connectivity through:

- Provision of an improved local pedestrian and cycle network to encourage residents to use non-motorised transport to move through the precinct;
- Retention of existing pedestrian and cycle connections across Tonkin Highway at the Stanton Road bridge and First Street pedestrian bridge; and
- Delivery of dedicated pedestrian crossing points across Great Eastern Highway in addition to those provided at signalised intersections as a component of the highway upgrade, including pedestrian underpasses or overpasses at key points.

These measures are further considered in **Section 6**.

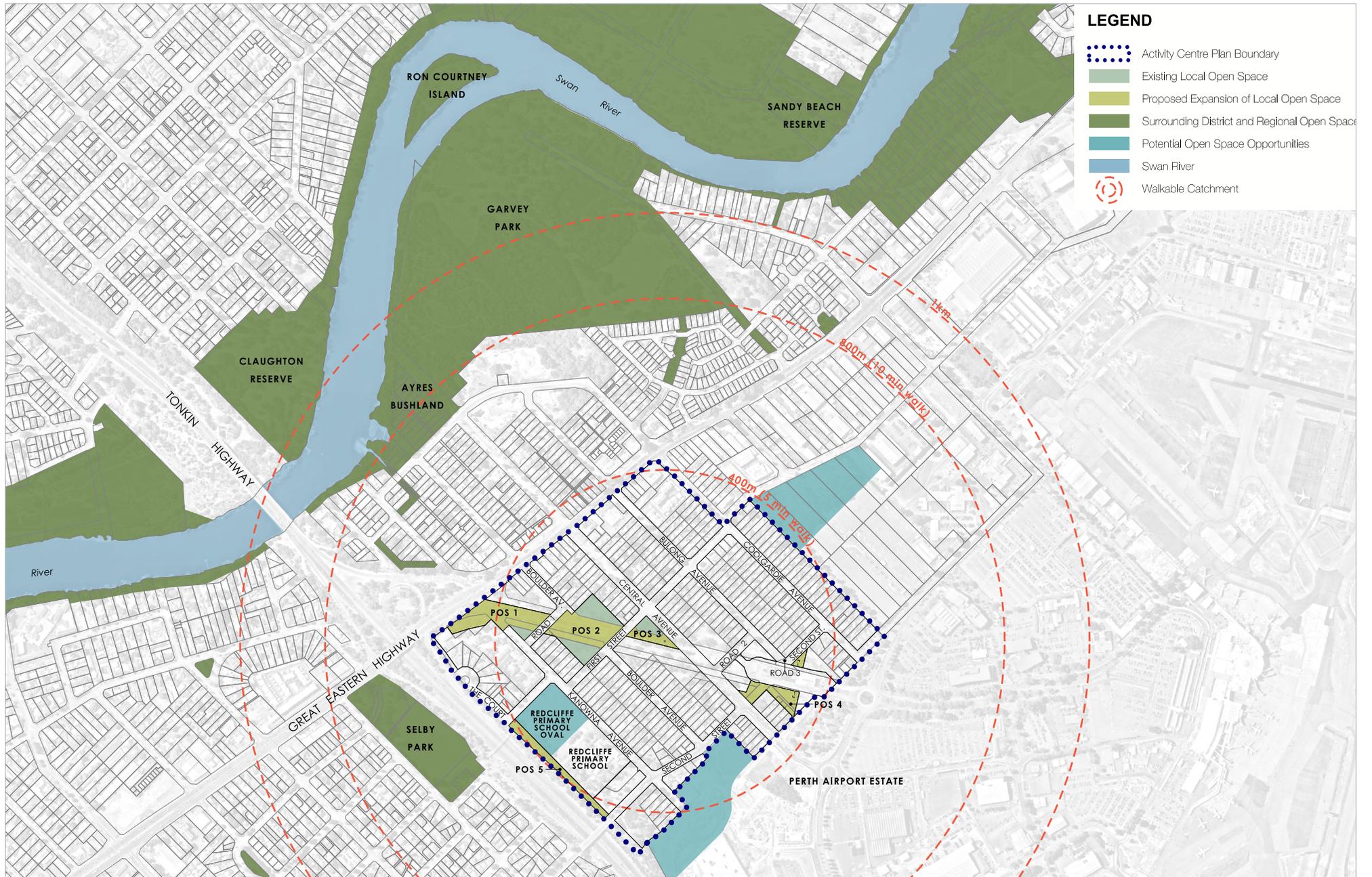


Figure 75: Open space considerations for Redcliffe Station Precinct and surrounds.

4.4.2 PUBLIC OPEN SPACE PROVISION

The provision of public open space within the precinct has been divided into five key spaces (shown in **Figure 76**) as follows:

- **Public Open Space Corridor (POS 1, POS 2 and POS 3):** The corridor of open space forming the spine of the precinct will provide a series of major recreation and play spaces, incorporating the redesigned Southern Main Drain and providing significant amenity for residents and visitors through the installation of community infrastructure;
- **Station Plaza (POS 4):** This space will be designed as an urban plaza and will provide a safe, vibrant public space, supported by active uses and pedestrian friendly pathways connecting with the surrounding residential neighbourhood; and
- **Linear Woodland Green Link (POS 5):** This space will be designed as a pedestrian and cyclist connection between First Street and Second Street, linking the shared path network along Tonkin Highway / Great Eastern Highway and the pedestrian bridge with the Stanton Road bridge, Redcliffe Primary School, Perth Airport commercial/retail precinct and the Redcliffe Train Station.

Open drainage areas are only proposed to be incorporated within POS 1 and POS 2 and are to be designed as an 'Urban Stream' to minimise the impact that these channels have on the overall design of the space and ensure the drainage design is attractive, functional and environmentally sustainable. The proposed design is further outlined in Section 6.

In accordance with Liveable Neighborhoods a Public Open Space schedule has been prepared as outlined in **Table 26** and shown in **Figure 76**. This schedule identifies that the subject area will provide a total of 3.66 Hectares, which equates to 8.72% creditable public open space.

Whilst the WAPC's Development Control Policy 2.3 generally requires the provision of 10% of the gross subdivisible area as open space, the 8.72% provided is considered appropriate as:

- Existing open space within the precinct equates to approximately 3.61 hectares and as such the proposed open space design represents an improved reconfiguration and small increase compared to the existing open space provision;
- The proposed design represents a significant increase in the quality and usability of open space within the precinct, as the spaces are significantly larger, have greatly improved connectivity and will provide higher quality amenity for users;
- The proposal to work with Perth Airport and the Redcliffe Primary School to improve public amenity and usability of other open space areas will provide additional opportunity for recreation space for future residents; and
- Improvements in connectivity to surrounding regional space, including the Swan River Foreshore, Garvey Park and Selby Park, will provide further opportunities for future residents to recreate.

Table 26: Public Open Space Schedule for the precinct in accordance with Liveable Neighbourhoods.

OPEN SPACE CONSIDERATIONS	BASE CALCULATION	SUMMARY CALCULATION
Site Area (Ha)		49.0907
Deductions		
Redcliffe Primary School (including oval)	3.262	
Station Precinct	1.2871	
Drainage Area (1:1 year storm event) (POS1)	0.0690	
Drainage Area (1:1 year storm event) (POS2)	0.2877	
Non-Residential Component of Mixed Use Sites	2.1726	
Total Deductions		7.0784
Net Subdivisible Area		42.0123
Required Public Open Space		4.2012
Public Open Space Requirements		
Unrestricted public open space - minimum 80%	3.3610	
Restricted public open space - maximum 20%	0.8402	
Total		4.2012
Public Open Space Provision		
Credited Unrestricted Public Open Space		
POS Area 1	0.8956	
POS Area 2	1.0758	
POS Area 3	0.3757	
POS Area 4	0.5329	
POS Area 5	0.5073	
Total Unrestricted POS		3.3873
Credited Restricted Public Open Space		
Drainage Area (1:5 year storm event) (POS1)	0.1250	
Drainage Area (1:5 year storm event) (POS2)	0.1500	
Total Restricted POS		0.2750
Total Restricted & Credited Unrestricted POS		3.6623
Percentage of Credited POS		8.72%



Figure 76: Proposed Public Open Space provision within the precinct.

4.4.3 STATION PLAZA

The Station Plaza will be the central transit hub for DA6 and surrounding areas (**Figure 78**). It will be the major urban space in DA6, and will be the nexus of transit activity for the locality. The Plaza will accommodate the train station and the high frequency bus interchange that connects to the surrounding suburbs. The Station Plaza will provide a safe, vibrant public space, supported by active uses and pedestrian friendly pathways connecting with the surrounding residential neighbourhood.

The Station Plaza will be a multi-functional space. The Redcliffe Station will be centrally located within the Plaza, covered by a sculptured roof structure. The Plaza will primarily be a paved area surrounded and lined with trees with a central sunny open interior. The abutting built form and land use will provide opportunities for public/private and alfresco uses to spill over and integrate with the space (**Figure 77**).

The Plaza will be an area with a focus for community life and gatherings, with the opportunity for the space to be converted to markets, event space or meeting areas for weekends or social areas in the evenings.

The landscape of the Plaza will be varied with formal and informal elements, including rest places and seating, lighting and signage. Opportunities to vary the 'scene' between day and night, weekday and weekends, and seasons should be explored. The detailed design will include servicing and power nodes to facilitate events. Simplicity of space, seating and canopy trees set within broad open paving, will create a place that accommodates peak hour pedestrian access use as well as community events.

4.4.3.1 Objectives

- Implement temporary landscape treatments to support interim uses for site activation, until such time that progression of adjoining development sites occurs. Temporary landscape treatments could include irrigated turf for passive recreation space and events such as markets, street art and court-style sport markings on hardscape surfaces for community use;
- Optimisation of access from the new residential development and the existing residential neighbourhood to this large community space;
- Provision of safe, direct and legible pedestrian and cycle connections with the residential neighbourhood and surrounding commercial precinct;

- Provide an engaging, vibrant public destination for workers and residents, and a setting for local convenience retail activity; and
- Minimise traffic impacts on Dunreath Drive by enhancing the boulevard with potential for on-street vehicle parking, abundant street trees, and safe pedestrian crossing opportunities.



Figure 77: Images of the type of public realm treatments envisioned within the Station Plaza.



Figure 78: Concept plan for the development of the Station Plaza (POS 4).

4.4.4 PUBLIC PARKS

A series of public open spaces of various sizes and shapes form a park network, which is located primarily along the old Brearley Avenue alignment. The network is proposed to extend through the residential neighbourhood, from Great Eastern Highway to the Redcliffe Train Station and its surrounding urban plaza precinct. The key considerations within this parkland network are:

- The retention of existing mature trees where possible;
- The provision for pedestrian and cycle movement;
- The integration of a hybrid engineered living stream and piped drainage system;
- The need to provide usable and functional open space that meets the needs of the future community, particularly given the intensity of residential development that is likely to develop within the area; and
- The requirements of Liveable Neighbourhoods.

4.4.4.1 Drainage

Accommodation of the existing drainage needs to be provided within the open space network until such time as the culvert at the Great Eastern Highway end of the Southern Main Drain and downstream infrastructure is upgraded to allow these storm events to be managed offsite prior to flowing to the Swan River.

A significant proportion of the public open space will accommodate the realigned Southern Main Drain, which will be reconfigured into an urban stream with planted banks and a combination of tiered drainage channels where practical and piped infrastructure and park over, where constrained. The stream is designed to accommodate the 1:100 year flood event within the open space and the 1:10 event within its banks.

The parkland will be structured to pipe the Southern Main Drain through the small triangular POS 3, then opened out through POS 1 and 2 as a tiered drainage channel to retain trees and to create an urban stream corridor. The drainage design will accommodate recreation within the riparian parklands in a safe environment and incorporate opportunities for community uses, with safe access and viewing areas, interpretive signage and environmental monitoring technologies.

This hybrid integrated water channel will achieve a balanced approach to the retention of trees, effective accommodation of stream flows, usability of open space and creation of State Government development sites. The tiered urban stream channel will be a valuable feature of

the parkland, planted with native species and detailed in order to minimise constraints on the recreational value of the public open space while providing a safe and aesthetically pleasing level change.

4.4.4.2 Pedestrian and Cycle Movement Network

The parklands will be linked with shared cycle/pedestrian paths meandering through the full length of the network. The path network winding around the existing mature trees and connecting seamlessly at key positions to the wider pedestrian and cycle network.

4.4.4.3 Tree Retention and Vegetation

The retention of existing mature trees is a defining feature of the parkland network, as the trees within the Brearley Avenue reservation are significant and valued by the community and will be of great benefit to the development area. Tree retention and supplementary planting will ensure the creation of an extensive urban tree canopy, aligned with The City of Belmont's Urban Forest Strategy (2014) and Street Tree Plan (2017).

Design and configuration of earthworks, drainage and services infrastructure, paths and other hardscapes will be carefully considered and undertaken in accordance with best practice standards and guidelines to ensure tree retention is maximised through public open space development.

4.4.4.4 Linear Woodland Green Link

A linear woodland green link (POS 5) along the western neighbourhood edge as an interface with the Redcliffe Primary School and Oval. The design of the parklands will provide a pedestrian corridor and passive parkland space, incorporating retained trees and supplementary tree planting to form a continuous tree canopy. The linear woodland green link could potentially include facilities such as outdoor fitness trail equipment and interactive fitness public art sculptural elements.

The space will facilitate clear passive surveillance from primary school and will be well lit at night to provide safe pedestrian circulation and sight lines.

4.4.4.5 Community Use

The parklands are a valuable community asset which will be the focus of community use. A place of meeting, it will also accommodate the primary pedestrian movement corridor linking through the spine of the neighbourhood to the train station.



Figure 79: Images of the type of public realm treatments envisioned within the Public Parks.

The central public open space (POS 2) will be a multi functional space providing a focus for community life and gathering. Further consideration of community facilities within this space will include high quality playgrounds, seating and other infrastructure to support community uses.

4.4.4.6 Urban Interface

The design of the parklands will include direct interface with built form development forming a new dynamic setting that is capable of providing informal meeting spaces, alfresco spill out, and spaces for community events. Possible features included within these areas will be public art, play and gym equipment and small pockets of soft and hard landscaping.

4.4.4.7 Crime Prevention Through Environmental Design (CPTED)

The open and broad nature of the parklands will provide safe pedestrian circulation and sight lines and will facilitate clear passive surveillance from the lower levels of buildings that will be well lit at night, incorporating smart lighting that responds to usage, enhancing safety and engagement.

4.4.4.8 Landscape Treatments

Due to the intensification of the surrounding built form the public open spaces should be considered ‘urban’ parks in their style and nature, and will rely on tree canopies to provide shade and “softness” to the urban spaces.

Irrigated turfed spaces will be carefully considered to optimise their functionality and meet passive recreational needs of the community, while having consideration for maintenance requirements and water sensitivity. The purpose of turfed areas is to provide for both informal active and passive recreation uses. These spaces will be incorporated with activities for the community that may include, children’s play areas, health and fitness trails, small scale ball kick-a-bout areas and one-on-one basketball spaces and public and community art.

The paved areas have to be of a size to accommodate potentially large numbers of users and also accommodate cyclists, skaters, and pedestrians all within a network of footpaths linking into the surrounding road network and to entries of the new buildings. The space will create a seamless and flowing character that embraces built form and is unaffected by the rigidity of traditional street infrastructure.

PUBLIC OPEN SPACE 1

Total POS Area: 10,896m²

Open Space

The concept design includes 10,206m² (94%) of the open space as creditable space incorporating landscaping, open lawn areas, footpaths and other amenities.

Drainage

Concept drainage design includes an 'Urban Stream' which will accommodate drainage up to a 1:100 year event, with a 1:1 year event consuming approximately 6% (690m²) of the total open space area.

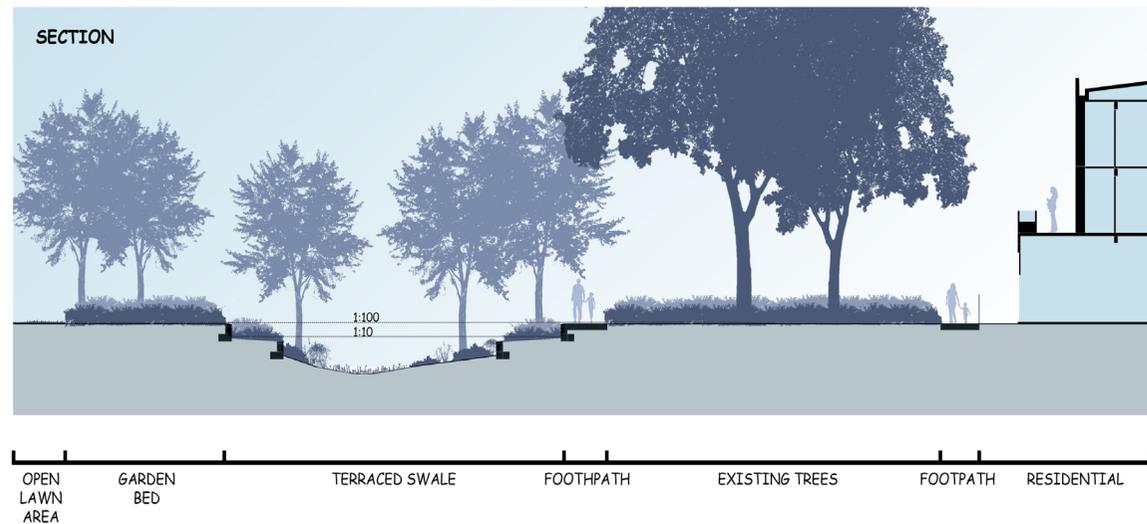


Figure 80: Concept Design for POS 1 and indicative cross section taking into account drainage, tree retention and future abutting residential development.

PUBLIC OPEN SPACE 2

Total POS area: 15,135m²

Open Space

Concept design includes 81% (12,258m²) as usable open space incorporating landscaping, open lawn areas, footpaths, play equipment and a community facility.

Drainage

Concept drainage design includes an 'Urban Stream' which will accommodate drainage up to a 1:100 year event, with a 1:1 year event consuming only 19% (2,877m²) of the total open space area.

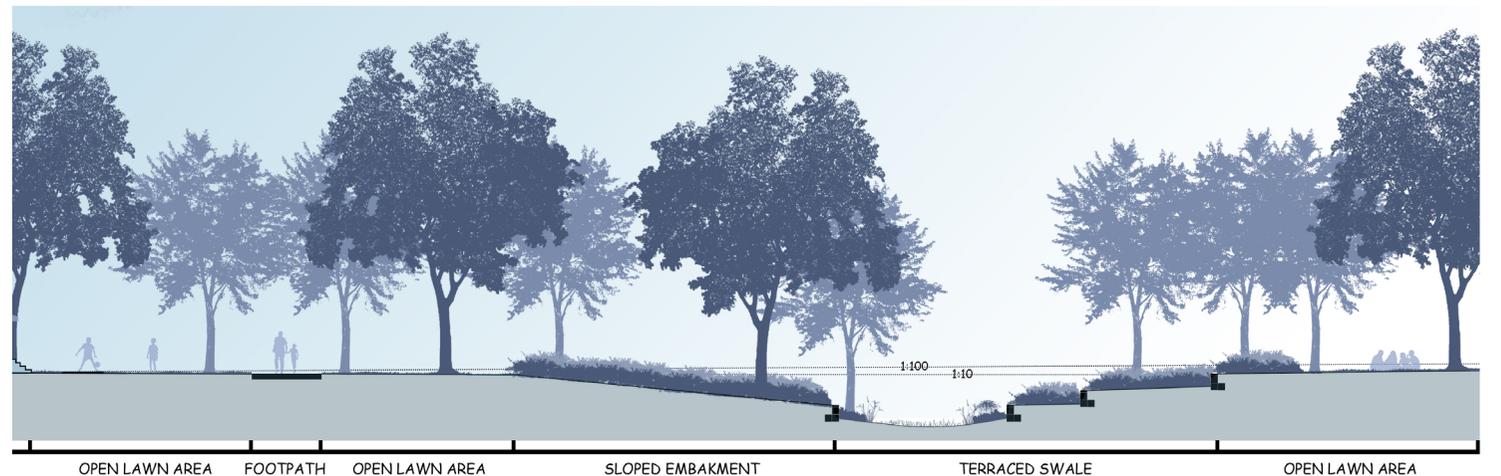
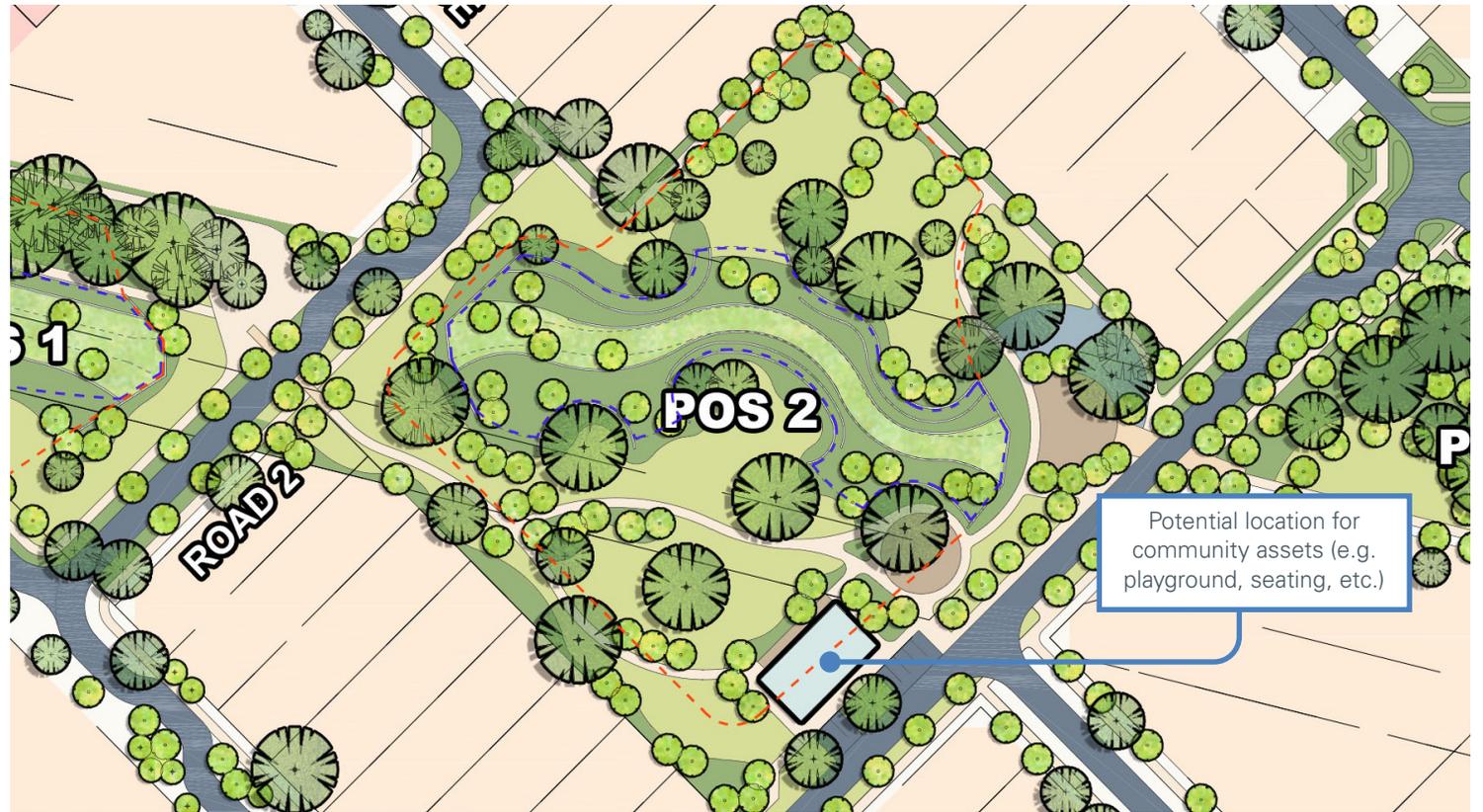


Figure 81: Concept Design for POS 2 and indicative cross section taking into account drainage, tree retention and a potential community building.

PUBLIC OPEN SPACE 3

Total POS Area: 3,757m²

Open Space

The concept design proposes all of the precinct as usable open space incorporating landscaping, open lawn areas and footpaths.

Drainage

There is no drainage proposed to be accommodated within the open space area as the southern main drain will be conveyed via a culvert either within the road reserve or on the southern boundary of the open space.

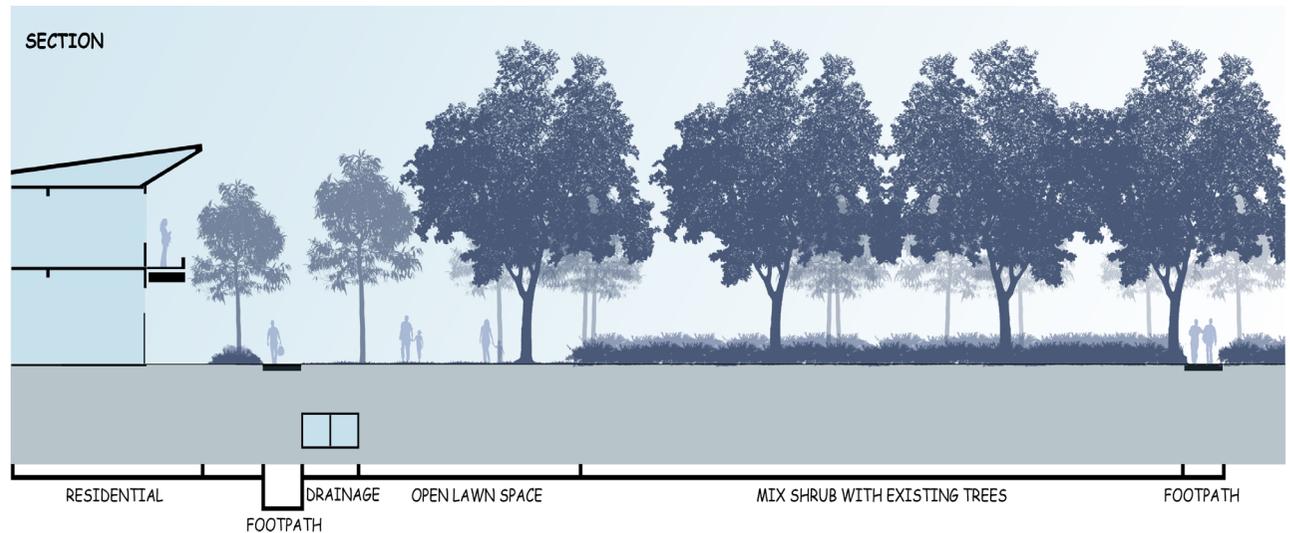
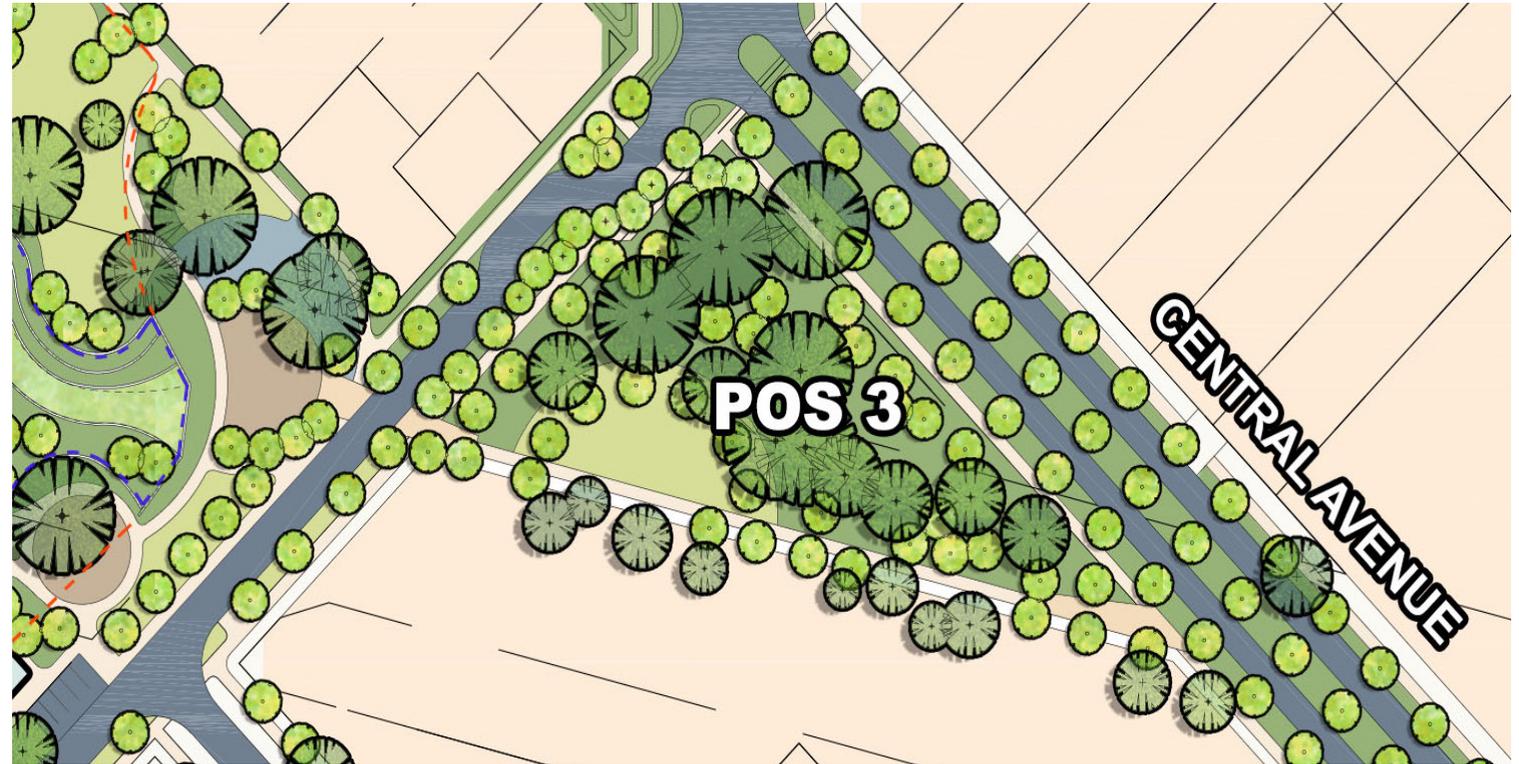


Figure 82: Concept Design for POS 3 and indicative cross section taking into account drainage, tree retention and future abutting residential development.

PUBLIC OPEN SPACE 5

Total POS Area: 5,073m²

Open Space

The concept design is for the existing portion of the Tonkin Highway reservation to be reformed into a dual use pathway which better connects pedestrians and cyclists to the Stanton Road Bridge, pedestrian bridge and the broader precinct.

Drainage

The subject land currently forms part of the Tonkin Highway reservation and drainage is accommodated within the reserve itself, so the accommodation of drainage within the open space is not anticipated to be required.

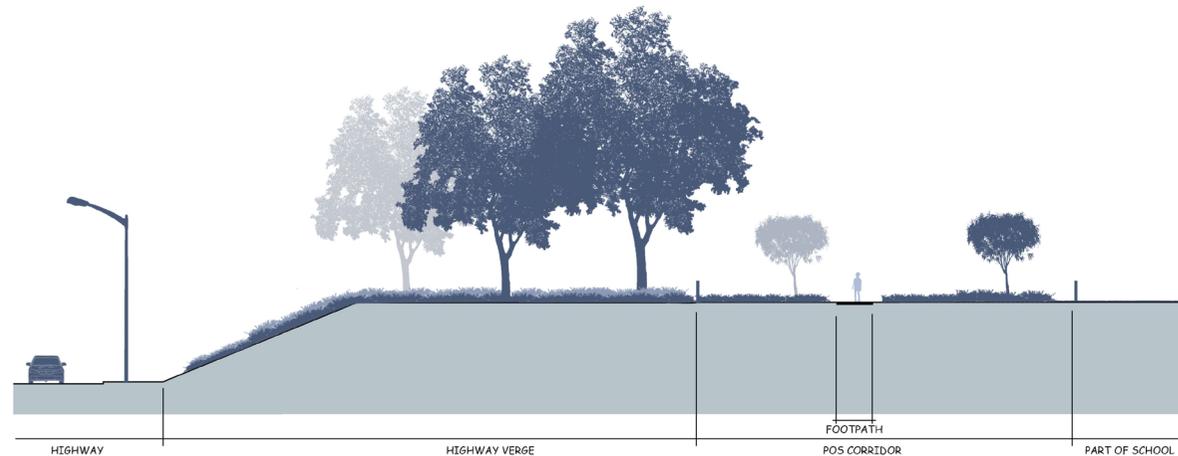


Figure 83: Concept Design for POS 5 and indicative cross section taking into account tree retention, the adjacent road reserve and the Redcliffe Primary School.

4.5 ACTIVITY CENTRE PLAN CHECKLIST - URBAN FORM

Section 4 of the explanatory report has been prepared in accordance with the guidance provided by *SPP4.2 Activity Centres for Perth & Peel*.

In accordance with this guidance a checklist has been prepared to delineate the sections of the ACP which are used to address each of the key SPP4.2 requirements, and this is outlined in **Table 27**.

Table 27: Activity Centre Plan Checklist - Urban Form

SPP4.2 Reference	ACP Requirement	Section of ACP addressing Requirement	Summary / Additional Comment
1	Map the existing block structure, building bulk/scale/layout, ownership patterns, anchor tenants, land use synergies (forming character areas) and any vacant or under utilised land.	4.1	The existing urban structure, including building bulk/scale/layout, land use synergies and future opportunities are comprehensively outlined within Section 4.1 and Figure 53 .
2	Review existing building stock and identify heritage structures or currently disused / under used buildings and allocate their reuse / intensification.	4.1	The existing building stock is predominantly comprised of single storey detached dwellings and single storey commercial development fronting the Great Eastern Highway. This analysis is outlined within Section 4.1 and Figure 53 .
3	Allocate and map locations within the centre that are suitable for accommodating optimised building envelopes.	4.1 and 4.2	The entire precinct is considered suitable for accommodating optimised building envelopes over time and subject to land assembly to achieve the envisioned built form outcomes. This is comprehensively outlined within Section 4.1 and Section 4.2.
4	Define design controls that allocate maximum (and minimum) building heights and setbacks to safeguard an attractive and appropriate scale to streets and public spaces, and solar access;	4.2	The design controls, inclusive of minimum and maximum building heights and setbacks, are comprehensively outlined in Section 4.2 and further defined in the Redcliffe Station Precinct Design Guidelines.
5	Define design controls to optimise building densities within the centre boundary, subject to other built form and environmental objectives.	Section 4.2	The design controls to optimise building density, inclusive of land assembly requirements, minimum density and minimum height controls, are comprehensively outlined in Section 4.2.

SPP4.2 Reference	ACP Requirement	Section of ACP addressing Requirement	Summary / Additional Comment
6	Define controls to minimise environmental impacts of development including: minimum standards to safeguard occupant amenity including segregation of incompatible uses and protection against potential nuisances.	Section 4.2	The minimum boundary setback requirements and maximum height provisions are outlined in Section 4.2 and assist in ensuring separation of buildings to protect occupant amenity. All other building design requirements are incorporated into the existing Residential Design Codes and the <i>Redcliffe Station Precinct Design Guidelines</i> . Land use separation requirements are incorporated in the land use permissibility section of Part 1. Transport Noise Assessments are required to be prepared for land included within Special Control Area 2 in accordance with SPP 5.4 for to minimise the adverse impact of road and rail noise on noise-sensitive land uses.
7	Define land use and design controls that provide for active uses (e.g. retail, service, hospitality) at ground floor and maximise building articulation, including the use of glazing and entrances to animate spaces and minimise blank facades / inactivity.	Section 4.2	Section 4.2, along with the provisions of Part 1, identify the areas required for mandatory active ground floor uses and adaptable ground floor space to ensure activation is a priority within the key mixed use precincts.
8	Provide weather protection using awnings, eaves or street trees.	Section 4.2 and 4.3	The use of awnings and public realm infrastructure to provide weather protection to pedestrians is outlined within Sections 4.1 and 4.2. This will be addressed in the <i>Redcliffe Station Precinct Design Guidelines</i> .
9	Review the provision and quality of public spaces (parks, plazas, pedestrian malls, etc.) and rank spaces according to usage and function, and define and prioritise areas for improvement.	Section 4.1 and Section 4.4	The provision of quality open space is limited within the precinct, and the ACP outlines measures to modify and expand on existing parks to create a linear series of more substantial open space areas between Great Eastern Highway and the Station Plaza.
10	Provide a landscape strategy that provides for biodiversity and urban ecologies and protects against adverse microclimatic effects.	Section 4.3 and Section 4.4	Section 4.3 and 4.4 outline proposed landscaping interventions for all public spaces including existing and new parks and public spaces, along with the broader street network, through the sustainable integration of stormwater via 'rain gardens' and the use of native species in landscaping and verge planting.
11	Identify and map the key nodes, landmarks, and view lines. Identify opportunities to enhance legibility such as creating new/improving old links and defining new landmarks.	Section 4.1	Section 4.1 identifies the key existing nodes and predominant land use patterns, along with the proposed urban design vision outlining new entry points, landmark development locations, community nodes and connections.



UTILITY INFRASTRUCTURE, DRAINAGE AND RESOURCE CONSERVATION

SECTION 5

Analysis of the infrastructure upgrades required has been undertaken based on the vision for the area and increased demand generated by anticipated redevelopment.

The infrastructure analysis is summarised in the following sections and outlined further within the detailed appendices.

5.1 DEMAND ESTIMATES

In order to estimate the demand for infrastructure upgrades within the precinct it is necessary to undertake analysis of the projected demand based on the likely ultimate development within the precinct.

This analysis is challenging to undertake as it is reliant upon projections and estimates of the future demand for residential development, demand for dwelling types, demand for commercial floorspace, anticipated market competition from similar precincts and the ability to overcome site and precinct constraints.

The establishment of the minimum dwelling yield requirements and non-residential floorspace requirements in Section 3 assists in establishing a base scenario for the purpose of demand analysis.

This is not, however, suitable for the purpose of infrastructure demand projection on its own, as basing the infrastructure capacity on the minimum yield requirements will not provide any additional capacity for growth which exceeds the minimum required. It also does not take into account the anticipated non-residential development which will occur within the Mixed Use zoned areas.

To inform the analysis the Activity Centre Plan has been based on two development scenarios, termed the 'moderate growth' and 'high growth' scenarios, which are outlined in the following sections:

5.1.1 MODERATE GROWTH SCENARIO

The Moderate Growth scenario assumes that:

- Residential development will be primarily in the form of medium density development with limited higher density development primarily located around the train station;
- Lower density townhouse and villa developments will provide approximately 30% of the residential development, with the remaining 70% provided as apartments in stand alone or mixed use developments;

- Commercial and retail development will occur within the Mixed Use zoned areas predominantly at ground and first levels only; and
- Development on sites impacted by the rail corridor loading limitations and underground parking restrictions will have a reduced development yield over that which would otherwise be expected due to these constraints.

The estimated dwellings and commercial/retail floorspace projections for the moderate growth scenario are outlined in **Figure 84**.

5.1.2 HIGH GROWTH SCENARIO

The High Growth scenario assumes that:

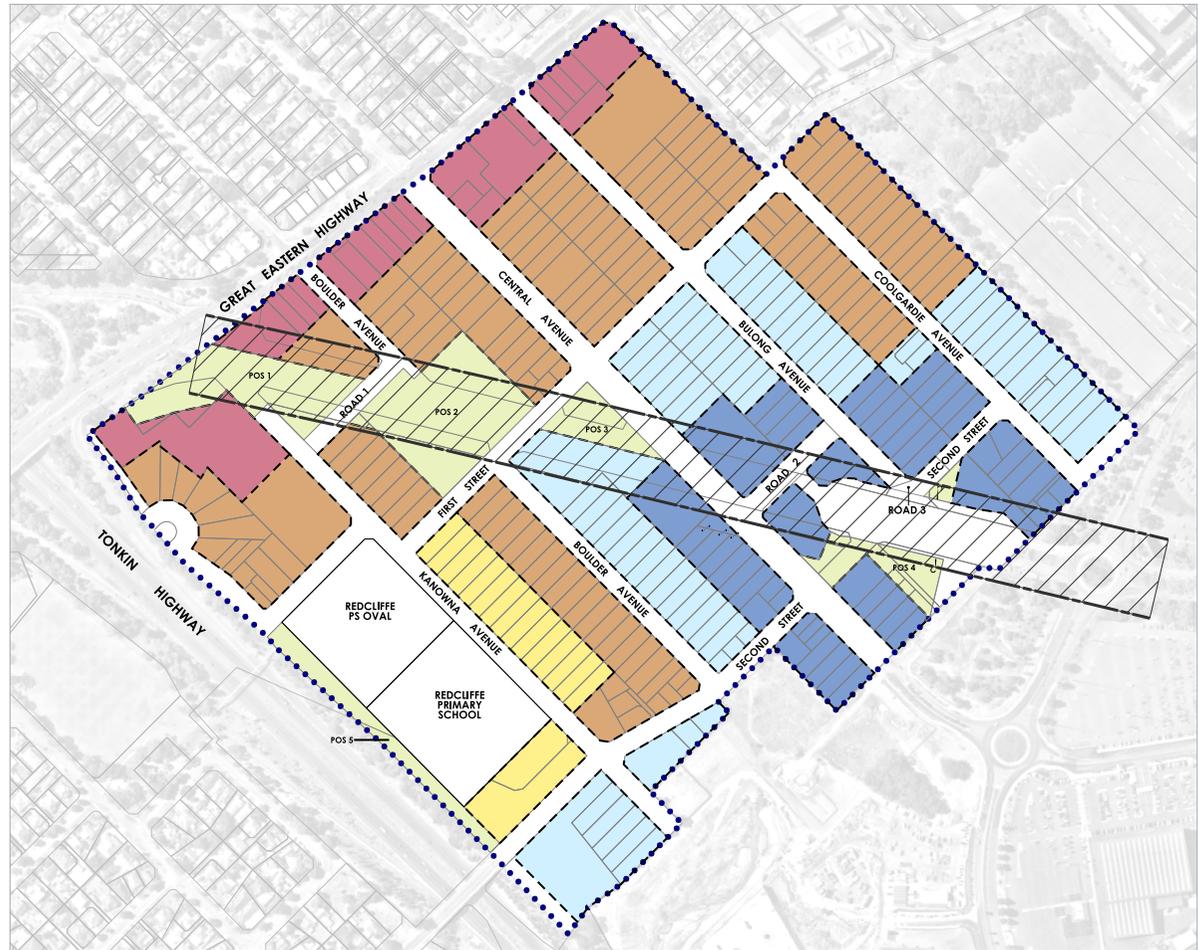
- Residential development will be primarily in the form of medium-high density development with minimal grouped or single dwelling developments;
- Lower density townhouse and villa developments will comprise approximately 10% of the residential development, with the remaining 90% provided as apartments in stand alone or mixed use developments;
- Commercial and retail development will occur throughout the first few levels of Mixed Use zoned areas; and
- Development on sites impacted by rail corridor loading limitations and underground parking restrictions will have a reduced development yield over that which would otherwise be expected due to these constraints, but slightly higher than the Moderate Growth scenario.

The estimated dwellings and commercial/retail floorspace projections for the high growth scenario are outlined in **Figure 84**.

5.1.3 USE OF DEMAND ESTIMATES

The two scenarios outlined have been used for the purpose of testing, undertaking concept designs and preliminary costing of infrastructure upgrade requirements in the following sections.

PRECINCT / LAND USE	MODERATE GROWTH SCENARIO	HIGH GROWTH SCENARIO
Centre Sub-Precinct		
Single/Grouped Dwellings (Units)	-	-
Apartments (Units)	752	895
Commercial - Floorspace (m2)	10,226	20,452
Centre Transition Sub-Precinct		
Single/Grouped Dwellings (Units)	260	104
Apartments (Units)	459	888
Residential Core Sub-Precinct		
Single/Grouped Dwellings (Units)	514	294
Apartments (Units)	445	1,218
School Interface Sub-Precinct		
Single/Grouped Dwellings (Units)	79	59
Apartments (Units)	32	74
Urban Corridor Sub-Precinct		
Single/Grouped Dwellings (Units)	-	-
Apartments (Units)	389	608
Commercial - Floorspace (m2)	18,244	29,190
Total Single/Grouped Dwellings (Units)	853	457
Total Apartments (Units)	2,077	3,682
Total Dwellings	2,930	4,139
Total Commercial Floorspace (m2)	28,470	49,642



LEGEND

-  Activity Centre Plan Boundary
 -  Centre Precinct (Mixed Use Development ≤13 Storeys)*
 -  Centre Transition Precinct (Residential Development ≤8 Storeys)*
 -  Residential Core (Residential Development ≤6 Storeys)*
 -  School Interface Precinct (Residential Development ≤3 Storeys)
 -  Urban Corridor Precinct (Mixed Use Development ≤13 Storeys)*
- *Heights subject to site area and building performance criteria

Figure 84: Overview of the yield analysis undertaken for the purpose of projecting demand and need for service infrastructure upgrades.

5.2 ELECTRICITY

An analysis of the electricity upgrade requirements is included as **Appendix 2**. This analysis identifies that:

- a) **Augmentation of the High Voltage (HV) feeder network** is required to facilitate the redevelopment of the precinct, inclusive of upgrades to the HV feeder network. Where development does not exceed an underline (natural) load growth of 1.5MVA, Western Power will augment the network at its own cost to support the natural load growth. With the ultimate build out of the precinct being anticipated beyond 2031, and assuming the first load increase occurs beyond 2020, it is not anticipated the natural load growth will be exceeded and as such these costs are assumed to be attributed to Western Power.
- b) **Initial Asset Relocations** need to occur as a component of the redevelopment plan, including:
 - i) **Train Station Area:** As the train station intersects with the main HV aerial network line along Second Street, new underground cables need to be installed along new routes to replace the network, along with the replacement of an existing pole mounted transformer with a new ground mounted substation. These works are being undertaken as a component of the construction of the Redcliffe Train Station.
 - ii) **Brearley Avenue:** The closure of the remainder of the Brearley Avenue road reserve will require the relocation of the existing WP assets within that road reserve. The network predominantly consists of Low Voltage (LV) network and street lighting. The street lighting would be removed, and the LV network would need to be modified to maintain supplies and interconnectivity. The LV network removed from Brearley Ave would likely introduce the need for new LV link across the new road reserve of Road 1 (Kanowna Avenue to Boulder Avenue). This means that the timing of the availability of the new road reserve would be a constraint on the final closure of Brearley Ave and the associated asset relocation.
- c) **Underground conversion of existing HV and LV Network:** As a result of the extent of the redevelopment to be undertaken throughout the precinct and the desire for significant improvements in streetscape and public realm amenity it will be necessary to convert the existing above ground HV and LV network to an underground network. The costs for this are ultimately borne by landowners within the precinct either as a coordinated rollout by State or local government, or as a result of incremental works undertaken in response to individual development of existing properties. The subject area is likely to benefit significantly from the coordinated rollout of underground conversion of the electricity network as a component of road upgrades within the area, and as such it is proposed to share the costs of these upgrades equitably throughout the precinct.

The spatial extent of upgrades required is shown in **Figure 85**, and the estimated costs for these upgrades are included in **Table 28**. All proposed upgrades require further detailed planning to be undertaken by Western Power in collaboration with key stakeholders. The responsibility for implementation of these upgrade works are further outlined in **Section 6**.

Table 28: Estimated costs of electricity network upgrades required.

WORKS ITEM	PRELIMINARY COST ESTIMATE (EXCL GST)
Augmentation of HV Feeder Network	Costs to be determined based on demand and recommended to be funded by Western Power
Initial Asset Relocation	\$995,000
Underground Conversion of HV/LV Network	\$7,350,000
Total Cost	\$8,345,000



Figure 85: Overview of the electricity infrastructure upgrades required to support growth within the precinct.

5.3 WATER SUPPLY

The existing water supply consists of Cast Iron, Asbestos Cement, PVC and Steel pipes ranging in diameter size from DN100, DN150 and DN205 internal to the ACP precinct. The water is sourced from a DN800 steel main in Great Eastern Highway, near Boulder Avenue, as outlined in **Figure 86**.

To facilitate the increased demand for water supply the Water Corporation will need to duplicate the existing mains supply within Great Eastern Highway to both sides of the Highway, and abandon/replace the existing mains, as shown in **Figure 86** and outlined in **Table 30**.

Water Corporation pre-fund the construction of all water mains DN300 and greater, so the required upgrades to the peripheral mains supply will be fully funded by the Water Corporation. The upgrades to distribution within the precinct, however, will be required to be fully funded by the precinct.

The preliminary cost estimates for the upgrade of distribution infrastructure based on the high growth scenario within the precinct are outlined in **Table 29**.

Table 29: Estimated costs of water supply upgrades required.

WORKS ITEM	PRELIMINARY COST ESTIMATE (EXCL GST)
Preliminaries and Site Establishment	\$254,889
Roadworks and Paths	\$111,350
Water Reticulation	\$321,049
Construction Contingency and Professional Fees	\$162,380
Total Cost	\$850,000

Table 30: Overview of water supply upgrades required.

STREET	MODERATE GROWTH SCENARIO
Central Avenue	<ul style="list-style-type: none"> New DN150 P to eastern side of the road for full length of road. New DN100 P to western side of road to bridge gap created by Brearley Avenue.
Bulong Avenue	New DN100 P to north eastern side of the road from Second St to Coolgardie Ave.
POS 1	- New DN150 P full length of road.
Road 1	<ul style="list-style-type: none"> New DN100 P from Kanowna St to former Brearley Ave. New DN150 P from Boulder Ave to former Brearley Ave.
Road 2	New DN100 P full length of road.
Kanowna Avenue	Abandon DN100 AC.

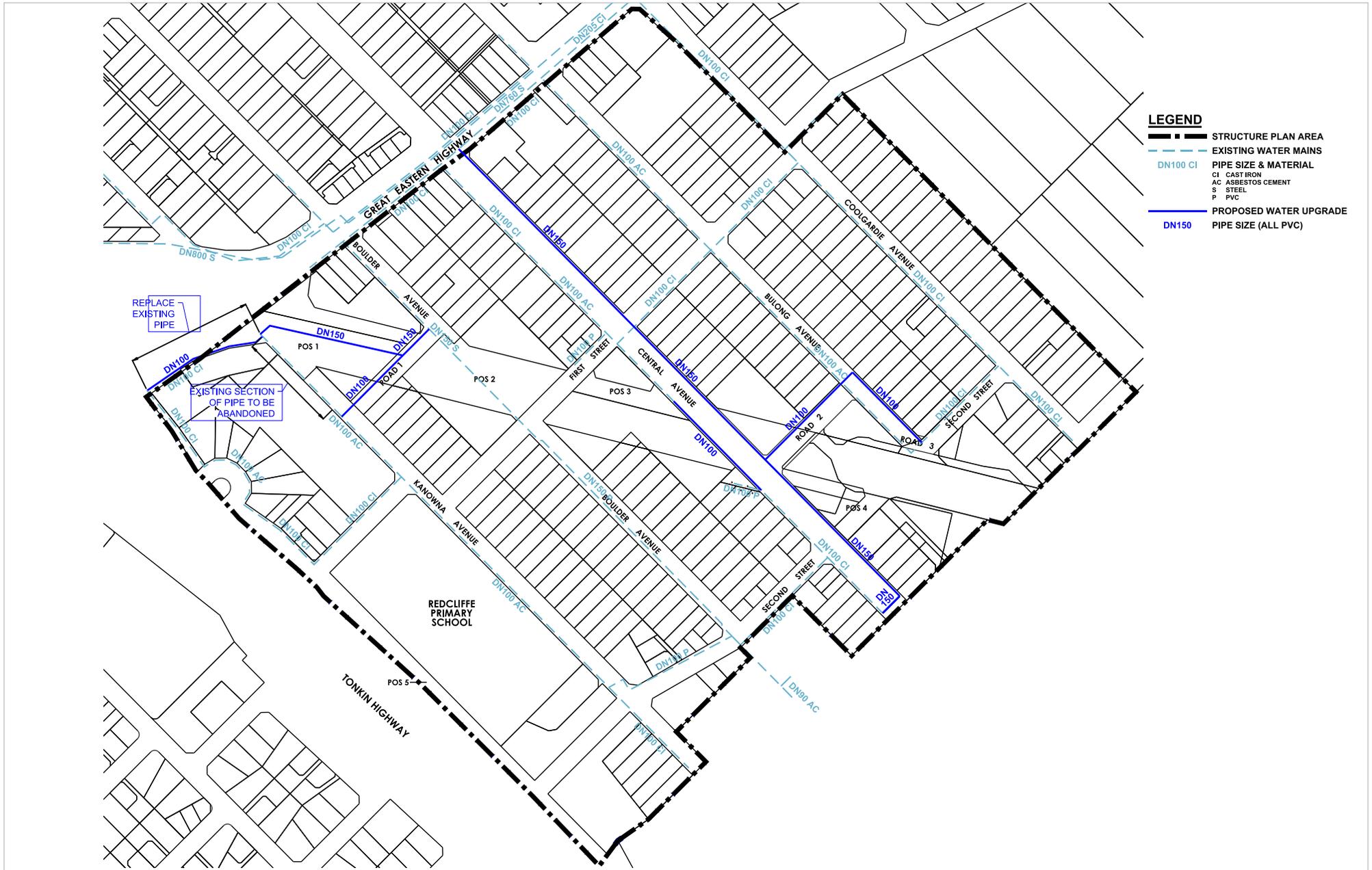


Figure 86: Overview of the water supply upgrades required to support growth within the precinct.

5.4 WASTEWATER

The wastewater reticulation for the entirety of the Redcliffe Station Precinct falls to the Type 40 Coolgardie Avenue Pumping Station location in Coolgardie Avenue west of the intersection of Bulong Avenue. The existing network consists of mainly DN150 reticulation grading centrally to a DN225 pipe in First Street, Bulong Avenue and Coolgardie Street before travelling north to the pumping station.

A portion of sewerage reticulation can be found within easements at the rear of private properties or in POS, providing connections for existing dwellings. It has been assumed that these easements and the reticulation will be maintained during future development. There is no costs allowance for the relocation of these assets.

In addition to the existing gravity network, the Perth Airport is serviced by a DN150 private pressure main traversing the full length of First Street but does not discharge into the gravity network and completely bypasses the Coolgardie Avenue Pumping Station.

The upgrades internal to the Redcliffe Station Precinct are:

- 85m section of DN150 in Boulder Avenue will be need to be upgraded to a DN225; and
- 775m of DN225 upgraded to DN300 within First Street and Bulong Avenue down to the Coolgardie Avenue Pumping Station. This includes 375m outside of the precinct boundary, west of GEH.

New DN150 sewer reticulation will be required where development occurs and a sewer main isn't already present. Entirely new mains are not required to form part of a shared cost arrangement as they would be constructed solely on the basis of serving that particular future development, which is as yet undefined.

Further headworks upgrades downstream to the existing sewer network are required at the cost of Water Corporation as follows:

- Type 40 Coolgardie Avenue Pumping Station upgraded to a Type 90;
- 1,100m DN200 pressure main from the Coolgardie Avenue Pumping Station to a AC L3589 upgraded to DN300;
- 713m varied section of gravity main from AC L3589 to AC L7510 upgraded to DN450; and
- 980m varied section of gravity main from AC L7510 to AC L0246 upgraded to DN600.

A plan depicting the areas requiring upgrade is shown in **Figure 87**, inclusive of the two gravity fed wastewater catchments across the precinct. The works list immediately above are outside the precinct boundary and will be funded through Water Corporation's Capital Works Program.

The 85m upgrade of DN150 to DN225 would be fully funded by the precinct. However, when installing DN300 reticulation, the Water Corporation refunds the developer \$600/m. This sum will be included with the cost estimate to balance the difference within the DCP.

Table 31 below contains the cost estimate for the two separate wastewater upgrades:

Table 31: Estimated costs of wastewater infrastructure upgrades required.

WORKS ITEM	PRELIMINARY COST ESTIMATE (EXCL GST)	POTENTIAL REFUND	TOTAL
Headworks upgrades outside of Precinct	Costs to be determined based on demand and funded by the Water Corporation Capital Works Budget		
DN150 to DN225	\$177,000	NA	\$177,000
DN225 to DN300	\$1,658,000	\$465,000	\$1,193,000
New DN150 to service areas not currently serviced	Costs to be determined based on demand and funded by developers benefiting from that extension.		
Total Cost	\$1,835,000	\$465,000	\$1,370,000

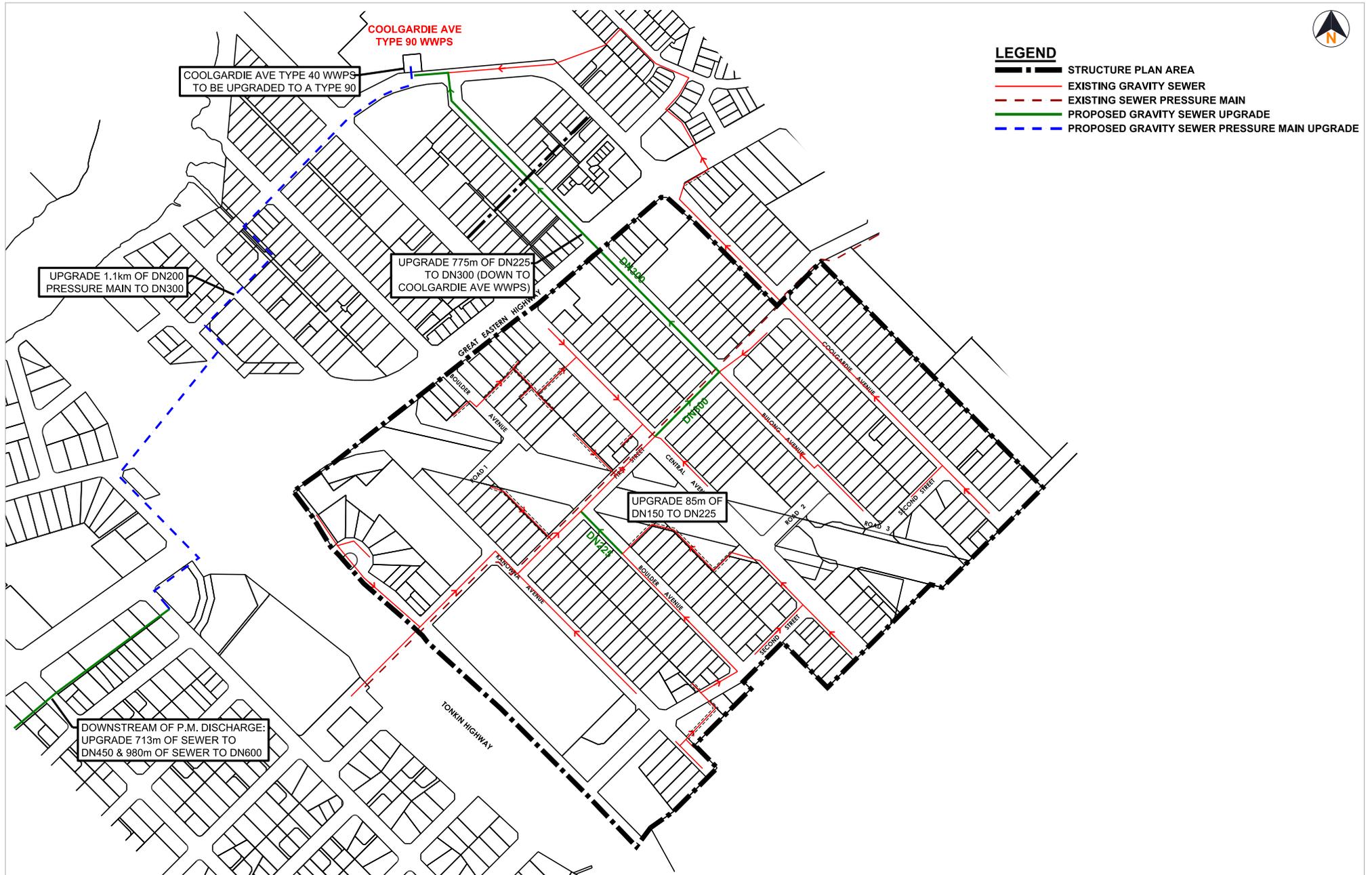


Figure 87: Overview of the wastewater infrastructure upgrades required to support growth within the precinct.

5.5 GAS SUPPLY

The suburban streets of the Redcliffe Station Precinct contain numerous medium pressure reticulated gas mains varying DN50 – 100. The largest main, DN155, is present along Brearley Ave, servicing Perth Airport.

ATCO Gas have proposed relocating their existing main from Brearley Ave to Boulder/Kanowna Ave in order to tie back in and serve Perth Airport. The increased density will require a reinforcement to the existing upstream network which will consist of two High Pressure Regulators (HPR), 3.3km of DN160 polyethylene high pressure mains and 1.5km of DN100 Steel high pressure mains. The internal reticulation will require new mains to the new roads and road links created by the removal of Brearley Avenue as well as external network links via Coolgardie Avenue and First Street.

The estimated costs of the infrastructure upgrades are outlined in **Table 32**, and the spatial extent of upgrades is shown in **Figure 88**. There may be opportunity to recover the cost of the external upgrades to the gas network through negotiation and partnership with ATCO Gas due to the significant increase of customers.

Table 32: Estimated costs of gas supply infrastructure upgrades required.

WORKS ITEM	PRELIMINARY COST ESTIMATE (EXCL GST)
Removal and relocation of Brearley Avenue Mains	\$449,000
External Upgrade and Network Reinforcement	\$4,700,000
Internal Reticulation Upgrades	\$445,000
Total Cost	\$5,594,000

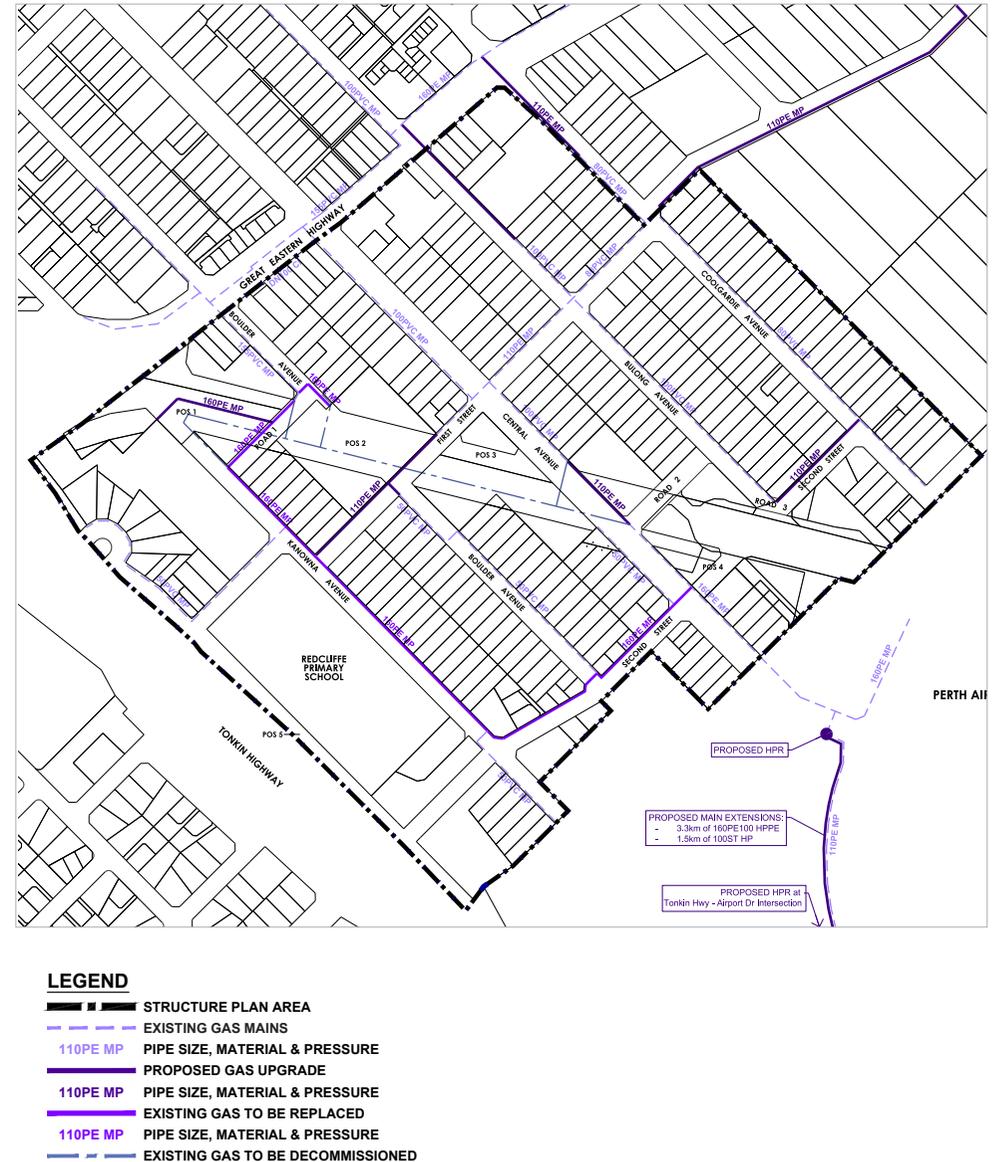


Figure 88: Overview of the gas supply infrastructure upgrades required to support growth within the precinct.

5.6 TELECOMMUNICATIONS

Telstra currently services the Redcliffe Station Precinct from its Ascot Exchange on Hardey Rd, ranging from 2 -> 3.5 Km to the west. Telstra distribution network radiates out from two pillars (P23 and P13) located on Great Eastern Highway, so works internal to the precinct (apart from Brearley Avenue) would only affect the extremities of the Telstra network which minimises the cost impact. Telstra assets on Great Eastern Highway are extensive and are located on both the north and south sides of the road.

Telstra pipe and cable capacity on internal streets of the precinct would have limited potential to support growth and in one instance cable is directly buried. Prior to the NBN Co Brownfields Rollout the Telstra distribution network serviced the majority of home and businesses in DA6.

There are a number of telecommunication infrastructure works required which are summarised as follows and detailed in **Appendix 2**:

- a) **Brearley Avenue Asset Relocation:** There are significant telecommunication assets within the Brearley Avenue reservation which require relocation as a result of the closure and repurposing of the reservation area. It is understood that relocations adjacent the Airport West Train Station have already taken place due to the commencement of construction of the new station. Relocation of the remaining assets could be undertaken as affected development sites are created, but would be more cost effectively undertaken as a single work package. The estimated cost of relocation is \$5.36 million.
- b) **Other Asset Relocations:** There are additional infrastructure relocations required, including raising the network associated with storm water control for Telstra assets and NBN Co assets, and decommissioning of terminal and equipment recovery for the domestic airport. The estimated cost for these relocations is \$613,000.

Table 33: Estimated costs of telecommunications infrastructure upgrades required.

WORKS ITEM	PRELIMINARY COST ESTIMATE (EXCL GST)
Brearley Avenue Asset Relocation	\$5,359,000
Other Asset Relocation	\$613,000
Total Cost	\$5,972,000

- c) **Pit and Pipe Construction:** NBN Co generally require pit and pipe design and construction by developers for superlots (such as those proposed along the Brearley Avenue reservation which are the responsibility of the developer based on the development proposed.
- d) **NBN Backhaul and Deployment Charges:** NBN Co require two infrastructure charges for the rollout of their infrastructure which are the responsibility of the developer based on the development proposed.

The spatial considerations for each of the upgrades are outlined within **Figure 89**, and cost estimates are outlined within **Table 33**.



Figure 89: Overview of the telecommunications infrastructure upgrades required to support growth within the precinct.

5.7 DRAINAGE MANAGEMENT

The strategy for the management of urban water within the Redcliffe Station Precinct is based on retaining all development related drainage on the development site, maintaining existing storm event flows of the Southern Main Drain within public open space and utilising best practice Water Sensitive Urban Design (WSUD) principles in urban drainage throughout.

Urban development affects water resources and due to the significant decline in rainfall and runoff in Western Australia, there is a need to achieve better water management. Storm event management and increased demand for water has resulted in a need to conserve drinking water, and address environmental concerns such as the declining health of waterways including the Swan Avon river system. To achieve this change in the environment must manage urban drainage in a positive manner.

The strategy for drainage within the precinct is set within the context of, and using the key principles and objectives provided in the State Water Plan and State Water Strategy. These guiding documents identify the need for an increased focus on total water cycle management and WSUD to improve the management of storm water, particularly nutrients, and increase the efficiency of the use of water.

It is proposed that the area be developed as a Transit Orientated Development (TOD) providing urban residential and work choices close to rail services with a key focus on:

- Integrating major drainage infrastructure in accordance with WSUD principles;
- Creation of public realm infrastructure that detains and infiltrates storm event rainfall;
- Promotion of the use of low water demand plants within the open space and public realm;
- Minimisation of irrigated lawns within parkland; and
- Pursuit of water harvesting, passive irrigation and integrated urban water management.

This section provides the framework for further planning of the ACP area that will reflect the requirements for urban water management for development. A Local Water Management Strategy will need to be prepared that meets all statutory and stakeholder requirements.

5.7.1 DRAINAGE CONTEXT

State Planning Policy 2.9 Water Resources requires land use planning to contribute to the protection and wise management of water resources by ensuring local and regional land use planning strategies, structure plans, schemes, subdivisions, strata subdivision and development applications take into account total water cycle management and water sensitive urban design principles.

It also ensures that development is consistent with current best management practices and best planning practices for the sustainable use of water resources, particularly storm water, which is currently defined by the content of SPP 2.9 and the *Stormwater Management Manual for Western Australia*.

Liveable Neighbourhoods defines best planning practices and the Draft *Liveable Neighbourhoods* 2015 update maintains the approach to urban water.

General objectives of water sensitive urban design are (adapted from the *Stormwater Management Manual for WA*, 2007):

- 1. To manage a water regime.** Maintain appropriate aquifer levels, recharge and surface water characteristics in accordance with assigned beneficial uses; Manage groundwater recharge sustainably; Prevent flood damage in developed areas; and Prevent excessive erosion of waterways, slopes and banks.
- 2. To maintain and, where possible, enhance water quality.** Minimise waterborne sediment loading; Protect riparian vegetation; Minimise the export of pollutants such as phosphorus and nitrogen to surface or groundwater; Prevent groundwater acidification processes; and Minimise the export and impact of pollution from sewerage.
- 3. To encourage water conservation.** Minimise the import and use of scheme water; Promote the sustainable use of rainwater; Promote the sustainable re-use and recycling of wastewater; Reduce irrigation requirements; and Promote opportunities for localised supply.
- 4. To maintain and, where possible, enhance water-related environmental values; and**
- 5. To enhance water-related recreational and cultural values.**

5.7.2 DRAINAGE PRINCIPLES AND OBJECTIVES

The strategy presently adopted for the Redcliffe Station Precinct has as its key principles and objectives.

1. Provide protection to property and lives from flooding that would occur in a 100 year Average Recurrence interval (ARI) flood event;
2. Retain and enhance the existing elements of the natural drainage system, including the existing Main Drain waterway, groundwater characteristics and processes, and integrate these elements into the urban landscape, through the use of a multiple use corridor set within open space;

3. Minimise pollutant discharge through implementation of appropriate non-structural source controls and structural controls. The aim being to reduce pollutant export via runoff and leaching from the urban uses;
4. Management of rainfall events to minimise runoff as high in the catchment as possible, use multiple low cost “in-system” management measures to reduce runoff volumes and peak flows;
5. Maximise water use efficiency, reduce potable water demand and maximise the reuse of water harvested from impermeable surfaces.

5.7.3 EXISTING SURFACE WATER HYDROLOGY

The primary and only surface water feature at the site, is the Southern Main Drain that traverses the site from east to west. It has been significantly modified in the past and recently, configuring a broad trapezoidal ditch format and being culverted in places. The most recent modifications being its realignment and culverting associated with the civil engineering works required for the new rail station.

The characteristics of the pre-development urban environment of the site, provide a number of key constraints and opportunities for the management of water with the proposed land use changes and urban intensification, these include:

- There are no wetlands in the study area;
- The soils of the site permit limited infiltration of storm water;
- The area subject to development intensification is large and the volumes of storm water likely to be generated from the site may be substantial and therefore storm water will be retained, managed and infiltrated on-site;
- The proposed development type will likely reduce potential nutrients with garden areas and setbacks being minimised;
- There is low to no risk of ASS on-site; and
- Public open space (POS) areas will be planted with water-wise plants (including natives) and be modest in the use of grass to reduce the requirement for irrigation and nutrient inputs.

5.7.4 WATER MANAGEMENT APPROACH

The management of drainage within the ACP area can be broadly summarised as follows:

- a) 1:1 and 1:5 year events which are currently accommodated within the Southern Main Drain will continue to be accommodated within the realigned Southern Main Drain channel;
- b) 1:100 year events which are currently accommodated by the Southern Main Drain and surrounding open space areas are intended to be accommodated within POS1 and POS2 subject to detailed modelling and design, which is yet to be undertaken. If detailed modelling and design considerations determine that the full extent of the 1:100 year event cannot be accommodated within the POS areas a proportion of this drainage may be directed to the road network drainage, subject to capacity within this network.
- c) Stormwater collection from roads will continue to be accommodated by the existing piped network, which over time will be supplemented by the introduction of rain gardens and other WSUD techniques within the road verge to more sustainably manage the stormwater flow;
- d) All storm events currently accommodated on private landholdings will continue to be accommodated on private landholdings, and this will be a general requirement for new development applications to demonstrate sufficient capacity to achieve via onsite storage and infiltration (e.g. rainwater reuse, rooftop landscaping, soakwells, etc.); and
- e) Where a development cannot accommodate the entire inundation from a 1:100 year event onsite, the City will consider accommodating some of this drainage within the street network, subject to further modelling undertaken by the developer to demonstrate the necessity for offsite drainage and the City confirming the capacity of the road network and associated public realm to accommodate the additional flow.

The above approach is to be detailed in a Local Water Management Strategy to be prepared following hydrological modelling of the Southern Main Drain requirements as a component of further detailing the open space and drainage concept design included in Section 5.7.5.

5.7.5 SURFACE WATER MANAGEMENT STRATEGY

5.7.5.1 Major Drainage System and Drainage System Design

The drainage system for Redcliffe Station Precinct will be designed to maximise the benefits of WSUD by capturing and infiltrating storm water generated within the public realm areas, including large storm events.

The main objectives of the drainage design are to maintain site water balance and protect surface and groundwater quality within the proposed development. This will be achieved by controlling flood events and retaining the majority of the storm water drainage runoff within the ACP area.

The majority of storm water will be contained on-site within development lots and the drainage system will capture and infiltrate storm water generated from the roads and public surfaces. This approach will ensure that majority of storm water is infiltrated as close as possible to the source of water.

The approach to drainage for each of the open space areas is outlined in the following sections, and the estimated costs based on the concept design is outlined in **Table 34** below.

Table 34: Estimated costs of realignment of Southern Main Drain in accordance with concept plan.

WORKS ITEM	PRELIMINARY COST ESTIMATE (EXCL GST)
Drainage modelling, detailed design and approvals	\$150,000
Preliminaries and Site Establishment	\$209,000
Siteworks and Earthworks	\$215,000
Roadworks and Paths	\$106,000
Stormwater Drainage	\$1,456,000
Construction Contingency (15%)	\$298,000
Professional Fees (7.5%)	\$172,000
Total Cost	\$2,606,000

5.7.5.2 Public Open Space 1

Public Open Space 1 is proposed to accommodate drainage via a terraced urban stream weaving through the open space area. Due to the confines of the space and the domination of the area via mature trees, particularly adjacent the northern boundary, the drainage requires a complex approach that responds to storm water management while addressing the retention of key tree groups. The area subject to flooding extends predominantly within the channel and over a portion of the open space close to the Highway, as shown in **Figure 90** and **Figure 93**. Key drainage considerations for the detailed design include:

- Retention of the primary tree belt on the northern boundary and mature trees throughout the open space;
- Planted terraces to stream presenting safe aesthetically pleasing corridor; and
- Passive open space adjacent highway subject to storm event inundation.

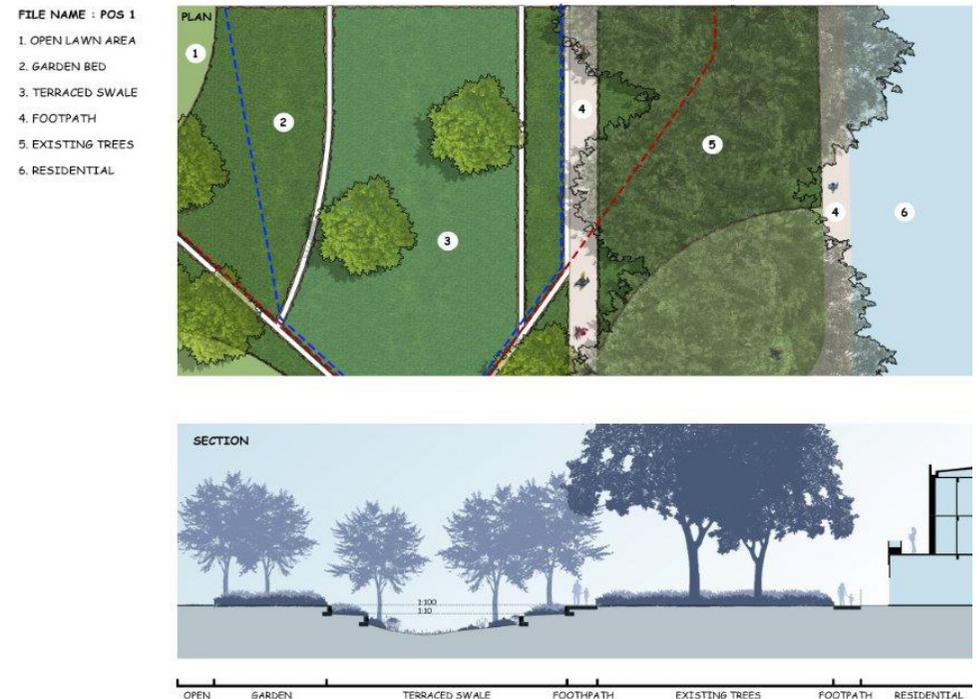


Figure 90: Principles for the design of the Southern Main Drain through Public Open Space 1

5.7.5.3 Public Open Space 2

Public Open Space 2 is also proposed to accommodate the southern main drain via a terraced urban stream which winds through retained mature trees. The hydraulic function of the space is proposed to accommodate the 100 year storm event within the open space by manipulation of its boundaries and paths to form bunds creating a subtle basin. The ten year storm event is proposed to be accommodated within the stream corridor, as shown in **Figure 91** and **Figure 93**. Key drainage considerations for the detailed design include:

- Optimisation of open space for informal park uses;
- Tree retention and open channel balance;
- Safe stream banks to selected areas; and
- Vegetated banks and feature terracing to retain trees.

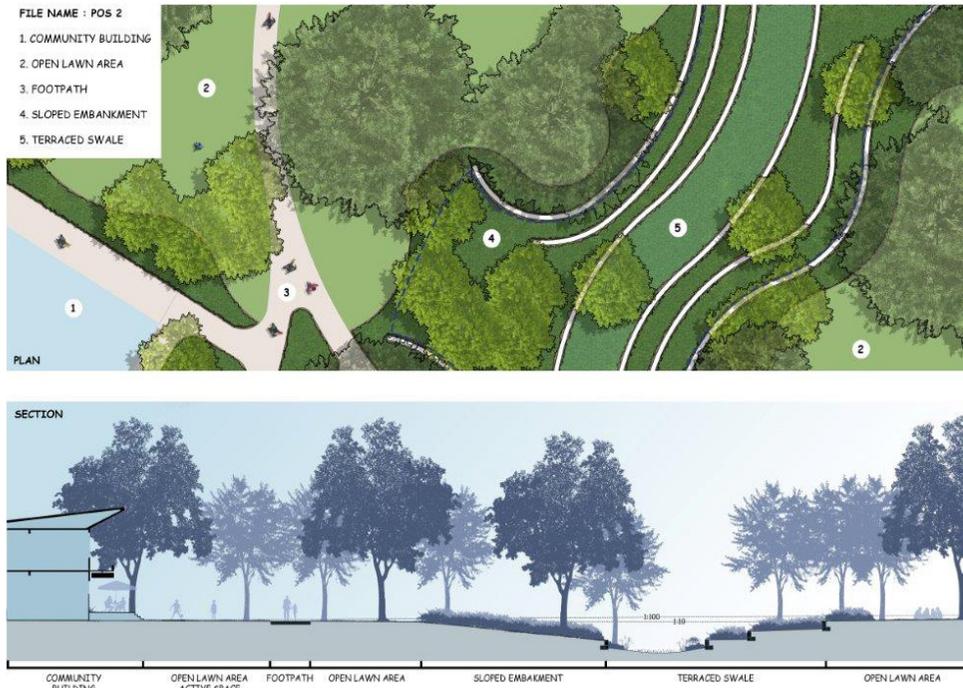


Figure 91: Principles for the design of the Southern Main Drain through Public Open Space 2

5.7.5.4 Public Open Space 3

Public Open Space 3 is proposed to incorporate the Southern Main Drain within a pipe diversion as an extension of the existing pipe diversion underneath Central Avenue. The triangular shape of the open space and the desire to retain mature trees effectively prevents the construction of an open environmentally responsive channel as earthworks would remove trees.

The extension of the Southern Main Drain as a piped component results in a more usable open space respecting the mature trees, as shown in **Figure 92** and **Figure 93**.

Key drainage considerations for the detailed design include:

- Mature tree retention; and
- Informal utility public open space with maximised usable space.

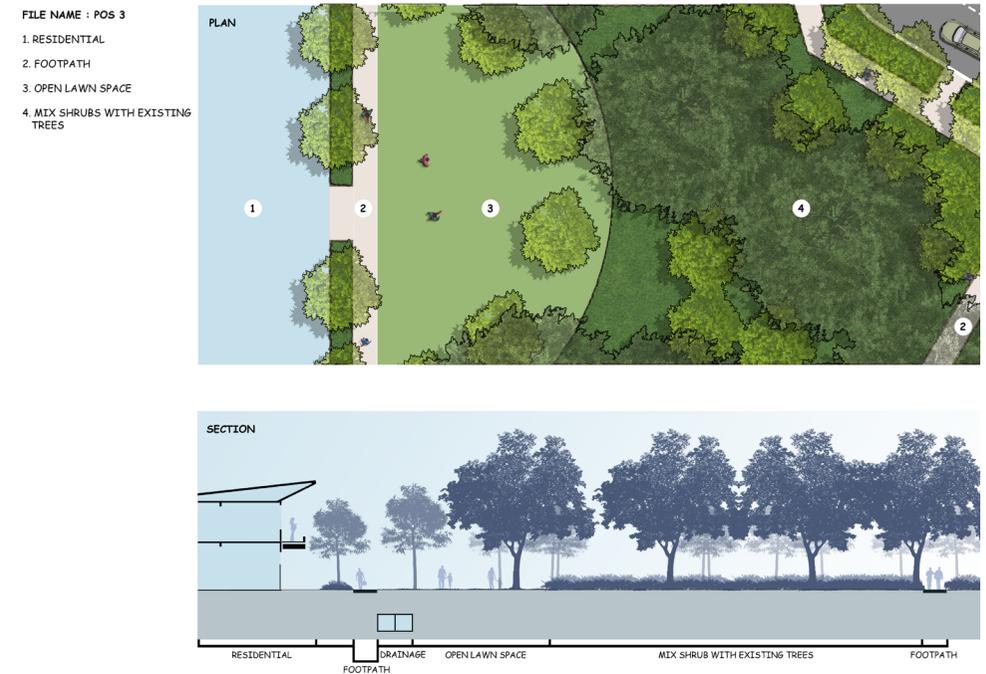


Figure 92: Principles for the design of the Southern Main Drain through Public Open Space 3

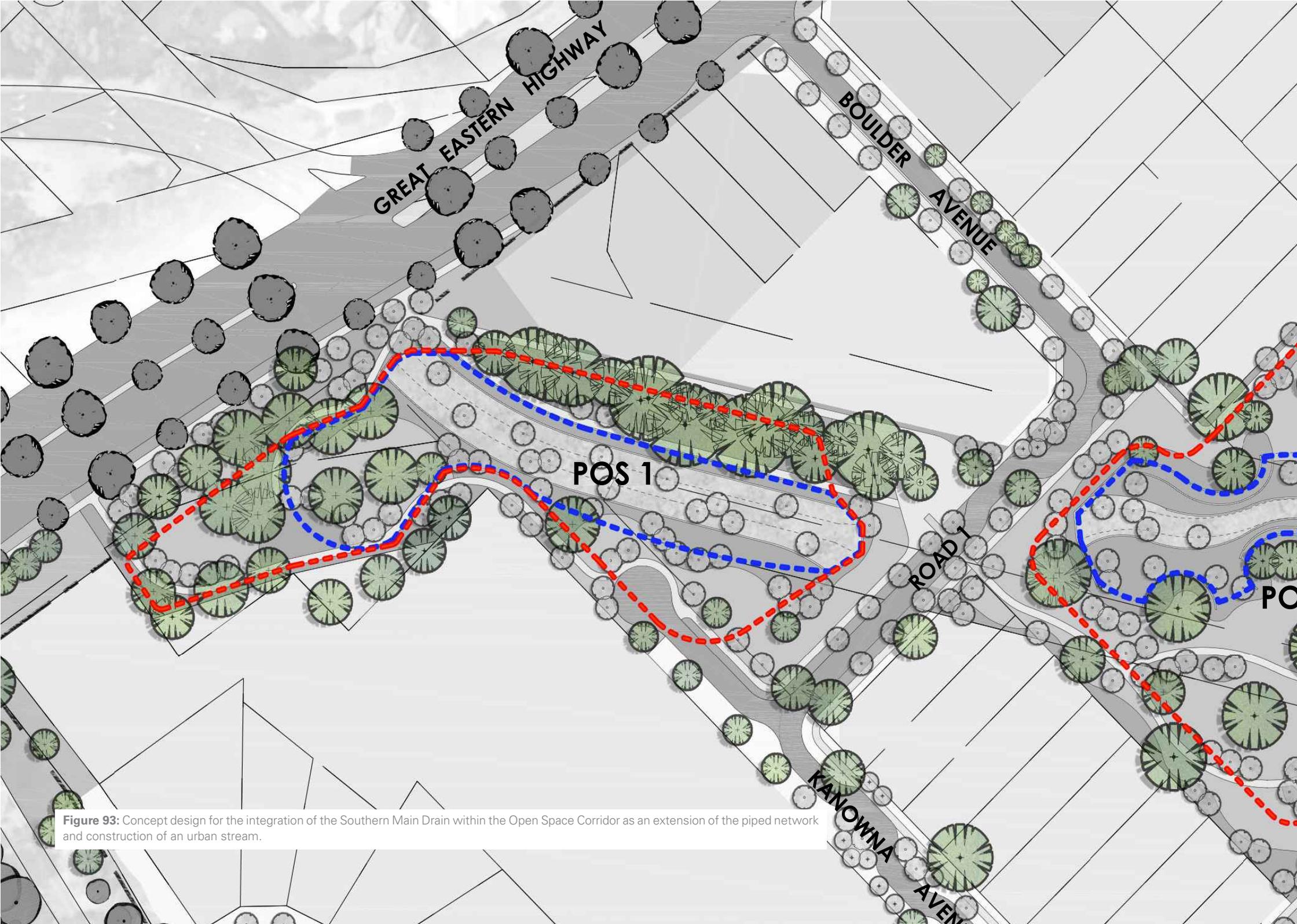
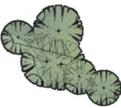


Figure 93: Concept design for the integration of the Southern Main Drain within the Open Space Corridor as an extension of the piped network and construction of an urban stream.



LEGEND

-  Existing mature trees with potential for retention based on drainage concept plan.
-  Indicative tree planting
-  Indicative extent of 1:5 year event drainage area based on concept design
-  Indicative extent of 1:100 year event drainage area based on concept design

5.7.5.5 Road Reserve Drainage Systems

Road Reserve drainage systems will employ a number of techniques to provide for infiltration of storm water as close as possible to the source, taking advantage of the site's permeability where practical.

The use of collector "rain garden" type devices and the use of infiltration areas associated with traffic calming and verge broadening or median areas, will act to infiltrate and remove/control pollutants (**Figure 94**).

Contemporary urban rain gardens and verge attenuation and recharge (VAAR) devices will be designed as public realm integrated street elements. Such devices will be supplemented with side inlet gullies and open bottom linked soakwells where required, and have been included in the cost estimates for road upgrades throughout the precinct.

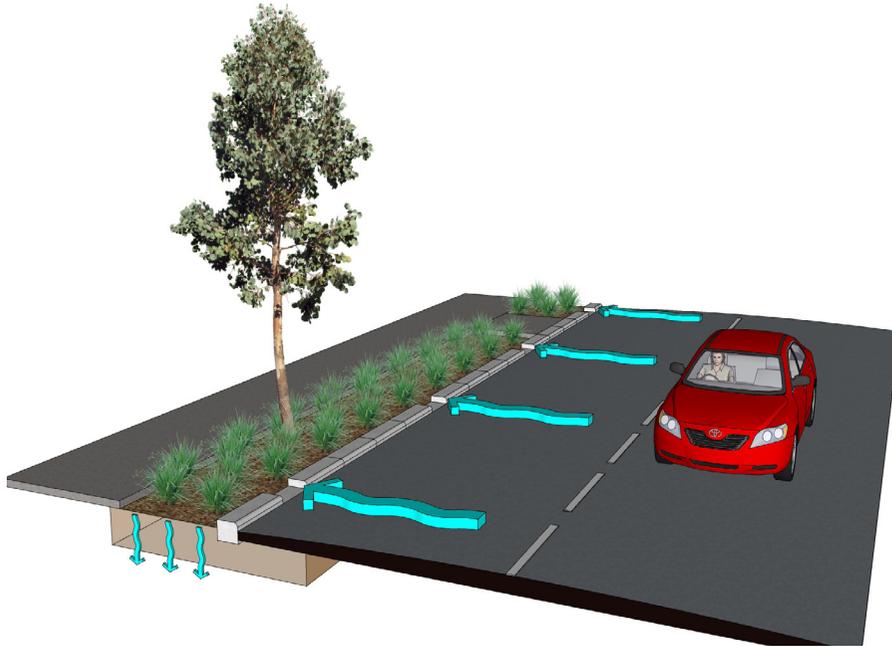


Figure 94: Local road upgrades within the precinct are proposed to incorporate WSUD drainage techniques to make direct use of storm water runoff for verge and median landscaping.

5.7.5.6 Lot and Development Drainage

All lots being redeveloped will be required to infiltrate or store storm water on site. Roof water infiltration can be accommodated by utilising soakwell pits. Where possible, paved areas should be graded towards infiltration beds or collect storm water in pits for infiltration via soakwells (**Figure 95**). Strategies for drainage interception and runoff slow down on higher density development are further guided within the *Redcliffe Station Precinct Design Guidelines*.



Figure 95: Lot and development drainage will be required to infiltrate or store storm water on site, and will be further guided by the Redcliffe Station Precinct Design Guidelines.

5.7.5.7 Demand Reduction

In general, urban growth and increased population, will result in increased demand for water for new residents and occupants. Domestic water use can be divided into in-house (e.g. showers) and ex-house (e.g. gardens). In addition to domestic use, there is demand for water resources for irrigation of POS.

Within the precinct, water savings will be achieved through the application of water wise landscapes in open space areas using native species, passive irrigation through drainage management, xeriscaping and minimising irrigated turf areas. All street and shrub planting species will be selected to survive with minimal irrigation after the initial three year water establishment period.

The future development will be informed through the *Redcliffe Station Precinct Design Guidelines* on plumbing fittings and fixtures specified to be low water usage.

Examples for water reduction can be achieved through specific use of elements such as shower heads but also through the need to have developments using performance specified washing machines, air conditioner etc.

5.7.5.8 Responsibility for Implementation

The responsibility for implementation of drainage management techniques is outlined in **Table 35**.

Table 35: Responsibility for implementation of drainage management

STAGE / COMPONENT	RESPONSIBILITY	REQUIREMENT AND PERIOD
Local Water Management Strategy	Proponent – Government Agency or Major Developer	Prior to finalisation of Activity Centre Plan
Urban Water Management Plan	Proponent – Government / LGA or Major Developer	Required with subdivision application
Drainage system construction	Proponent – Government / LGA or Major Developer	After completion handed over to Department of Water / WaterCorp / City of Belmont
Drainage system maintenance	Proponent – Government / LGA or Major Developer After completion handed over to Department of Water / WaterCorp / City of Belmont	Cleared Bi-annually and inspected to ensure functionality, public safety in open space
Non- Structural controls	Proponent – Government / LGA or Major Developer	Sediment and erosion control during construction phase. Design guidance and Information packs provided to purchasers/ developers for non-structural control measures such as green roofs, water reuse and storage and waterwise gardening practices
Structural Control	Proponent – Government / LGA or Major Developer– first 2 years Department of Water / WaterCorp / City of Belmont - after handover	Drainage structures to be cleared bi-annually and monitored to ensure functionality
Structural Control <i>Allotment soak well</i>	Lot purchasers and developers	Installation and maintenance of individual allotment soak wells, bladder and chamber storage
Water Quality Monitoring and Reporting	Proponent – Government / LGA or Major Developer	Data to be collected as described in Section 5.0 to be submitted annually to the City of Belmont and DoW for a period of 2 years after practical completion.

5.8 ACTIVITY CENTRE PLAN CHECKLIST - UTILITY INFRASTRUCTURE, DRAINAGE AND RESOURCE CONSERVATION

Section 4 of the explanatory report has been prepared to comprehensively address the utility infrastructure and drainage upgrade requirements as part of the intensification of the precinct.

In accordance with this guidance a checklist has been prepared to delineate the sections of the ACP which are used to address each of the key SPP4.2 requirements, and this is outlined in **Table 35**.

Table 36: Activity Centre Plan Checklist - Utility Infrastructure, Drainage and Resource Conservation.

SPP4.2 Reference	ACP Requirement	Section of ACP addressing Requirement	Summary / Additional Comment
1	Establish guidelines for new development to ensure that energy-saving design and technology is incorporated through passive solar building orientation and roof designs that facilitate the use of photovoltaic panels, natural ventilation and wind turbines.	NA	The Activity Centre Plan does not address this component as it will be addressed as part of the Redcliffe Station Precinct Design Guidelines.
2	Mandate the use of waterwise plants and trees in all centre landscape plans;	Section 5.7	Waterwise plants and trees are proposed for use in street verge and median landscaping and throughout the public open space areas. Guidance on landscaping within private landholdings will be provided by the Redcliffe Station Precinct Design Guidelines.
3	Establish targets for stormwater and greywater use.	NA	The Activity Centre Plan does not address this component as it will be addressed as part of the Redcliffe Station Precinct Design Guidelines.

IMPLEMENTATION

SECTION 6

6.1 PLANNING FRAMEWORK AND STAGING

In order to facilitate the redevelopment of the precinct a comprehensive planning framework is required to be prepared and implemented.

The proposed framework at the time of preparing this report is outlined within **Figure 96**, inclusive of the preparation of this ACP, a statutory planning implementation mechanism and detailed design guidelines for development within the precinct. In addition to this, a Development Contribution Plan is proposed to be prepared to equitably share the costs of infrastructure required to facilitate redevelopment.

Each of these elements is further outlined in the following sections.

6.1.1 ACTIVITY CENTRE PLAN

The ACP will guide the preparation and implementation of the statutory implementation mechanism by providing recommendations for zoning, land use permissibility, subdivision requirements and development requirements, in addition to guiding implementation, public realm upgrades and infrastructure investment.

This report is the starting point for addressing the requirements for the preparation of an ACP. Once preliminary advertising is undertaken the City will review feedback received and update the report and progress to Council for formal advertising in accordance with the *Planning and Development (Local Planning Scheme) Regulations 2015*.

Upon conclusion of advertising the matter will be further considered by Council for a recommendation to the WAPC, and the WAPC will determine whether to adopt the final plan (with or without modifications).

It is anticipated that this process will be complete by mid to late 2021.

6.1.2 STATUTORY IMPLEMENTATION

The statutory implementation of the plan has not been confirmed at the time of preparing this report, but is broadly proposed to occur in one of two ways:

- **Option 1** - An Improvement Plan, along with an Improvement Scheme, will be prepared based on the recommendations and outcomes of the ACP in accordance with Part 8 of the *Planning & Development Act 2005*, and statutory implementation will thereafter be guided by the Improvement Scheme rather than the City of Belmont's *Local Planning Scheme No. 15*.

- **Option 2** - The ACP will be used to guide amendments to the City of Belmont's *Local Planning Scheme No. 15*, which will thereafter be the statutory mechanism which guides subdivision and development within the precinct.

In terms of Option 1, whilst this has been identified as an implementation mechanism, the Department of Planning, Lands and Heritage has advised that the Western Australian Planning Commission do not intend to initiate an Improvement Plan or Improvement Scheme for the precinct.

Upon confirmation of the preferred statutory implementation mechanism the ACP will be updated to reflect the final relationship between the plan and the operative planning scheme.

It is anticipated that this process will commence following preliminary advertising of the ACP, and be complete by late 2021.

6.1.3 DESIGN GUIDELINES

The Redcliffe Station Precinct Design Guidelines will be prepared to further guide built form and site design and will operate in conjunction with this ACP and State Planning Policy 7.3 (Residential Design Codes).

The design guidelines are to be adopted as a planning policy in accordance with the provisions of the statutory implementation mechanism which governs the subject area, and are to be a key part of the assessment of any future subdivision or development applications.

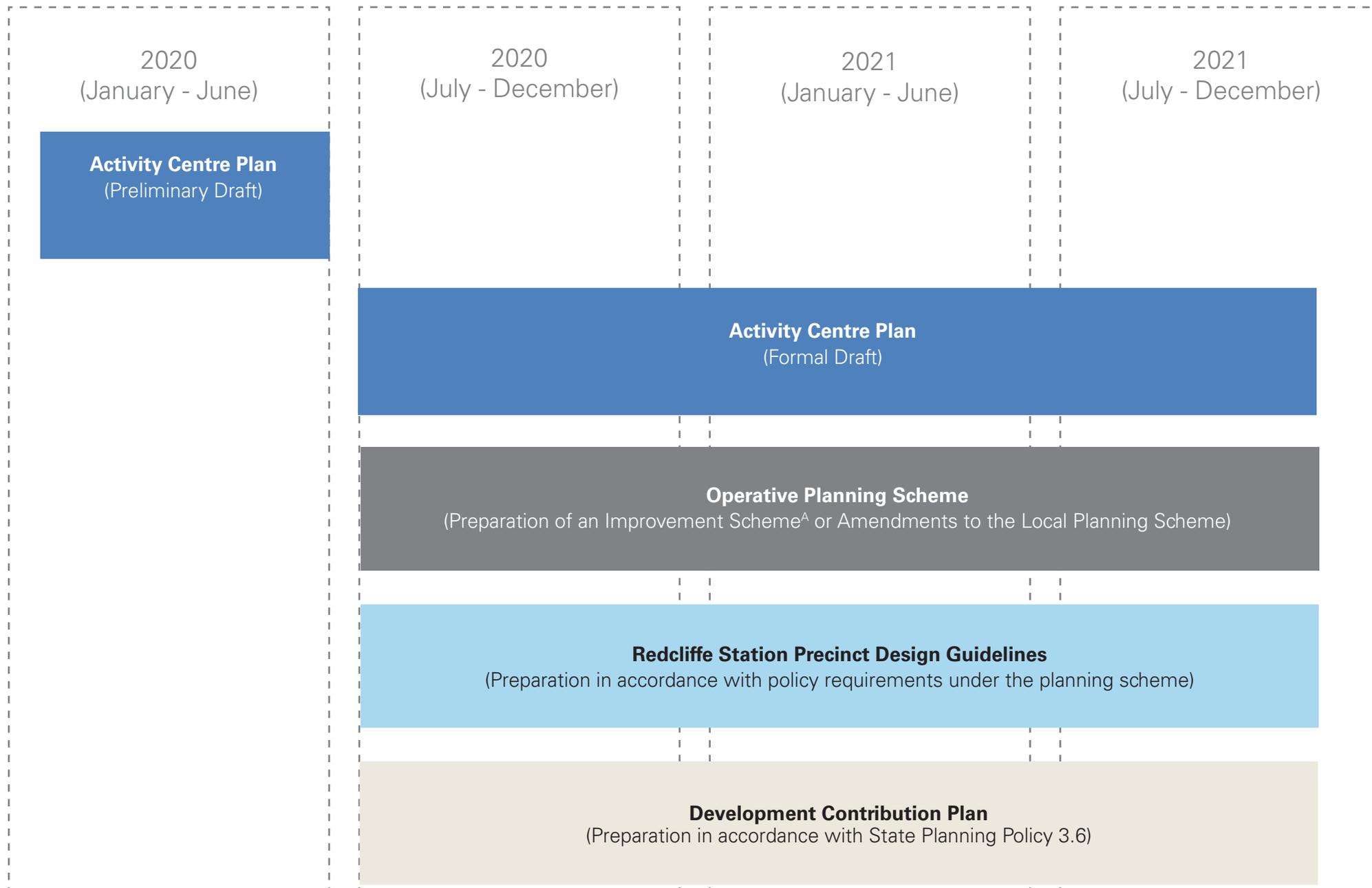
The draft Design Guidelines are anticipated to be adopted for use by late 2021 in conjunction with the preferred statutory implementation mechanism.

6.1.4 DEVELOPMENT CONTRIBUTION PLAN

A Development Contribution Plan (DCP) is to be prepared to facilitate the equitable sharing of the costs of identified infrastructure upgrades required to support redevelopment within the precinct.

The DCP will be prepared in accordance with the guidance provided by the WAPC's *State Planning Policy 3.6* and is expected to be advertised and adopted for use by late 2021 in conjunction with the statutory implementation mechanism.

The anticipated inclusions within the DCP are further outlined within **Section 6.4**.



^A It is noted that the Department of Planning, Lands and Heritage has advised that the Western Australian Planning Commission do not intend to initiate an Improvement Plan or Improvement Scheme for the precinct.

Figure 96: Indicative timeframes for the preparation of the planning framework to guide development and subdivision within the Redcliffe Station Precinct.

6.1.5 ANTICIPATED DEVELOPMENT STAGING

It is not proposed to stage the statutory planning modifications within the precinct based on specific sub-precincts, and as such the increase in development potential for individual sites will happen simultaneously across the entire precinct.

The simultaneous increase in development potential makes it more challenging to anticipate the likely staging of development, as individual developments will be led by the market response and the response to investment in public infrastructure.

In attempting to use these two factors to predict the likely staging of development, the anticipated development staging plan has been prepared in **Figure 97**.

In reviewing this plan it is important to note:

- a) The staging precincts shown are indicative only, and as such are not intended to restrict or inhibit development outside of an identified stage; and
- b) The staging precincts are not necessarily anticipated to occur sequentially, with development to occur throughout the entire precinct over time as market demand and infrastructure upgrades incentivise redevelopment.

The stages are further described as follows:

Stage A

Stage A development is predominantly anticipated to be led by the delivery of the Redcliffe Train Station and the upgrades to the public realm in the immediate vicinity of the station.

In addition it is anticipated that development along Second Street will progress during the first stage based on market interest in the area, as this area:

- a) Is in close proximity to the key community and commercial assets of the precinct, including the Redcliffe Station, Redcliffe Primary School, Discount Factory Outlet and future Neighbourhood Centre within the Perth Airport Estate; and
- b) Includes the State Government owned development sites adjacent the Stanton Road bridge which have been identified as a potential development demonstration project.

Stage B

Stage B is anticipated to be led by the delivery of the open space corridor and the progression of State Government development sites immediately abutting these areas, along with the redevelopment of privately owned land parcels.

The high quality amenity provided by the open space area, along with the close proximity to the station, is anticipated to draw significant market interest in the area.

Stage C

Stage C is anticipated to incorporate the remaining privately owned land within the precinct as:

- a) Road upgrades fronting these lots are completed;
- b) Viable land assembly opportunities arise in response to increasing market demand for residential development; and
- c) Developable land within Stages A and B begins to diminish.

Stage D

Stage D is anticipated to incorporate the existing commercial land fronting Great Eastern Highway in response to the upgrade of the highway reservation by Main Roads.

The road upgrades will provide a higher level of local amenity and improved connectivity, and will encourage redevelopment of the abutting sites to take advantage of the upgrades and facilitate side and rear access.

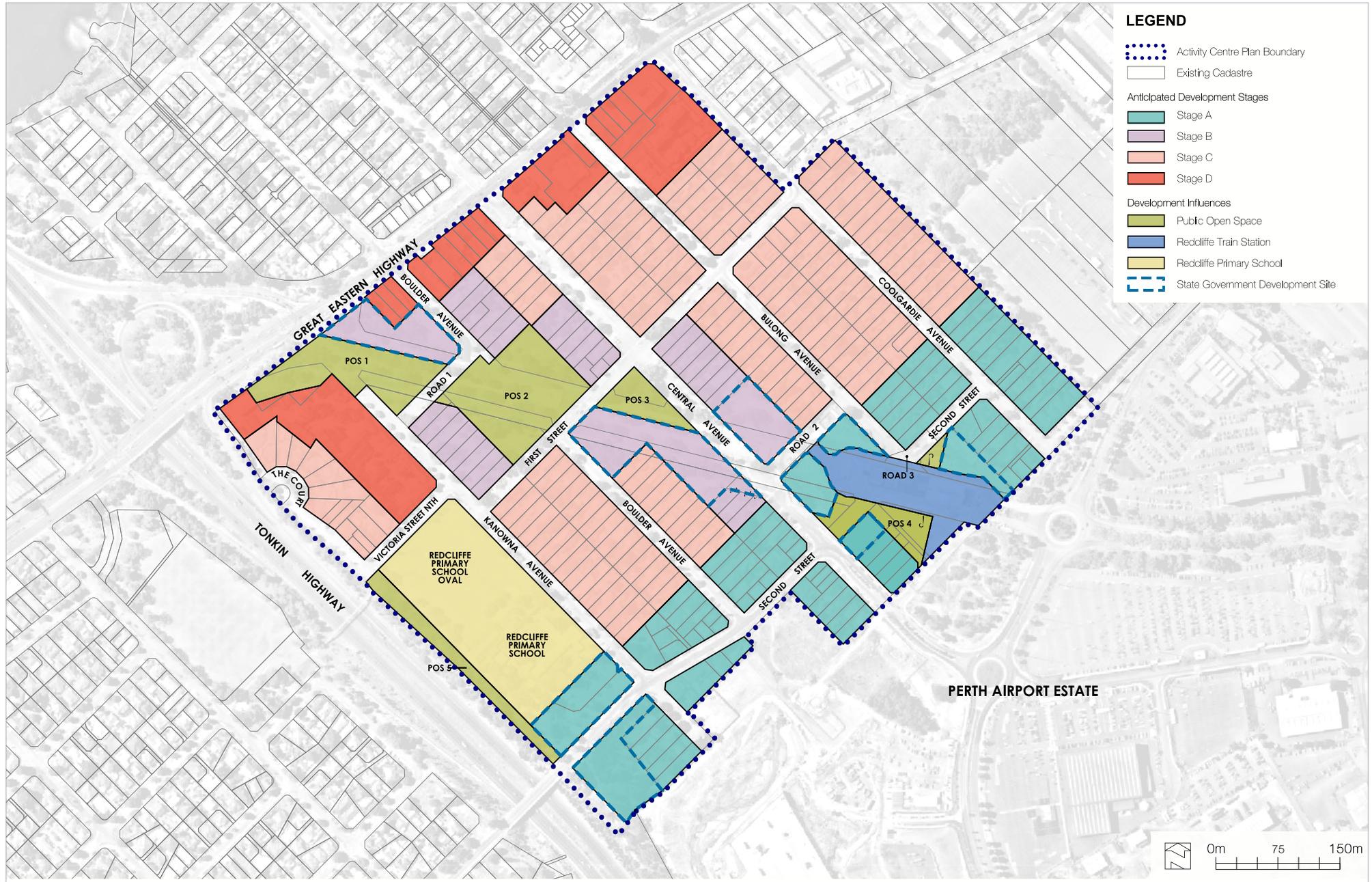


Figure 97: Anticipated staging of development within precinct based on infrastructure key infrastructure influences.

6.2 LAND ASSEMBLY

In addition to the necessary assembly of private landholdings identified as a component of Section 4.2.1, the State Government and City of Belmont will need to:

- a) facilitate a process of land assembly to reappropriate the redundant Brearley Avenue reservation and realigned Southern Main Drain; and
- b) create the new road and open space sites as public purpose sites dedicated for their intended purpose and identify land parcels for future development.

6.2.1 REAPPROPRIATION OF STATE LAND

The process to undertake the reappropriation of the redundant Brearley Avenue reservation and the realigned Southern Main Drain will be led by the Department of Planning, Lands and Heritage as part of a subdivision proposal to:

- Create POS 1, POS 2 and POS 3 as public purpose sites vested with the City of Belmont for Parks and Recreation purposes;
- Create POS4 and the Redcliffe Train Station as public purpose sites vested with the Public Transport Authority for operation of the train station and immediate surrounds;
- Create and title proposed Lots 1-9 as freehold landholdings in the ownership of the State Government; and
- Create Roads 1, 2 and 3 and the connection of Central Avenue as local road reservations vested with the City of Belmont.

The proposed pattern of subdivision to create the above sites is shown in **Figure 98**. It is anticipated that the process for creation of the new sites will be completed prior to the opening of Redcliffe Train Station in 2021.

Similar to the above, the process to reappropriate the portion of the Tonkin Highway reservation identified as 'POS5' will be undertaken by the Department of Planning, Lands and Heritage and the City of Belmont in response to the amendment to the *Metropolitan Region Scheme* to exclude this area from the Primary Regional Roads reservation and include it as a public purpose site vested with the City of Belmont for Parks and Recreation purposes, prior to progression of land parcel for development as public open space.

6.2.2 LAND ACQUISITION - ROAD 3

In order to provide the full extent of public land identified within the ACP it will be necessary to acquire a small portion of a privately owned site.

The proposed linkage of Second Street and Bulong Avenue to the north of the Redcliffe Station is an important link to ensure efficient movement of vehicles dropping and picking up rail passengers from the north side of the station. The current configuration, which will result in two abutting cul-de-sacs, is sub-optimal and likely to result in traffic congestion within each street. To avoid this it is proposed to connect the two roads as a through movement, but this will require the acquisition of a portion of the abutting privately owned Lot 310 to provide the necessary truncation for the road connection. The indicative area of land required from the 885m² site is 14m², as shown in **Figure 98**.

The public acquisition of this land may occur in a number of ways, including:

- a) A government agency may negotiate the purchase of the entire site with the current landowner, undertake the necessary subdivision to excise the required portions of land, and then on sell the remainder of the site for development purposes;
- b) A government agency may amend either the Metropolitan Region Scheme or the Local Planning Scheme to include the required land within a reservation and compulsorily acquire the subject portion of land from the current landowner(s) in accordance with Part 11 of the *Planning & Development Act 2005*; or
- c) The site may be included within a Development Contribution Plan as required for public purposes, and a government agency may use funds collected by the DCP to negotiate the purchase or compulsorily acquire the land in accordance with a) or b) above.

The land acquisition required to deliver the full extent of the public spaces abutting the station is considered a necessary component of the functionality of the station, and as such it is not considered reasonable to burden landowners within the broader precinct with these costs via a DCP, or burden the broader City of Belmont ratepayers via the use of municipal funds.

The preferred mechanism for the land acquisition is a negotiated purchase as per a) above, as this is considered the quickest and fairest mechanism to give the affected landowners certainty as to the timing of the acquisition, and if undertaken prior to 2021, will ensure the station precinct can be delivered as envisioned.

6.3 INFRASTRUCTURE DESIGN AND DELIVERY

Planning for the design and delivery of infrastructure has been undertaken at a conceptual level as a component of this plan. This analysis is included as **Appendix 1** and **Appendix 2**, and is summarised in the following sections, including the City of Belmont's preferred funding mechanisms subject to further analysis and negotiation.

6.3.1 PUBLIC OPEN SPACE AND SOUTHERN MAIN DRAIN

The open space areas outlined in Section 4 have been the subject of varying levels of design as a component of the preparation of this ACP. The status of their design and the responsibility for further design and delivery is outlined as follows and summarised within **Table 38**:

6.3.1.1 Station Plaza

The Station Plaza has been designed as a component of the Public Transport Authority's development application for the Redcliffe Train Station. The works to be undertaken will include the hardscaping and softscaping of the plaza space, provision of pedestrian shelter along the main southern linkage to the Kiss and Ride area, and interim landscaping of the future development sites.

The Public Transport Authority will be responsible for the delivery of these works as a component of the Forrestfield Airport Project. Any further provision of additional community infrastructure will be the responsibility of either the City of Belmont as a capital works item or by developers of the abutting development sites as a component of those developments.

6.3.1.2 Open Space Corridor

The open space corridor, inclusive of the extent of open space, internal configuration and incorporation of the Southern Main Drain, has been designed to a concept level only as a component of this plan.

The detailed design of this upgrade will be a shared undertaking between the City of Belmont, who are generally responsible for the delivery and maintenance of open space within residential areas, and the State Government, as the owner of the Southern Main Drain asset. The delivery of the upgrade will be managed by the City of Belmont and the State Government.

The costs associated with the delivery of the open space network excluding the realignment of the Southern Main Drain, based on a preliminary analysis, are estimated at \$3,024,000, as outlined within **Table 37**. The delivery of the open space is proposed to be funded by the Development Contribution Plan as a cost that is of direct benefit to, and needed as a result of, future development within the precinct. The delivery of the open space corridor is anticipated to occur during the first 5 years of the project (2021-2026).

6.3.1.3 Linear Woodland Link

The Linear Woodland Link in Section 1 as 'POS5' has been designed to a conceptual level only as a component of this plan. The detailed design and delivery of this upgrade will be the responsibility of the City of Belmont, following the necessary amendment to the Metropolitan Region Scheme to exclude the area from the Primary Regional Road Reservation and creation of a separate land parcel for open space purposes.

The costs associated with the delivery of the open space network, based on a preliminary analysis, are estimated at \$180,000, as outlined within **Table 37**. The delivery of the open space is proposed to be delivered during the first five years of the project and funded by the Development Contribution Plan as a cost that is of direct benefit to, and needed as a result of, future development within the precinct.

6.3.1.4 Investigation of Open Space Opportunities

The investigation of further open space opportunities outlined in **Section 4.4.1** is proposed to occur within the first five years of the project (2021 - 2026). This will require collaboration with the key stakeholders, including the Department of Education and the Primary School for the purpose of Redcliffe Primary School Oval and Perth Airport Pty Ltd for the purpose of opportunities within the Airport Estate.

6.3.1.5 Southern Main Drain Realignment

The design for the realigned Southern Main Drain has been prepared to a concept level only as a component of this plan.

The City of Belmont proposes that the detailed design of this upgrade will be undertaken by the State Government as a collaboration between the Water Corporation, Department of Water and Department of Planning, Lands and Heritage, inclusive of the necessary storm water modelling, updates to concept designs, preparation of a Local Water Management Strategy and detailed design.

The costs associated with the design and delivery of the realigned Southern Main Drain, based on the preliminary analysis, are estimated at \$2,606,000, as shown in **Table 34**. The design and delivery is proposed to be funded by the State Government as works necessary for the realignment of a State Government drainage asset and necessary to de-constrain developable parcels of State Government owned land within the former Brearley Avenue reservation. It is recognised, however, that the funding for these works has not been confirmed at the time of preparing this report.

The delivery of the realigned Southern Main Drain is anticipated to align with the delivery of the open space corridor, during the first 5 years of the project (2021-2026)

Table 37: Estimated costs for delivery of public open space network (excluding the realignment of the Southern Main Drain which are outlined within Table 34).

ITEM	PRELIMINARY COST ESTIMATE (EXCL GST)
Open Space Corridor (POS1, POS2 and POS3)	
Preliminaries	\$240,000
Hardscaping (Shared path network, paved areas)	\$970,000
Landscaping Costs (turf, shrubs and additional tree planting)	\$460,000
Community Infrastructure (playground within POS2, Exercise Equipment in POS1, seating and shelter throughout)	\$1,354,000
Total Cost	\$3,024,000
Station Plaza (POS4)	
All costs for delivery	Costs for POS 4 are to be included within the Forrestfield Airport Link project.
Linear Woodland Link (POS5)	
Preliminaries	\$40,000
Hardscaping (Shared path network)	\$60,000
Landscaping Costs (shrubs and additional tree planting)	\$80,000
Total Cost	\$180,000
Total Costs	\$3,204,000

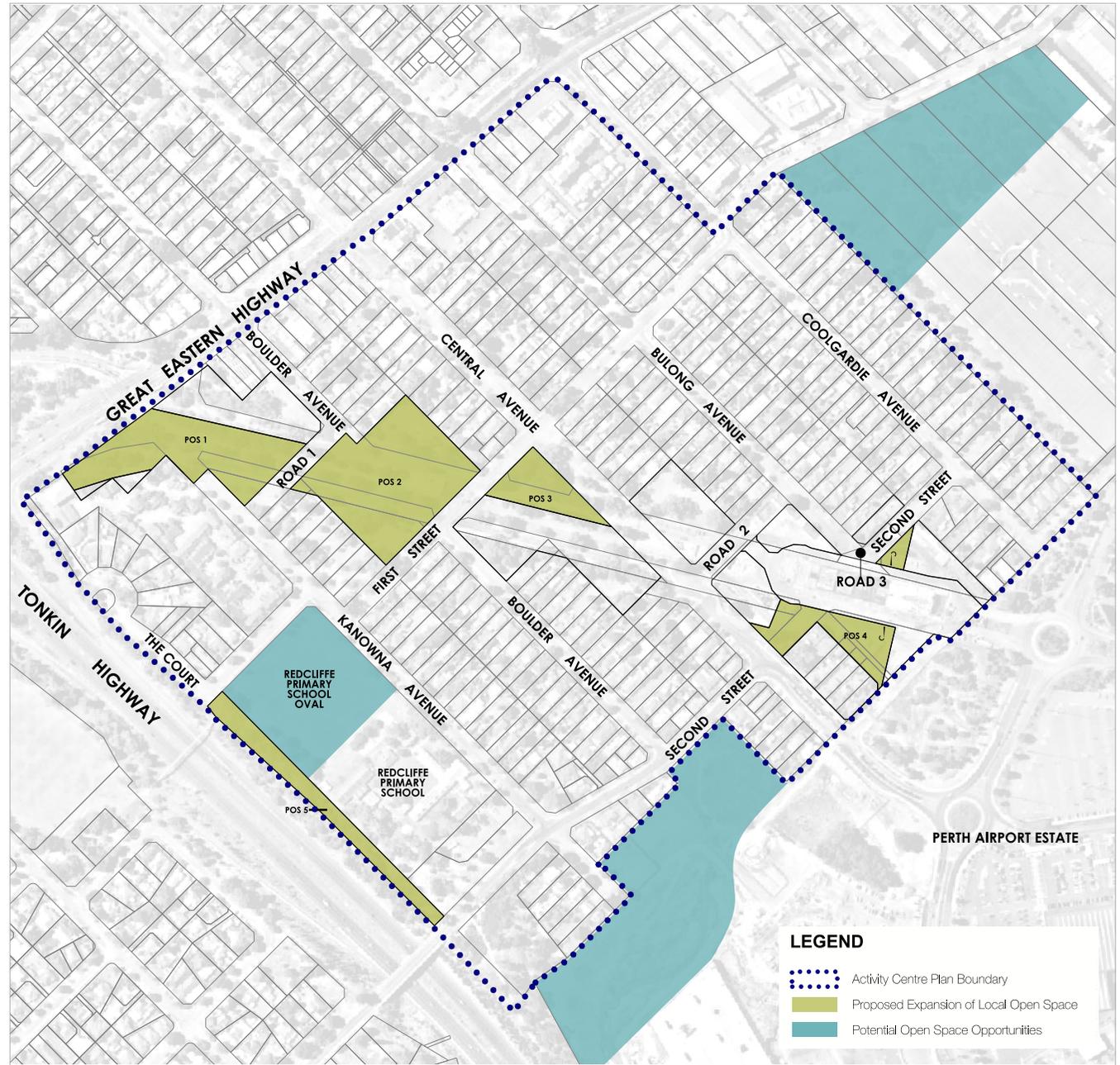


Figure 99: Extent of public open space areas included in ACP

Table 38: Summary of proposed implementation requirements for public open space and drainage matters within the Redcliffe Station Precinct.

Infrastructure	Recommended Responsibility for Design and Delivery	Preliminary Cost Estimate (excl GST)	Proposed Funding Mechanism	Indicative Timeframe for Delivery	Matters for Resolution in Implementation
Public Open Space					
Station Plaza (POS 4)	Public Transport Authority as a component of the Forresterfield Airport Link Project	Unknown	State Government Investment	2021	<ul style="list-style-type: none"> Creation of public purpose site via land transfer and vesting order. Design of Public Realm infrastructure as a component of initial site delivery. Further embellishment as a component of abutting development or interim place making opportunities.
Linear Parkland (POS 1, POS 2 and POS 3) (excluding Southern Main Drain integration)	City of Belmont	\$3,024,000	Development Contribution Plan	2021-2026	<ul style="list-style-type: none"> Creation of public purpose sites via land transfer and vesting order(s). Action opportunities for early activation of public open space areas. Detailed design of public realm infrastructure as a component of site delivery. Integration of Southern Main Drain realignment in collaboration with State Government. Further embellishment as a component of abutting development or other place making opportunities.
Linear Woodland Green Link (POS 5)	City of Belmont	\$180,000	Development Contribution Plan	2021-2026	<ul style="list-style-type: none"> Amendment to Metropolitan Region Scheme to exclude land from the Primary Regional Road reservation. Creation of public purpose sites via land transfer and vesting order(s). Detailed design of public realm infrastructure as a component of site delivery.
Redcliffe Primary School Oval (Shared Use Arrangement)	City of Belmont, Redcliffe Primary School and Department of Education	Unknown	Shared funding arrangement between City of Belmont and DoE / Redcliffe Primary School.	2021-2031	<ul style="list-style-type: none"> Agreement for shared usage arrangements for the Redcliffe Primary School oval to the satisfaction of the City of Belmont, Redcliffe Primary School and Department of Education. Agreement for funding arrangement for capital upgrades to open space to facilitate shared usage and exclusive use by the school during school hours. Agreement for ongoing maintenance responsibilities between the City of Belmont and Redcliffe Primary School.

Infrastructure	Recommended Responsibility for Design and Delivery	Preliminary Cost Estimate (excl GST)	Proposed Funding Mechanism	Indicative Timeframe for Delivery	Matters for Resolution in Implementation
Public Open Space					
Perth Airport Estate Open Space Opportunities (Southern Main Drain Basin and Redcliffe Road Bushland)	Perth Airport Pty Ltd and the City of Belmont	Unknown	Shared funding arrangement between City of Belmont and Perth Airport Pty Ltd	2021 - 2031	<ul style="list-style-type: none"> Investigation of opportunities and constraints for each site to develop as public open space. Agreement for funding arrangement for capital upgrades required to facilitate active and passive recreation opportunities for residents and visitors within the surrounding precinct. Agreement for ongoing maintenance responsibilities between the City of Belmont and Perth Airport Pty Ltd.
Southern Main Drain Realignment					
Realignment of Southern Main Drain (Modelling, Design and Approval)	Western Australian State Government Department of Planning, Lands and Heritage, Department of Water and Environment Regulation, Water Corporation)	\$150,000	State Government Investment ^A	2021-2026	<ul style="list-style-type: none"> Undertake modelling of stormwater based on concept designs prepared as a component of this Activity Centre Plan. Refine concept plan to a level of detail suitable to support the preparation of a Local Water Management Strategy. Prepare a Local Water Management Strategy consistent with the guidance provided by the Department of Water and Environment Regulation. Seek approval for the Local Water Management Strategy and refined concept design for the Southern Main Drain.
Realignment of Southern Main Drain (Detailed Design and Delivery)		\$2,456,000	State Government Investment ^A	2021-2026	<ul style="list-style-type: none"> Undertake detailed design of the Southern Main Drain suitable for construction purposes in collaboration with the City of Belmont to ensure integration with open space design and tree retention. Undertake the realignment works consistent with the detailed design and in collaboration with the City of Belmont as a component of the open space upgrade and delivery.

^A At the time of preparing this report the State Government has not committed to funding these items.

6.3.2 REGIONAL AND LOCAL ROADS

The regional and local road upgrades outlined in Section 2 have been the subject of varying levels of design as a component of the preparation of this ACP. The status of their design and the responsibility for further design and delivery is outlined as follows and summarised within **Table 39**:

6.3.2.1 Great Eastern Highway Upgrade

The upgrade of Great Eastern Highway will be undertaken by Main Roads WA and is anticipated to include:

- Widening of the carriageway to include dedicated bus lanes;
- Creation of turning lanes at key intersections;
- Creation of dedicated on-street cycle lanes; and
- Upgrading and standardising footpaths, landscaping and pedestrian crossing points within the verge and median areas.

The design standard anticipated is similar to the already upgraded section of Great Eastern Highway between the Graham Farmer Freeway and the Tonkin Highway.

Within the portion of Great Eastern Highway fronting the precinct the following outcomes are of the utmost importance to the success of redevelopment proposed within the precinct:

- a) Designing the signalised intersections at Coolgardie Avenue to permit safe and efficient u-turn movements to permit vehicles to easily access mixed use development fronting the Highway;
- b) Designing the intersection of Boulder, Bulong and Central Avenue with Great Eastern Highway to minimise 'rat-running' through the precinct;
- b) Designing the pedestrian crossing points across Great Eastern Highway to ensure safe and efficient movement of pedestrians between the precinct and the Swan River / Garvey Park area to the north; and
- c) Ensuring that the restriction of direct access for sites fronting Great Eastern Highway is well managed and limits disruption to existing and future businesses.

The delivery of the upgrade will be undertaken by Main Roads WA in consultation with the City of Belmont (for the section within the City's municipal area) and will be funded by the State Government.

6.3.2.2 Tonkin Highway Gap Project

The upgrade of Tonkin Highway will be undertaken by Main Roads WA and is anticipated to include modifications to the carriageway and interchange designs to improve efficiency of the overall network.

The design standard anticipated is similar to the section of Tonkin Highway between Dunreath Drive and Leach Highway.

Within the portion of Tonkin Highway abutting the precinct the following outcomes are of the utmost importance to the success of redevelopment proposed within the precinct:

- a) Maintaining the Stanton Road bridge as a key connection point for vehicles, cyclists and pedestrians accessing and egressing the precinct;
- b) Maintaining the pedestrian/cyclist bridge across Tonkin Highway at First Street as an alternative connection and direct linkage to Selby Park; and
- c) Revising the alignment of the MRS Primary Regional Road reservation to exclude the areas identified in the ACP as future development sites and open space.

The delivery of the upgrade will be undertaken by Main Roads WA in consultation with the City of Belmont and will be funded by the State Government.

6.3.2.3 Brearley Avenue

The works required for the closure and removal of Brearley Avenue are largely complete as of the time of preparing this report, with only temporary road infrastructure remaining for the connection between First Street and Boulder Avenue. The further works required to realign subterranean infrastructure within the reservation area are outlined within **Section 6.3.3**.

6.3.2.4 New Local Roads

The delivery of new local roads will generally be undertaken by the City of Belmont and the Public Transport Authority in accordance with the following:

- **Road 1** will be designed and delivered by the City of Belmont. The detailed design will be undertaken as a component of the detailed design of the open space corridor and Southern Main Drain realignment to take account of necessary levels, crossing points and drainage culverts. This work is anticipated to be undertaken during the first five years of the project (2021-2026) and the design and delivery will be funded by the Development Contribution Plan as works that of direct benefit to, and needed as a result of, future development within the precinct.

- **Road 2** will be designed and delivered by the Public Transport Authority as a component of the Forrestfield Airport Link project. This road will form a primary connection for bus movements into the station precinct, and is included within the approved development project for the Redcliffe Train Station. The road will be delivered in 2021 as a component of the opening of the train station.
- **Road 3** is to be designed and delivered by the Public Transport Authority as a component of the Forrestfield Airport Link project. Whilst not currently identified within the approved development, the extension of this road is considered essential to the efficient operation of the road network adjacent the station precinct, and should be delivered prior to the station opening in 2021. The design and delivery of Road 3 extends to the necessary acquisition of privately owned land, the costs of which should be borne by the State Government as a component of the Forrestfield Airport Link project. It is recognised, however, that the State Government has not committed to funding or undertaking this work.

6.3.2.5 Local Road Upgrades

The delivery of all local road upgrades will be undertaken by the City of Belmont and generally in accordance with the guidance provided by **Figure 100**.

The detailed design of the road upgrades will take account of the following matters, amongst others:

- Ongoing monitoring of traffic flows throughout the precinct;
- Opportunities and constraints in installation of traffic calming devices in key locations to ensure that they are effective in slowing traffic and prioritising pedestrian/cyclist movements, but do not have an unreasonable impact on the amenity or movement of abutting landowners; and
- Additional traffic modelling undertaken as a result of key changes in the road network or demand generators, such as the relocation of Qantas from the T3/T4 terminals, upgrade of Great Eastern Highway or Tonkin Highway or additional development within Perth Airport which is considered a major traffic generator.

The staging and implementation of the local road upgrades will be subject to the City of Belmont’s capital works programme and detailed design for the upgrade of these local roads, but is anticipated to be influenced by the prioritisation factors outlined in **Figure 100**.

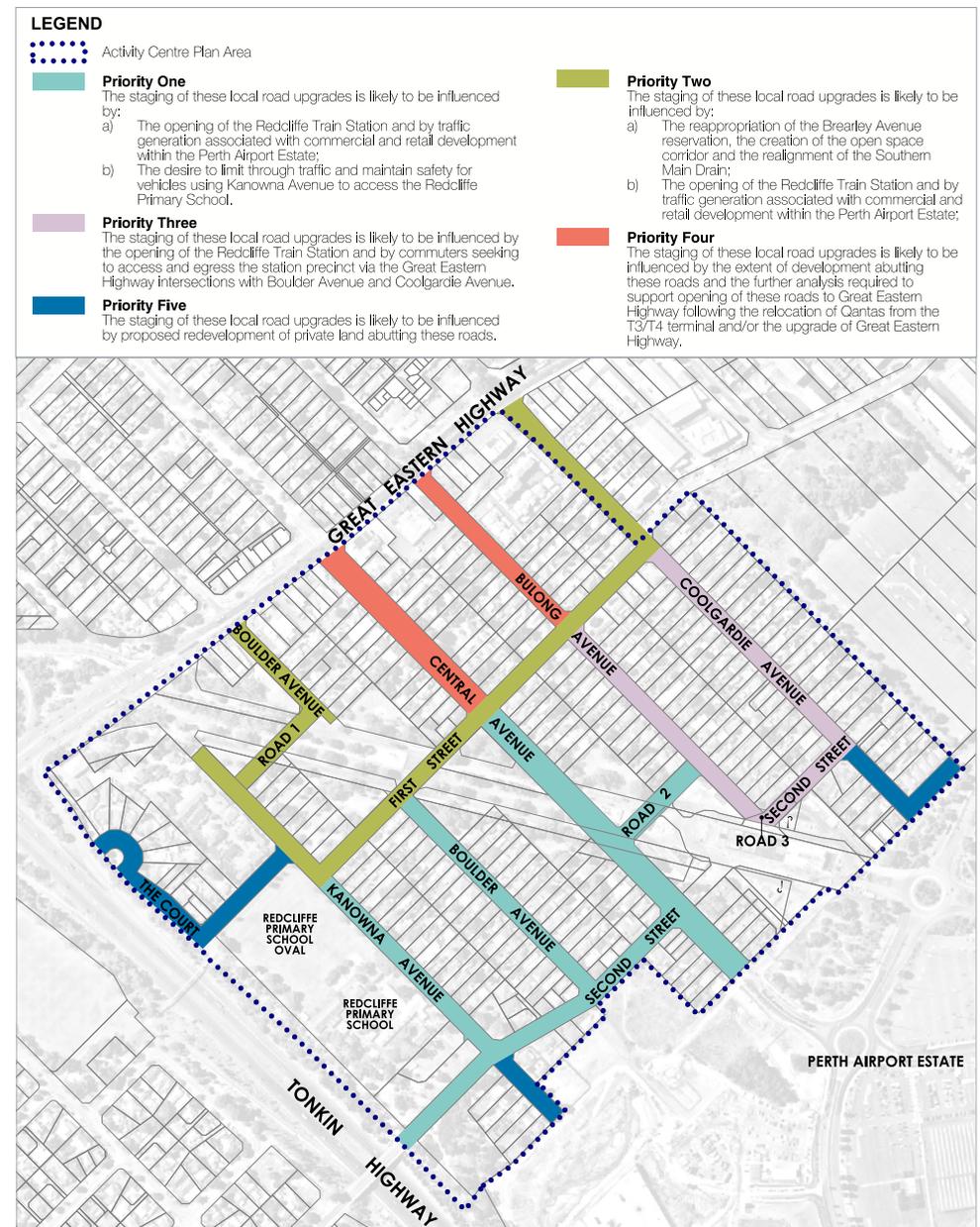


Figure 100: Indicative prioritisation of local road upgrades subject to ongoing traffic modelling and the local government capital works budget assessment.

Table 39: Summary of proposed implementation requirements for regional and local road network upgrades within and adjacent to the Redcliffe Station Precinct.

Infrastructure	Recommended Responsibility for Design and Delivery	Preliminary Cost Estimate (excl GST)	Proposed Funding Mechanism	Indicative Timeframe for Delivery	Matters for Resolution in Implementation
Regional Road Upgrades					
Great Eastern Highway Upgrade	Main Roads WA	Unknown	State Government Investment	2021 - 2031	<ul style="list-style-type: none"> • Concept and detailed design of highway upgrade; • Budget allocation for highway upgrade; • Detailed design of intersection arrangements at Coolgardie, Bulong, Central and Boulder Avenue depending on timing of upgrade and status of operations and Perth Airport; • Detailed design of dedicated pedestrian crossing points via pedestrian underpasses and overpasses at key desire lines.
Tonkin Highway Upgrade	Main Roads WA	Unknown	State Government Investment	2021 - 2031	<ul style="list-style-type: none"> • Concept and detailed design of highway upgrade; • Budget allocation for highway upgrade; • Detailed design to maintain key pedestrian crossing point via the First Street pedestrian bridge; • Detailed design to facilitate the creation of the Linear Woodland Green Link adjacent to the highway reservation.
Brearely Avenue Closure	Main Roads WA	\$200,000	State Government Investment	2021	<ul style="list-style-type: none"> • Finalisation of removal of any remaining Brearely Avenue infrastructure.
New Local Roads					
Road 1 (Kanowna Avenue to Boulder Avenue)	City of Belmont	\$319,000	Development Contribution Plan	2021-2026	<ul style="list-style-type: none"> • Creation of public purpose sites via land transfer and vesting order(s). • Detailed design preparation for road design based on street character type and culvert required to accommodate realigned Southern Main Drain. • Confirmation of budget allocation for the purpose of pre-funding construction and delivery of the item ahead of sufficient funds being available with the DCP.
Road 2 (Central Avenue to Bulong Avenue)	Public Transport Authority as a component of the Forrestfield Airport Link Project	Unknown	State Government Investment	2021	<ul style="list-style-type: none"> • Creation of public purpose site via land transfer and vesting order. • Design and delivery of road a component of the approved development application for the Redcliffe Station Precinct.

^A At the time of preparing this report the State Government has not committed to funding these items.

Infrastructure Item	Recommended Responsibility for Design and Delivery	Preliminary Cost Estimate (excl GST)	Proposed Funding Mechanism	Indicative Timeframe for Delivery	Matters for Resolution prior to Implementation
Road 3 (Connection - Second Street to Bulong Avenue)	State Government and City of Belmont	\$142,000	State Government Investment ^A	2021	<ul style="list-style-type: none"> Detailed design of road upgrade and confirmation of necessary land acquisition required for truncation. Budget allocation for the purpose of the road upgrade and land acquisition.
Local Road Upgrades					
All Local Roads (Excluding intersection treatments and new roads specified separately)	City of Belmont	\$4,263,000	Development Contribution Plan	Ongoing	<ul style="list-style-type: none"> Ongoing monitoring of traffic volumes to determine extent and timing of upgrades required. Detailed design of local road upgrades inclusive of traffic calming devices, landscaping and drainage upgrades. Alignment with timing of key infrastructure upgrades (underground power lines, realignment of Southern Main Drain and upgrade of utility service infrastructure) to be located within or intersect with the road reservation for efficiency of works and minimisation of resident disruption. Confirmation of budget allocation for the purpose of pre-funding construction and delivery of the item ahead of sufficient funds being available within the DCP.
Intersection Treatment - Roundabout (Second Street and Boulder Avenue)	Public Transport Authority as a component of the Forrestfield Airport Link Project	\$99,000	State Government Investment ^A	2021	<ul style="list-style-type: none"> Design and delivery of road a component of the approved development application for the Redcliffe Station Precinct.
Intersection Treatment - Signals (Second Street and Central Avenue)	State Government and City of Belmont	\$247,000	State Government Investment ^A	Subject to traffic volumes exceeding capacity.	<ul style="list-style-type: none"> Timeframes for delivery, and responsibility for costs, are dependent on traffic volumes upon station opening and with the growth of commercial development in Perth Airport. It is anticipated that the cost of upgrade will be borne by the State Government if the upgrade is required as the increased traffic volume will predominantly be as a result of demand driven by the station and development outside of the Redcliffe Station Precinct.
Intersection Treatment - Raised Platform (Second Street and Kanowna Avenue)	City of Belmont	\$43,000	Development Contribution Plan	2021-2026	<ul style="list-style-type: none"> Ongoing monitoring of traffic volumes to determine extent and timing of upgrades required. Detailed design of road upgrades for delivery. Confirmation of budget allocation for the purpose of pre-funding construction and delivery of the item ahead of sufficient funds being available within the DCP.

^A At the time of preparing this report the State Government has not committed to funding these items.

6.3.3 UTILITY INFRASTRUCTURE UPGRADES

The utility infrastructure upgrades outlined in Section 5 have been identified based on the yield analysis prepared for the precinct. The status of their design and the responsibility for further design and delivery is outlined as follows and summarised within **Table 40**:

6.3.3.1 Electricity Upgrades

The electricity infrastructure upgrades are divided into the following categories for the purpose of funding and responsibility for implementation:

- a) Augmentation of External Network:** These works are the responsibility of Western Power as works external to the precinct, and will be monitored, designed, planned, and are proposed to be implemented and funded by Western Power.
- b) Initial Asset Relocations:** These works are the responsibility of the State Government as works required to deconstrain the Station Precinct and Brearley Avenue, and are proposed to be designed, planned, implemented and funded by the State Government.
- c) Underground conversion of existing HV and LV Network:** These works are required as a component of the streetscape upgrade and redevelopment and, to ensure coordination and cost-effectiveness, will be designed, planned and implemented by Western Power, and will be funded by the Development Contributions Plan.
- d) Network Extension and Reinforcement:** The extension and reinforcement of the network to facilitate new development in areas not currently serviced will be the responsibility of developers proposing development or subdivision of these sites.

6.3.3.2 Water Infrastructure Upgrades

The water infrastructure upgrades are divided into the following categories for the purpose of funding and responsibility for implementation:

- a) Upgrades to Mains Infrastructure (DN300):** These works are the responsibility of the Water Corporation as works external to the precinct, and will be monitored, designed, planned, implemented and funded by the Water Corporation.
- b) Upgrades to Distribution Infrastructure:** These works are the responsibility of the developer and, given the extent of upgrade works required, will be designed, planned and implemented by the Water Corporation and funded by the Development Contributions Plan.

6.3.3.3 Wastewater Infrastructure Upgrades

The water infrastructure upgrades are divided into the following categories for the purpose of funding and responsibility for implementation:

- a) Headworks Infrastructure:** These works are the responsibility of the Water Corporation as works external to the precinct, and will be monitored, designed, planned, implemented and funded by the Water Corporation.
- b) Upgrades to Distribution Infrastructure:** These works are the responsibility of the developer and, given the extent of upgrade works required, will be designed, planned and implemented by the Water Corporation and funded by the Development Contributions Plan.
- c) Extension of Unserviced Areas:** These works are the responsibility of individual developers proposing development or subdivision over land not currently serviced by wastewater infrastructure, and will be designed, planned and implemented by the Water Corporation and funded by the individual developer(s).

6.3.3.4 Gas

The gas infrastructure upgrades are divided into the following categories for the purpose of funding and responsibility for implementation:

- a) Brearley Avenue Asset Relocation:** Relocation of gas infrastructure within the former Brearley Avenue reservation is the responsibility of the State Government as works required to deconstrain the Station Precinct and Brearley Avenue, and are proposed to be designed, planned, implemented and funded by the State Government.
- b) External Network Upgrades and Reinforcement:** These works are the responsibility of ATCO Gas as works external to the precinct, and will be monitored, designed, planned, implemented and funded by ATCO Gas.
- c) Internal Distribution Upgrades:** These works are the responsibility of the developer and, given the extent of upgrade works required, will be designed, planned and implemented by ATCO Gas and funded by the Development Contributions Plan.

6.3.3.5 Telecommunication

The telecommunications infrastructure upgrades are divided into the following categories for the purpose of funding and responsibility for implementation:

- a) Brearley Avenue Asset Relocations (Telstra, Vocus, Nextgen, WP, NBN and Optus):** The asset relocations required are all within the former Brearley Avenue reservation and are proposed to be the responsibility of the State Government in the closure of the road and creation of future development sites.
- b) NBN and Delivery Charges:** Costs associated with the delivery and connection of new telecommunication infrastructure will be borne by the developers.

Table 41: Summary of proposed implementation requirements for utility infrastructure upgrades within and adjacent to the Redcliffe Station Precinct.

Infrastructure	Recommended Responsibility for Design and Delivery	Preliminary Cost Estimate (excl GST)	Proposed Funding Mechanism	Indicative Timeframe for Delivery	Matters for Resolution in Implementation
Electricity Infrastructure					
Augmentation of External Network	Western Power	To be confirmed by provider based on demand analysis	State Government Investment ^A	As Required	<ul style="list-style-type: none"> Ongoing monitoring of network load to identify upgrade requirements by Western Power. Planning and implementation of upgrades by Western Power.
Initial Asset Relocation	Western Power	\$995,000	State Government Investment ^A	2021	<ul style="list-style-type: none"> Finalisation of works to remove remaining infrastructure within Brearley Avenue reservation to deconstrain future sites.
Underground Network	Western Power and City of Belmont	\$7,350,000	Development Contributions Plan	Ongoing	<ul style="list-style-type: none"> Investigate opportunities for shared funding arrangements between the local, State and Commonwealth Government to assist in reducing the burden on the DCP. Detailed design of local road upgrades and alignment of timing of key infrastructure upgrades for efficiency of works and minimisation of resident disruption. Confirmation of budget allocation for the purpose of pre-funding construction and delivery of the item ahead of sufficient funds being available within the DCP.
Extension to Unserviced Areas	Western Power and Affected Landowners	To be confirmed by provider based on demand analysis	Developer Funded - As Required	As Required	<ul style="list-style-type: none"> Ongoing monitoring of network load to identify upgrade requirements by Western Power. Planning and implementation of upgrades by Western Power.
Water Infrastructure					
Mains Duplication (DN300 Upgrade)	Water Corporation	To be confirmed by provider based on demand analysis	State Government Investment ^A	As Required	<ul style="list-style-type: none"> Ongoing monitoring of capacity constraints to identify upgrade requirements by Water Corporation. Planning and implementation of upgrades by the Water Corporation.
Distribution Upgrades (DN100, DN150 and DN200)	Water Corporation and City of Belmont	\$850,000	Development Contributions Plan	As Required	<ul style="list-style-type: none"> Detailed design of local road upgrades and alignment of timing of key infrastructure upgrades for efficiency of works and minimisation of resident disruption. Confirmation of budget allocation for the purpose of pre-funding construction and delivery of the item ahead of sufficient funds being available within the DCP.

^A At the time of preparing this report the State Government has not committed to funding these items.

Infrastructure	Recommended Responsibility for Design and Delivery	Preliminary Cost Estimate (excl GST)	Proposed Funding Mechanism	Indicative Timeframe for Delivery	Matters for Resolution in Implementation
Wastewater Infrastructure					
Headworks Infrastructure	Water Corporation	To be confirmed by provider based on demand analysis	State Government Investment ^A	As Required	<ul style="list-style-type: none"> Ongoing monitoring of capacity constraints to identify upgrade requirements by Water Corporation. Planning and implementation of upgrades by the Water Corporation.
Distribution Upgrades (DN100, DN150 and DN200)	Water Corporation and City of Belmont	\$1,370,000	Development Contribution Plan	As Required	<ul style="list-style-type: none"> Detailed design of local road upgrades and alignment of timing of key infrastructure upgrades for efficiency of works and minimisation of resident disruption. Confirmation of budget allocation for the purpose of pre-funding construction and delivery of the item ahead of sufficient funds being available within the DCP.
Extension to Unserved Areas	Water Corporation and Affected Landowners	To be confirmed by provider based on demand analysis	Developer Cost	As Required	<ul style="list-style-type: none"> Infrastructure analysis and detailed planning to be undertaken in response to development proposals by landowner/developer in consultation with the Water Corporation.
Gas Infrastructure					
Brearley Avenue Asset Relocation	ATCO and State Government	\$449,000	State Government Investment ^A	2021-2026	<ul style="list-style-type: none"> Preparation and implementation of realignment plans in consultation with the City of Belmont.
External Upgrade and Network Reinforcement	ATCO	\$4,700,000	ATCO Gas Investment	As Required	<ul style="list-style-type: none"> Ongoing monitoring of capacity constraints to identify upgrade requirements by ATCO.
Internal Reticulation Upgrade	ATCO and City of Belmont	\$445,000	Development Contributions Plan	As Required	<ul style="list-style-type: none"> Detailed design of local road upgrades and alignment of timing of key infrastructure upgrades for efficiency of works and minimisation of resident disruption. Confirmation of budget allocation for the purpose of pre-funding construction and delivery of the item ahead of sufficient funds being available within the DCP.

^A At the time of preparing this report the State Government has not committed to funding these items.

Infrastructure	Recommended Responsibility for Design and Delivery	Preliminary Cost Estimate (excl GST)	Proposed Funding Mechanism	Indicative Timeframe for Delivery	Matters for Resolution in Implementation
Telecommunications Infrastructure					
Brearley Avenue Asset Relocation	Infrastructure Owners and State Government	\$5,972,000	State Government Investment ^A	2021-2026	<ul style="list-style-type: none"> Preparation and implementation of realignment plans in consultation with the City of Belmont.
NBN Delivery Charges	NBN Co and Developers / Landowners	To be confirmed by provider based on demand analysis	Development Cost	As Required	<ul style="list-style-type: none"> Infrastructure analysis and detailed planning to be undertaken in response to development proposals by landowner/developer in consultation with the NBN.

^A At the time of preparing this report the State Government has not committed to funding these items.

6.4 PREPARATION OF DEVELOPMENT CONTRIBUTIONS PLAN

The Redcliffe Station Precinct is intended to be identified as a Development Contributions Area (DCA) in the operative planning scheme once prepared, and a subsequent Development Contributions Plan will be prepared to guide the equitable cost sharing of infrastructure within the precinct.

The area subject to the DCA is outlined in **Figure 101**, and the anticipated common infrastructure works items, preliminary cost estimate and timing for delivery is outlined within **Table 41**.

Based on a preliminary assessment each of the items are anticipated to meet the need/nexus threshold for inclusion within a DCP as outlined within the WAPC's *State Planning Policy 3.6 - Development Contributions for Infrastructure*.

This will be further considered as a component of the preparation of the plan to ensure that the inclusion of the infrastructure item is fair and reasonable, the cost estimates provide sufficient certainty and all of the principles of SPP3.6 are addressed.

Based on the preliminary cost estimates for the infrastructure area and the total cost contribution area derived from the yield analysis, the indicative cost per/m² of site area is \$58.86/m². It is anticipated that this cost will vary dependent on the relevant sub-precinct to reflect the varying development potential of these sub-precincts. The estimated sub-precinct rates are outlined in **Table 42**.

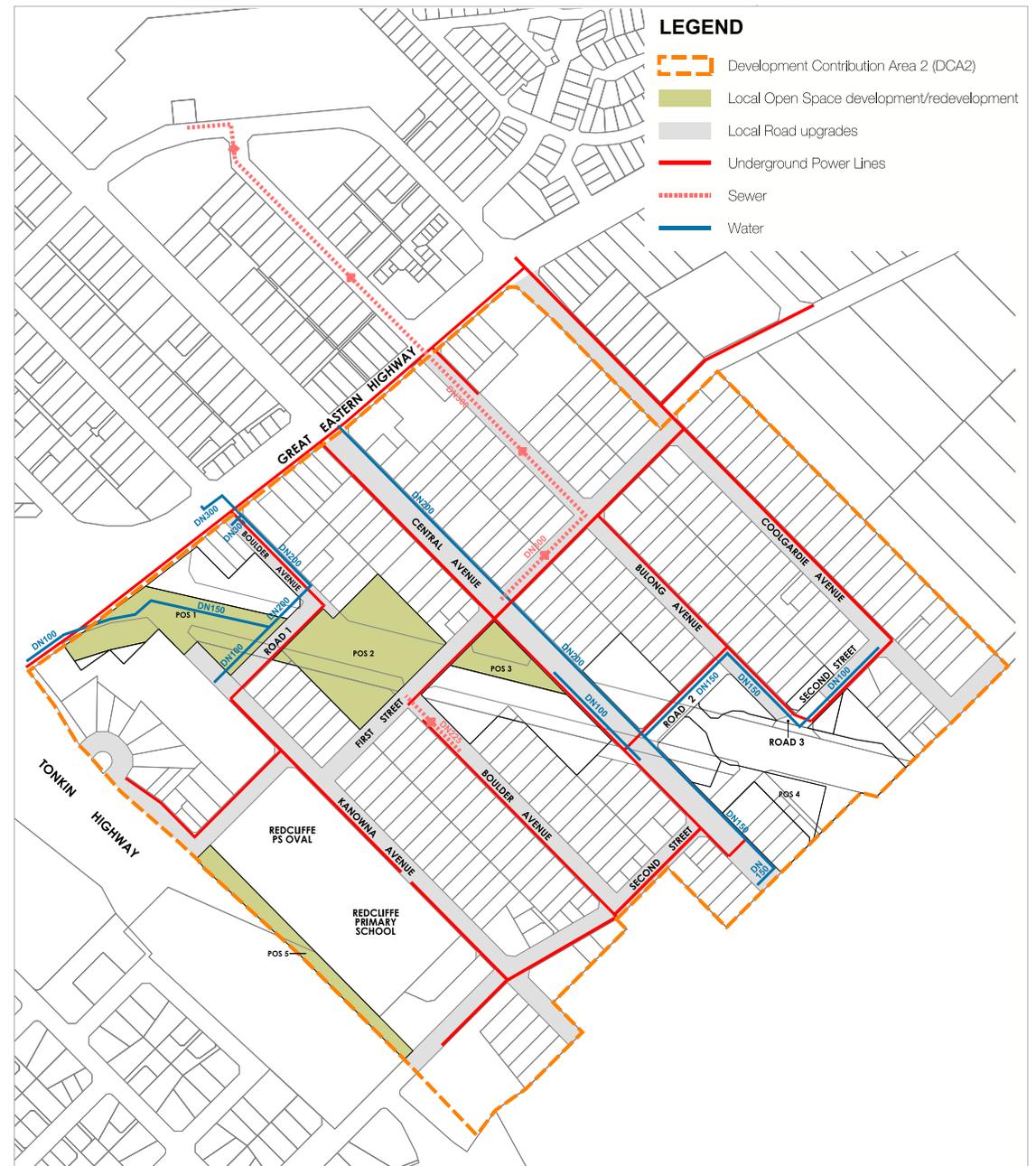


Figure 101: Proposed Development Contribution Area for the Redcliffe Station Precinct, to be implemented via the statutory implementation mechanism once confirmed.

Table 42: Summary of the cost contribution items and preliminary cost estimates for infrastructure potentially included within a Development Contributions Plan for the precinct.

Infrastructure	Proposed Responsibility for Design and Delivery	Preliminary Cost Estimate (excl GST)	Indicative Timeframe for Delivery	Justification for Inclusion in DCP
Linear Parkland (POS 1, POS 2 and POS 3) (excluding Southern Main Drain integration)	City of Belmont	\$3,024,000	2021-2026	Upgraded public open space is required to support the growth in resident population, employees and visitors as a result of the redevelopment of the precinct. The upgrades are to the benefit of the precinct as a whole and as a result the costs should be borne equitably by landowners seeking subdivision or development approval.
Linear Woodland Green Link (POS 5)	City of Belmont	\$180,000	2021-2026	
Road 1 (Kanowna Avenue to Boulder Avenue)	City of Belmont	\$319,000	2021-2026	In order to create POS2 as a large area of open space the temporary road infrastructure currently separating this area is required to be relocated to its ultimate alignment. These costs are a direct result of the requirement for the open space area and are therefore to the benefit of the precinct as a whole.
All Local Roads (Excluding intersection treatments and new roads specified separately)	City of Belmont	\$4,306,000	Ongoing	The upgrade of local roads is required to slow the movement of vehicles through the area and enhance the amenity for pedestrians and cyclists. These upgrades are required to support the intensification of land use and development within the precinct and are to the benefit of the precinct as a whole.
Electricity Network (Underground Power Lines)	Western Power and City of Belmont	\$7,350,000	Ongoing	The 'undergrounding' of electricity infrastructure throughout the area has the benefit of creating a higher level of visual amenity within the precinct, deconstraining sites seeking to develop close to existing above ground infrastructure and reducing the potential for blackouts as a result of incidents with above ground infrastructure. The removal of the above ground infrastructure is a benefit to the precinct as a whole and as such it is considered the costs should be borne equitably by landowners.
Water Supply Distribution Upgrades (DN100, DN150 and DN200)	Water Corporation and City of Belmont	\$850,000	As Required	The upgrades to utility service distribution infrastructure to increase the capacity of these services is necessary to facilitate the increased intensity of development within the precinct. These upgrades are of benefit to the precinct as a whole and should be borne equitably by landowners seeking subdivision or development.
Wastewater Infrastructure (Reticulation Upgrades)	Water Corporation and City of Belmont	\$1,370,000	As Required	
Gas Infrastructure (Reticulation Upgrades)	ATCO and City of Belmont	\$445,000	As Required	
Administrative Costs (0.3% per annum for 10 years)	City of Belmont	\$535,320	Ongoing	Administration costs are based on 0.3% of the total infrastructure cost contribution works per annum, equate to a total of \$53,530 per annum, over a period of 10 years. Administration costs include management of the DCP, legal advice to the City and costs associated with the annual reviews.
Total Costs		\$18,379,320		
Cost Contribution Area (Site Area) (m ²)		312,248		
Average per/m² Cost Contribution Rate		\$58.86		

Table 43: Breakdown of the indicative per/m2 site area cost contribution rates based on development assumptions within each of the sub-precincts.

Sub-Precinct	Total Development Floorspace Estimate (m ²)	Proportion of Total Development Floorspace Estimate (m ²)	Proportion of Total DCP Cost Estimate	Total Site Area (m ²)	Contribution Rate per m ² of Site Area
Centre	66,660	20%	\$3,724,897.60	51,130	\$72.85
Centre Transition	70,818	22%	\$3,957,247.68	72,811	\$54.35
Residential Core	125,856	38%	\$7,032,705.68	132,096	\$53.24
School Interface	18,145	6%	\$1,013,932.49	19,723	\$51.41
Urban Corridor	47,434	14%	\$2,650,536.56	36,487	\$72.64
	328,913		\$18,379,320.00	312,248	\$58.86

GLOSSARY AND REFERENCES

REFERENCE LIST

This report draws upon information from a range of existing literature, policies and strategies. The following are key documents and reports reviewed in preparing this report.

Part 2, Section 1 Centre Context

- City of Belmont Local Commercial Strategy, City of Belmont, 2008.
- City of Belmont Local Housing Strategy, City of Belmont, 2011.
- City of Belmont Local Planning Scheme No.15 Scheme Text, City of Belmont, 2011.
- City of Belmont Local Planning Strategy, City of Belmont, 2011.
- Community Profile for the City of Belmont, .id-the population experts, 2016.
- Draft Great Eastern Highway Urban Corridor Strategy, prepared by Taylor Burrell Barnett, on behalf of the City of Belmont, 2018.
- Draft State Planning Policy 4.1 – Industrial Interface, WAPC, 2012(10)7.
- Economic Profile for the City of Belmont, .id-the population experts, 2016.
- General Community Profile cat. no. 2001.0, Australian Bureau of Statistics, 2016.
- General Community Profile cat. no. 2001.0, Australian Bureau of Statistics, 2011.
- Liveable Neighbourhoods, WAPC, 2009.
- Local Planning Policy No. 13 Vehicle Access for Residential Development, City of Belmont, 2016.
- Local Planning Policy No. 14 – Development Area 6 Vision, City of Belmont, 2016.
- Metropolitan Regional Scheme, WAPC.
- Perth & Peel @ 3.5 million, WAPC, 2018.
- Perth Airport Masterplan, Perth Airport Pty Ltd, 2014.
- Perth and Peel @ 3.5 million - The Transport Network, DoT, 2018.

- Population Forecast for the City of Belmont, .id-the population experts, 2016.
- State Planning Policy – 7.3 Residential Design Codes (Volume 2 – Apartments), WAPC, 2019.
- State Planning Policy 3.6 – Development for Infrastructure, WAPC, 2009.
- State Planning Policy 3.7 – Planning for Bushfire Prone Areas, WAPC, 2015.
- State Planning Policy 4.2 – Activity Centre for Perth and Peel, WAPC, 2010.
- State Planning Policy 5.1 – Land Use Planning in the Vicinity of Perth Airport, WAPC, 2015.
- State Planning Policy 5.4 - Road and Rail Transport Noise and Freight Considerations in Land Use Planning, WAPC, 2009.

Part 2, Section 2 Movement

- Transport Impact Assessment, Flyt, 2019.

Part 2, Section 4 Urban Form

- Street Tree Plan, prepared by City of Belmont, 2017.
- Urban Forest Strategy, City of Belmont, 2014

Part 2, Section 5 Utility Infrastructure, Drainage and Resource Conservation

- State Planning Policy 2.9 - Water Resources, WAPC, 2006.
- State Water Plan, Government of Western Australia, 2007.
- Stormwater Management Manual for Western Australia, Department of Environment, 2004.
- Western Australian State Water Strategy, Government of Western Australia, 2003.

GLOSSARY & ABBREVIATIONS

Activity Centre Plan: a plan for the coordination of the future subdivision, zoning and development of an activity centre plan.

Activity Centre: are community focal points. They include activities such as commercial, retail, higher density housing, entertainment, tourism, civic/community, higher education and medical services. Activity centres vary in size and diversity and are designed to be well-serviced by public transport.

Character: captures the interrelationships between built form, natural landscapes and vegetation in the public and private domains and distinguishes one place from another.

Dwelling: A building or portion of a building being used, adapted, or designed or intended to be used for the purpose of human habitation on a permanent basis by a single person, a single family, or no more than six persons who do not comprise a single family.

Employment density: total employment of a selected geography divided by the total size of the selected geography (gross land area in hectares).

Employment self-sufficiency: is the ratio (expressed as a percentage) of the total labour force (local residents who are employed or seeking employment) of a defined area relative to the total number of jobs available in that area. A percentage above 100 indicates a region has more jobs locally than resident workers

Infill: is the redevelopment of existing urban areas at a higher density than currently exists.

Local Planning Policies: prepared by the local government, these policies provide additional information about the position that local government will take on certain planning matters.

Local Planning Scheme: sets out the way land is to be used and developed, classify areas for land use and include provisions to coordinate infrastructure and development within the local government area.

Local Planning Strategy: is a local-level planning framework that provides strategic direction for land use and development in a local government area and is used to guide or inform the content of statutory local planning schemes.

Mixed Use: means the compatible mixing of a range of uses, integrated in close proximity to each other to improve the efficiency and amenity of neighbourhoods, reduce travel demand, increase walkability, and make more efficient use of available space and building.

Perth and Peel @ 3.5 Million and Sub-regional Planning Framework: is a suite of documents that define the urban form for the next 30 years, limit unsustainable urban sprawl and encourage greater housing diversity to meet changing community needs. They provide guidance and certainty to State Government agencies, local government and the development sector.

Planning and Development Act 2005: an Act of the Western Australian Parliament which lays down specific controls over planning at a metropolitan and local level as well as establishing more general controls over the subdivision of land. The Act replaces The Western Australian Planning Commission Act 1985, the Metropolitan Region Town Planning Scheme Act 1959 and the Town Planning and Development Act 1928.

Planning and Development Regulations 2015: 'the Regulations' are a major part of Western Australia's planning reform agenda, affecting arrangements for local planning strategies, schemes and amendments. In addition to a Model Scheme Text, the Regulations introduce a set of deemed provisions that form part of every local planning scheme in the State.

Public Open Space: means land used or intended for use for recreational purposes by the public and includes parks, public gardens, foreshore reserves, playgrounds, and sports fields but does not include regional open space and foreshore reserves.

State Planning Policies: prepared by the Western Australian Planning Commission, these policies provide the highest level of planning policy control and guidance in Western Australia.

Place: is a component of 'cultural identity'; sense of place is a personal response to environmental, social and economic surroundings that an individual experience in daily life. It can be the individual's or communities' perception and feeling of belonging for a home, local area, region, state or country.

State Planning Policies: prepared by the Western Australian Planning Commission, these policies provide the highest level of planning policy control and guidance in Western Australia.

Streetscape: means the visible components in a street between facing buildings, including the form of the buildings, garages, setbacks, fencing, landscaping, driveway and street surfaces, utility services and street furniture such as lighting, signs, barriers and bus shelters.

Sustainability: is meeting the needs of current and future generations through the integration of environmental protection, social advancement and economic prosperity.

Transit-oriented development: is an urban development around public transport stations that increases use of public transport. The aim is to locate moderate-to high intensity commercial, mixed use, community and residential development close to train stations and/or transit corridors to encourage public transport use over private vehicles.

Urban: land identified for urban use (urban or urban deferred zones) such as residential and associated activity and light industrial employment centres, recreation and open space.

Urban Corridor: an integrated land use and transportation concept

Walkable Catchment: means that actual area served in a 400m (five-minute) or 800m (five-minute) walking distance along the street system from a public transport stop, town or neighbourhood.

Western Australian Planning Commission (WAPC): has state-wide responsibility for urban, rural and regional integrated strategic and statutory land use planning and land development. Its functions and authority to undertake and regulate land use planning and development is established under the Planning and Development Act 2005.





