

METRONET YANCHEP RAIL EXTENSION

Eglinton Train Station

Prepared for
**NEWEST ALLIANCE / PUBLIC TRANSPORT
AUTHORITY**
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INTRODUCTION

Urbis acts as the planning consultant on behalf of the Public Transport Authority and *NEWest Alliance*, the contractor to complete works on the METRONET Yanchep Rail Extension. The following development application seeks approval for the Eglinton train station and associated infrastructure, which is one of three new train stations proposed as part of the METRONET Yanchep Rail Extension, which will result in the extension of the Joondalup line from Butler to Yanchep.

The Eglinton Station is recognised as an essential catalyst for the successful development of the Eglinton District Centre. The station will unlock the potential to implement a contemporary town centre within the heart of Eglinton, including the opportunity to support higher density development, without creating sole reliance on the private vehicle. This 'infrastructure first' model of development enables the town centre to be defined by the railway station from day one and ensure that movement and built form is defined holistically to the magnetism of the railway station.

The Eglinton Train Station will be located in the area generally bounded by Pipidiny Road, Eglinton Drive, Marmion Avenue and the planned Mitchell Freeway extension. Design development of the Eglinton Station has been occurring for a long period of time to ensure that the station sparks the catalyst for a truly integrated station, which a community will be built around. The design has evolved over time as through engagement with stakeholders, as well as with design review lessons learnt from Yanchep and Alkimos YRE Stations. The Eglinton station is a multi-modal station, and will comprise the following:

- The rail line sunk within a rail cutting and capped by the main station building. This is described as an 'cut and cover' station design, meaning the railway tracks and station platform are partially sunk below ground level, creating an at-grade entry experience to the station concourse. The intent behind this is to improve the pedestrian experience into the station, as well as meet the PTA's safety requirement of delivering pedestrian access which does not directly interface with the rail infrastructure.
- The station building, which is designed with two entry points at the east and west facades of the building. This station entry arrangement provides a continuous east-west movement between the city centre core, adjacent bus station and ultimately connecting to the future town square.
- Bus interchange immediately adjacent to the western station entrance. This bus interchange forms part of the connection between the train station and future Eglinton town centre town square and main street. A weather protected link is provided between the station building and bus interchange.
- Principal shared path (**PSP**) to the western side of the railway line, sunk below the station concourse entrance. This PSP will ultimately form part of a wider connection generally running parallel to the Yanchep Rail Extension railway reservation from Butler to Yanchep. The PSP has access ramps at either end of the station providing connections into the station, activity centre and local street network.
- Private vehicle parking, including a dedicated 'kiss-and-ride' area and separate long-term parking area designed for Transperth 'park-and-ride' patrons.

A key objective in the station design is to apply principles which support transit oriented development (**TOD**), and encourage non-private vehicle use for connecting trips, as well as to support a diverse range of uses within the activity centre. However, the pragmatic requirement for long-term car parking for a new train station within an emerging town centre must still be acknowledged and provided for in a way that is safe and does not overly impact the long-term placemaking opportunity. To strike an appropriate balance between these competing objectives, the following infrastructure hierarchy has been specifically applied to the station design:

- Pedestrian desire lines and accessibility have been key drivers in the station design. This is demonstrated through the direct pathway from the station entrance to the future Eglinton town square and main street west of the station. The grade separated station design also supports pedestrian connectivity during the station operational hours by allowing at-grade accessibility through the station concourse, which acts to unify both sides of the train line.
- Bus service convenience, with the bus interchange being located immediately adjacent to the station entrance. Passenger comfort is considered in the design, with weather protection provided between the station and bus interchange.

- Drop-off and pick-up ('kiss-and-ride') area within a short walk of the station entrance, which also provides for on-demand transport options; and
- Long-term (all day commuter) parking is provided north-west of the station, at the greatest distance from the station entrance. Provision has also been made for possible future expansion to the west of the proposed parking area as well as to the south of the station in a separate precinct.

This hierarchy encourages patrons to consider alternatives to private car transport by delivering these as a more convenient mode of transport. This layout also removes the impact of large areas of at grade parking from the core of the town centre. The linear design of the parking station provides the future opportunity for patrons to consider a pathway through the town centre to access the station, enabling users to combine trips such as day-to-day household shopping provisions.

Overall, the Eglinton Station achieves the appropriate balance of applying best practice station design whilst also addressing the requirements of a major train station in the setting of future development. This report considers the planning context and merit of the proposed development and provides an assessment of the application against the relevant planning framework, including the requirements of SPP 7 and the METRONET Station Precinct Design Guide.

1. PROJECT BACKGROUND

1.1. YANCHEP RAIL EXTENSION BACKGROUND

METRONET is a key project of the West Australian State Government and the single largest investment in public transport ever undertaken in Perth and will positively change how people live and travel in Perth.

The METRONET Yanchep Rail Extension (YRE) project will deliver a 14.5km rail extension of the Joondalup Line from Butler Station to Yanchep. The project includes the delivery of 3 new stations at Alkimos, Eglinton and Yanchep, a new bus stowage depot at Alkimos, 9 new road-over rail bridges, 13.8km of principle shared path (PSP) and conversion of Butler Station into a 'through' station.

A context summary of the YRE extension is illustrated at Figure 1.

Figure 1 - Context Summary of YRE Extension



Early estimates of the YRE patronage estimates that around 5,200 daily boarding's will occur at day one operation, with this number drastically increasing to an estimate of approximately 19,400 daily boarding's by 2031.

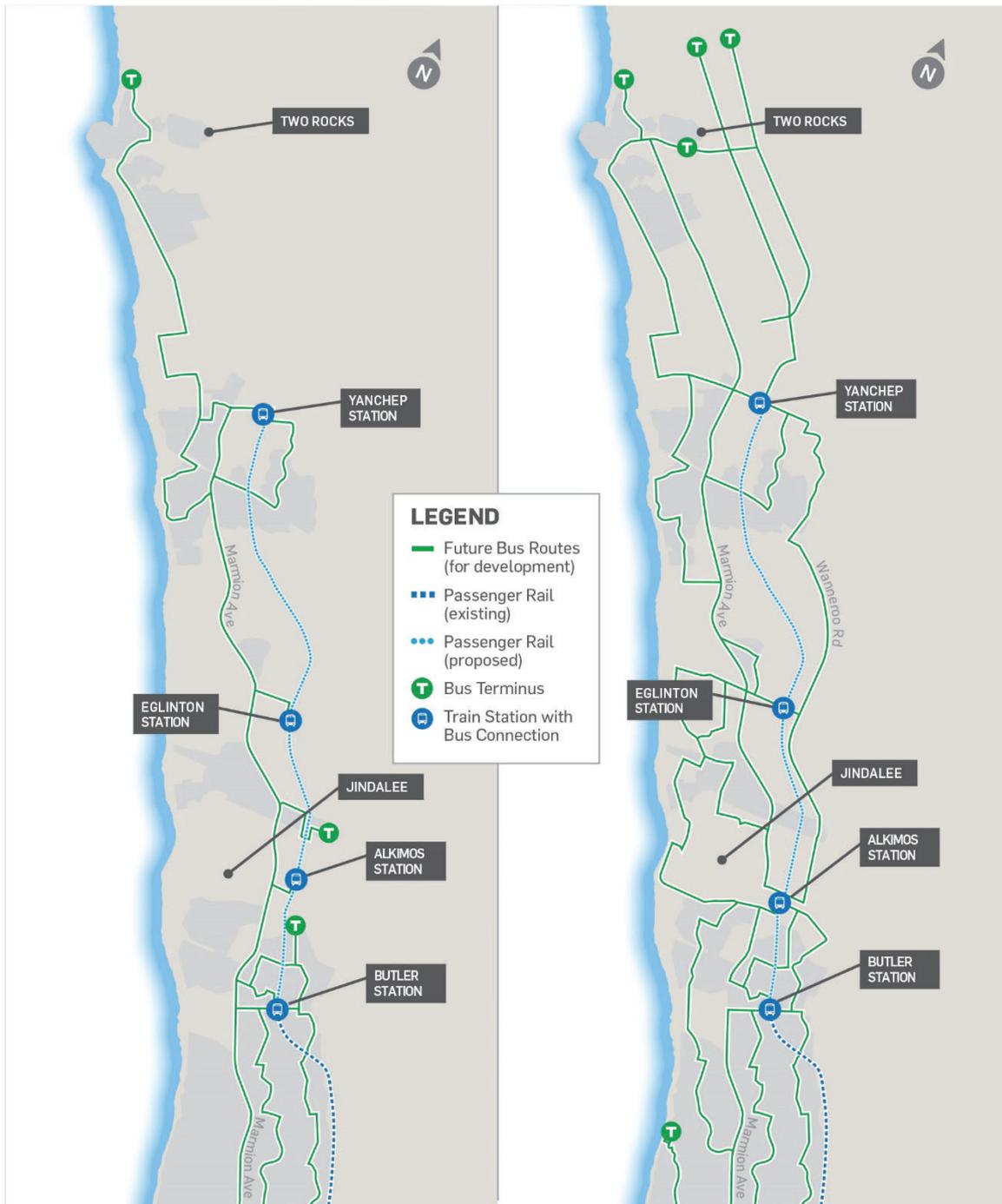
Peak period operation of the YRE extension of the Joondalup line is expected to require six carriages operating at a frequency of 6 trains per hour (averaging one train per 10-minute intervals).

All new stations delivered as part of YRE are designed as multi-modal stations meaning the train station will be delivered in conjunction with supporting transport infrastructure including bus interchange, pedestrian and cyclist path and connection to the road networks. Figure 2 below outlines the planned bus network to be implemented in conjunction with the YRE line, noting that the network is ultimately dependent multiple variables such as supporting local road constructions by parties, and funding allocations. As a result, these bus networks may be subject to change.

Figure 2 - Planned YRE Bus Network

Proposed day one bus operations

Proposed 2031 bus operations



Source: METRONET YRE Project Definition Plan

A summary of the METRONET YRE project is provided at **Appendix A** of this report.

1.2. EGLINTON STATION BACKGROUND

Population growth in the Eglinton region is forecast to reach over 30,000 by 2031. Patronage estimates used to inform planning of the Eglinton Station suggests that approximately 1,800 daily boarding's will occur at initial operations, increasing to around 2,200 daily boarding's by 2031. The new Eglinton Station and rail extension provides an alternative to the 1 to 1.5hr private vehicle peak hour journey to the Perth CBD, reducing the journey to approximately 46 minutes, providing direct and measurable incentives for commuters to consider public transport over private vehicle use.

As demonstrated in Figure 2 above, it is anticipated that new support bus service routes will be provided for the Eglinton Station. This is will likely include a high frequency bus route between Alkimos and Eglinton Station, subject to funding.

1.3. METRONET CONTRACT BACKGROUND

The contractual arrangements under METRONET for the YRE project are structured as an 'alliance-style contract'. In December 2019, the NEWest Alliance was formed and selected as the contractor to deliver the YRE project, including the Eglinton Station and associated 'land-side' station infrastructure development.

As the YRE is a METRONET project, the funding for the project has been allocated by the State and Federal Governments, with the scope of the project being approved by Parliament of WA in the form of a Project Definition Plan. The scope of the project is captured within the contractual arrangements, including the METRONET specified Scope of Work and Technical Criteria (**SWTC**). This SWTC also sets the design criteria, standards and guidelines for the station design.

For the Eglinton Station specifically, the SWTC sets following direct design parameters relevant to the scope of this development application:

- Delivery of the station building, including two station platforms and all internal operational facilities, servicing and amenities.
- Station platform, which is 150 metres long and will cater for 6 car train sets below the station concourse. The station platforms must provide weather protection to 50% of the platform length.
- Bus interchange with at least 8 active bus stops and 4 bus layover bays, and associated infrastructure including bus roads, pedestrian access pathways, bus canopies and waiting areas.
- Two secure bicycle parking shelters and separate u-rails adjacent to the station entry points.
- Landscaping to streets, forecourts and public open space on the PTA controlled land.
- Minimum 426 car parking bays in total, including at-grade long-term 'park-and-ride' bays, 'kiss-and-ride' bays as well as motor cycle / scooter bays.

Importantly, the SWTC also sets key qualitative station design measures, such as:

- The requirement to deliver a multi-modal station with bus interchange and rail station. This included a specification that the bus interchange includes a continuous canopy shelter between the bus interchange and rail entrance.
- The need for the station to be located centrally to the main retail, commercial and residential areas of the future Eglinton District Centre, and easily accessible to those users who rely on public transport.
- The requirement for pedestrian and cycle access to the station to be at concourse level, and forming a connection over the new rail line, and including station connection from both east and west of the station, including the ability to freely move through the station concourse (i.e. no fare gates) as a means of passing through the activity centre.

Appendix B of this submission provides a summary of the specific standards of the SWTC which are required to be met by the Eglinton Station.

This SWTC therefore sets the basic building blocks for the delivery of a highly functional and contemporary multi-modal train station. The role of the NEWest Alliance is to interpret these requirements and apply them to the detailed station design, as proposed through this development application.

The station development envelope is also strictly defined by a number of factors, including landowner negotiations and environmental constraints, such as the clearing of significant vegetation and associated environmental offsets.

In terms of the development approvals process, this essentially means that there are some fixed aspects to the project, and as a result there are limitations on the ability to make fundamental changes to the design scope and requirements. However, the opportunity to make pragmatic changes which remain within the scope of the SWTC and environmental approvals may still be considered.

2. SITE LOCATION AND CONTEXT

2.1. SITE PARTICULARS

The legal details of the lots directly affected by works the Eglinton Station and requiring development approval are detailed in Table 1. Certificates of Title are enclosed within this application at **Appendix C**.

Table 1 Affected Lots (Eglinton Station)

| Lot | Street Address | Plan | Vol/Folio | Proprietor |
|-----|-------------------|---------|-----------|--|
| 800 | 301 Pipidiny Road | P404604 | 2917/458 | Eglinton Estates Pty Ltd |
| 802 | 251 Pipidiny Road | P404604 | 2917/460 | Western Australian Planning Commission |

2.2. SITE CONTEXT

The Eglinton Station is proposed within the centre of the planned Eglinton District Centre, which is an emerging activity centre currently undergoing detailed planning. The Eglinton Station and District Centre is located approximately 50km north of the Perth CBD. The railway alignment is reserved as 'Railways' under the MRS, with surrounding land zoned 'Urban' (refer to Section 7 of this report).

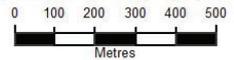
Yanchep and Alkimos are the closest activity centres to Eglinton, which are identified as 'Strategic Metropolitan Centre' and 'Secondary Centre' respectively in accordance with the activity centre hierarchy specified in *State Planning Policy No. 4.2 – Activity Centres for Perth and Peel*. Accordingly, the Eglinton District Centre will be the lowest order centre of the three new stations delivered as part of the YRE project. Notwithstanding, the station will foster a community that will develop its heart around the station and surrounds, and intrinsic connectivity it has with the wider metropolitan area.

As illustrated in Figure 3 below, the Eglinton Station and surrounding land is currently undeveloped.

Figure 3 – Current Aerial Photo



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LEGEND:

-  Passenger Rail - Proposed
-  Indicative Station Envelope

AERIAL

Figure 4 - Context Reference Plan

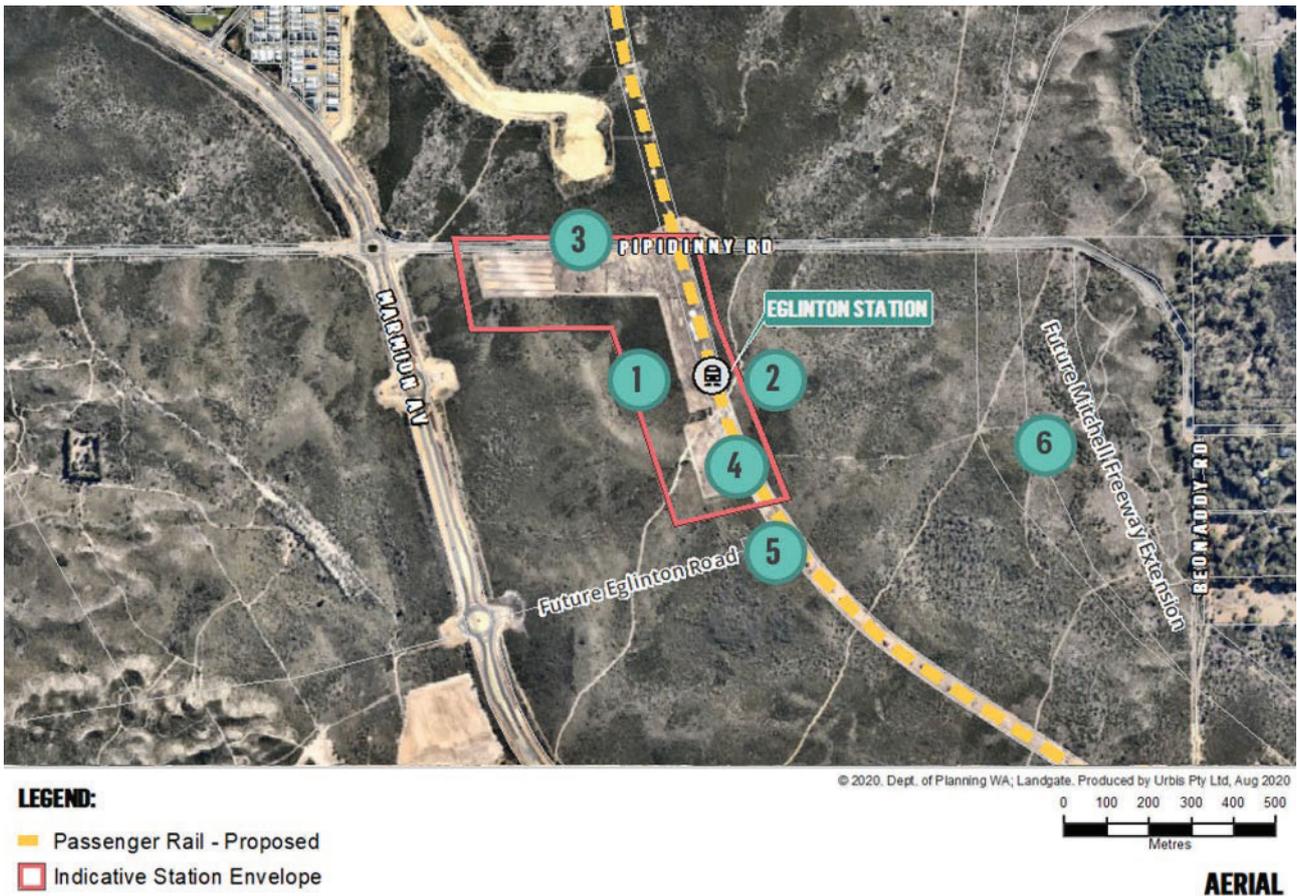


Table 2 Context Summary

| CONTEXTUAL FEATURE | DETAILS |
|--|---|
| <p>Future Eglinton Activity Centre (West of Railway)</p> | <p>The draft Eglinton Activity Centre Plan (as advertised) identifies the area immediately west of the station as commercial land. A key pedestrian link is envisioned between the planned ‘station square’, main street and the Eglinton station entrance.</p> <p>This layout suggests that the western component of the future activity centre will contain the highest level of street activation and pedestrian activity.</p> |
| <p>Future Eglinton Activity Century (East of Railway)</p> | <p>The draft Eglinton Activity Centre Plan (as advertised) identifies a ‘Private Club and Recreation’ space south west of the Eglinton Station. This is understood to be a planned school site.</p> <p>The land immediately east of the Eglinton station is within the Eglinton District Centre, but not included within the draft Eglinton Activity Centre Plan. As a result, it is expected that development immediately east of the station will not occur within the next 10 years, being the duration of approval for an activity centre plan.</p> <p>The final design interface between the Eglinton Station site and adjoining land remains subject to ongoing negotiation between the NEWest Alliance and Eglinton Estates to determine what ultimate</p> |

| CONTEXTUAL FEATURE | DETAILS |
|--|---|
| | <p>interface between the YRE project and the landholding interface will be. At present the developer has not disclosed their forecast timing to commence any of their development front.</p> |
| <p>Existing Pipidinnny Road</p> | <p>Pipidinnny Road is identified as a Neighbourhood Connector road under the draft Eglinton ACP, with the interface with adjoining development identified as a ‘High Speed Frontage’. Pipidinnny Road is therefore planned as a vehicle oriented streetscape, and would be expected to carry relatively high traffic volumes.</p> <p>Pipidinnny Road will provide access for all forms of vehicle traffic (cars and bus) for Day 1 Operation of the station, with the ultimate design providing bus access from Carphin Drive. The scope of works for the Eglinton Station will include a minor upgrade to Pipidinnny Avenue at the point of access for the station carpark, which is discussed in more detail within Section 5.2 of this report.</p> |
| <p>Future Carphin Drive</p> | <p>Carphin Drive is identified as a ‘major access road’ under the draft Eglinton Activity Centre Plan, and provides an east-west connection between Marmion Avenue and Eglinton Drive.</p> <p>A ‘road over rail’ grade separated bridge will be constructed at the intersection of Carphin Road railway crossing. This bridge structure is discussed further in Section 3.2.1 of this report. This bridge is the responsibility of the developer to deliver. At present the developer has not disclosed their forecast timing to commence delivery of the Eglinton town centre road network.</p> |
| <p>Future Eglinton Drive</p> | <p>Eglinton Drive is currently reserved as an ‘Other Regional Road’ under the Metropolitan Region Scheme, and in ‘Integrator A Road’ under the draft Eglinton Activity Centre Plan. Once constructed Eglinton Drive will provide an east-west connection from Marmion Avenue, with the long-term plan of providing a connection to the Mitchell Freeway.</p> <p>The METRONET scope of works will include the construction of a ‘road over rail’ bridge at the Eglinton Road railway crossing. This bridge structure is discussed further in Section 3.2.1 of this report. At present the developer has not disclosed their forecast timing to commence delivery of the supporting Eglinton town centre road network.</p> |

| | |
|---|---|
| <p>Future Mitchell Freeway Alignment</p> | <p>The Mitchell Freeway extension is planned to align approximately 1km east of the Eglinton Train Station.</p> <p>Main Roads funding for the freeway extension is currently limited to construction up to Romeo Road in Alkimos. The North-West Sub-Regional Framework envisions the staged extension of the Mitchell Freeway to Eglinton be completed in the medium term (generally between 2022 and 2031), however we recognise this may be subject to political priorities and funding.</p> <p>As a result, this development application has <u>not</u> modelled the Mitchell Freeway extension as part of the modelling and assessment for the Eglinton Station.</p> |
| <p>Existing Allara by Satterley Estate</p> | <p>The Allara estate is the closest existing residential development estate, located north west of the station. The estate provides low-to-medium density lots, with densities between R20 and R40 outlined within the approved North Eglinton Local Development Plan No. 1.</p> |

3. PROPOSED WORKS

The delivery of the Eglinton Station provides existing and future residents nearby with a rail and bus services, working towards the State Government's objectives to increase the reach and frequency of bus and rail services, alleviate road demand, and provide alternative and sustainable transport options to residents of Perth.

Consistent with the METRONET ethos, the Eglinton Station will incorporate a number of built form and placemaking initiatives designed to encourage alternative forms of transport to and from the station, discourage anti-social behaviour, create a 'sense of place', and implement natural wayfinding cues leading to the station entrance. The guiding principle for the station design is to deliver a functional, long lasting asset to the State at the greatest value for money and lowest whole of life cost. The following information demonstrates what is proposed for the Eglinton Station, and most importantly how the Eglinton Station meets these objectives. The design of the station and surrounds has been refined via close engagement with key stakeholders, including the City of Wanneroo, and the landowner. The NEWest Alliance is built upon a fundamental desire to maximise the opportunity from this transportation project, and an essential part of achieving that is through the ensuring the design supports the legacy for the future use and function of the station. This has been achieved via iterative design development that delivers an integrated town centre that provides a functional and efficient journey for commuters, whilst creating a distinct and memorable place that people want to interact with and visit.

3.1. STATION WORKS

The station has been designed 'in cut' as it passes through the Eglinton Activity Centre, meaning that the station concourse is constructed at ground level, and the station platform will be sunk at a lower level. This station design maximises patron usability, and allows direct and level access to the train station forecourt from the surrounding area. This acts to eliminate the railway as a barrier to the free movement of pedestrians from one side of the railway line to the other, during the station operating times.

The specific works proposed by this development application include the following:

- The station building, with station entrances provided to the east and west of the station. These entrances will be open for public access during the station operating times.
- A bus interchange which includes 8 active bus stands for passenger pick-up/drop-off. The busway also contains 4 layover bus bays, allowing buses to park between services, and quickly recirculate as required.
- Two station platforms of 150m length. The station platform provides canopy roof cover for 50% (approx. 75m) of each of the station platform, with this weather protection being provided at the location of highest passenger activity.
- A grade separated Principle Shared Path (PSP) located along the western side of the station, beneath the station forecourt, with access ramps up to the station forecourt level.
- Two secured bicycle shelters on the western side of the station, which provide capacity to park up to 96 bikes each. 5 u-rails are also provided adjacent to the east and west entrance.
- A kiss-and-ride pick-up and drop-off area containing 23 bays.
- 436 long-term parking bays located northwest of the station.

The station planning has also set aside land immediately west of the existing car park and south of the train station for potential future parking provision. The demand for these parking facilities will be assessed and considered in the future based on user demand, but for the purpose of this development application is outside of scope.

Development plans for the proposed station works are provided at **Appendix D** of this report.

3.2. SURROUNDING WORKS

Given the greenfield context of the YRE, the new stations will logically require a substantial component of infrastructure to support the ultimate functional operation. For the Eglinton Station, this will require a number of road connections to be completed by the third party landowners / developers, as well as works which are exempt from the requirement of planning approval generally.

The following section outlines these supporting works, and the associated arrangements which are in place for the Eglinton Station.

3.2.1. Road Bridges

The scope of the METRONET project will also include the completion of some works and infrastructure to be constructed by NEWest Alliance under the project SWTC. For the Eglinton Station, this will include the following:

- Pipidiny Road 'road over rail' bridge (north of Eglinton Station); and
- Eglinton Avenue 'road over rail' bridge (south of Eglinton Station).

The Carphin Road Bridge (south of station) is also identified as a potential future bridge, but this is not included within the scope of works for the YRE. Any required approvals and construction of this bridge will be the responsibility of the landowner.

Consultation with the METRONET office was undertaken in the early stages of this development application process, where it was determined that the bridges in the scope of the YRE works would not require development approval on the basis that they did not provide *direct* vehicle access into the station. The exemptions from planning approval available for this METRONET project is further detailed within Section 7.3 of this report.

Regardless of this exemption, it was agreed that a basic level of information for these structures should be provided within the development application report, for context only and not part of the formal approval documentation. A summary of the detail for these surrounding works which will ultimately support the Eglinton Station are presented in Table 3 below. Early designs of these road bridges are provided at **Appendix E** of this submission, however it should be noted that these may be subject to change as the design advances.

Figure 5 - Station Precinct Bridges

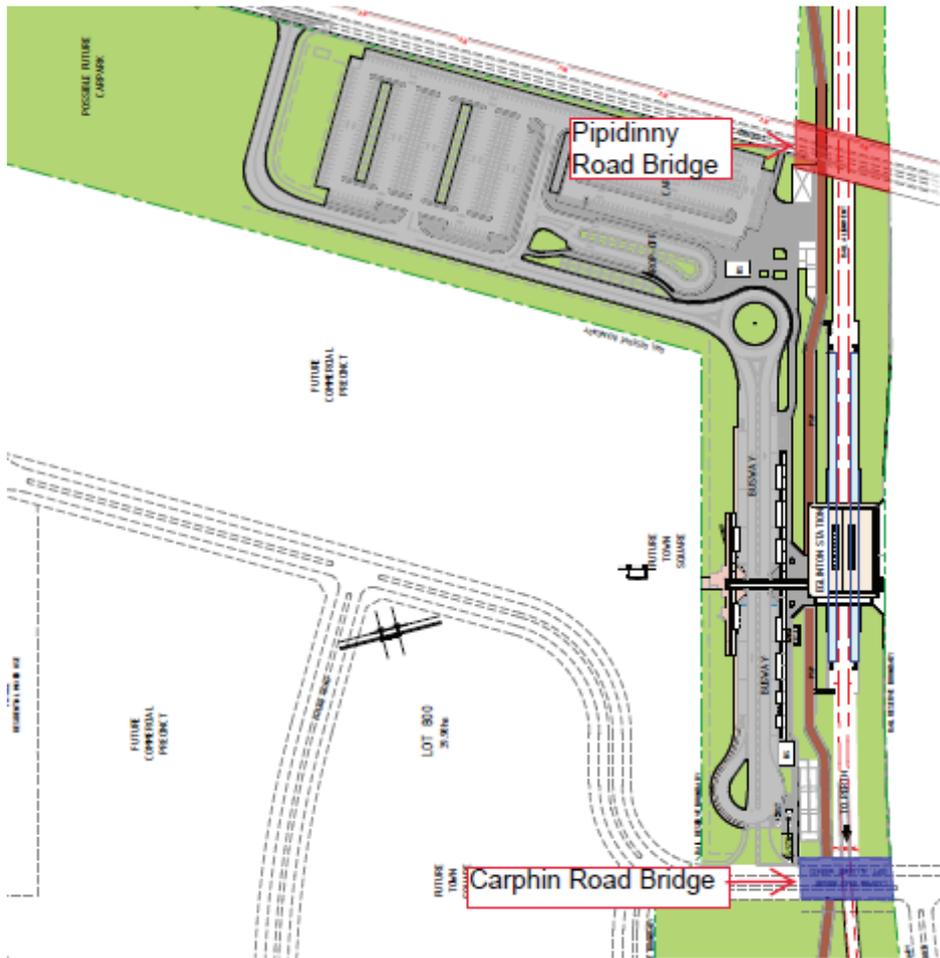


Figure 6 - Eglinton Station Supporting Infrastructure



Table 3 Surrounding Works

| WORKS | RESPONSIBILITY | DETAILS |
|---|-----------------------|--|
| Pipidinny Road 'Road Over Rail' Bridge | YRE scope of works | Two lanes (one in each direction), 2m central median and 3m shared path on each side of the carriageway. |
| Eglinton Avenue 'Road Over Rail' Bridge | YRE scope of works | Four lanes (two in each direction), 6m central median and 3m separated shared path on each side of the road carriageway. |
| Carphin Road and Bridge | Eglinton Estates | Out of scope for the YRE, and subject to developer design. |

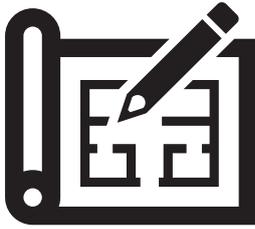
3.3. DESIGN PRINCIPLE AND INTENT

As noted within Section 1 of this report, the scope of works set by METRONET includes a number of qualitative design measures which must be met in the station design. Table 4 below provides detailed information on how these qualitative design measures have been interpreted and applied to the Eglinton station design.

Table 4 Proposed Works for Eglinton Station

| PROPOSED | DETAILS |
|---|--|
| <p data-bbox="167 495 335 562">Train Station Functionality</p>  | <p data-bbox="534 495 1422 674">The ‘sunken’ form of station achieves many of the benefits of a tunnel style station, including providing a station entrance at street level, reduced visual impact of the station, and lower impact of noise and vibration compared to tradition at grade station with elevated concourse. A section demonstrating the design of the station is provided at Figure 15 below.</p> <p data-bbox="534 701 1374 846">The Eglinton Station building will ultimately provide entrances along the east and west elevations. This is an important measure for the precinct connectivity, as the station concourse will form the main east-west pedestrian link through the Eglinton Activity Centre.</p> <p data-bbox="534 873 1422 1126">At opening Eglinton Station will be an unmanned station with no fare gates or Station Booth. Notwithstanding, future provision will be made for Automated Fare Gates by the inclusion of cast-in conduits in the concourse slab to allow for controlled access in the future. Critically, both with or without controlled access (Fare Gates) the layout of the station building provides free access throughout the station concourse as a means of passing over the railway line during the station operational hours.</p> <p data-bbox="534 1153 1406 1220">Consistent with all PTA infrastructure, the station building will be designed to universal access standards.</p> <p data-bbox="534 1247 730 1281"><u>Station Staging</u></p> <p data-bbox="534 1308 1406 1599">Whilst the Eglinton station will be constructed with entrances to both the east and west, the intent is for only the western entrances to be open for access initially. The reason for this is that the land immediately east of the station building is not currently within the scope of the draft Eglinton ACP, and therefore is not expected to be developed or made open to the public in the short-to-medium term. The interface of the station design levels with the land immediately east of the station is also subject to ongoing negotiations with the landowner.</p> <p data-bbox="534 1626 1406 1805">The operation of the eastern entrance is therefore ultimately subject to the developer progressing with development to the east of the rail corridor. Irrespective of this timing, it is still important to have the eastern entrance constructed as part of the station works, as there is limited opportunity to retrofit a station building once it is operational.</p> |

Station Architectural Design



A pavilion theme is common to YRE Stations. An angled parapet sits above the stations predominantly transparent façade, vertical fins, horizontal louvers, and overhangs provide passive solutions to environmental design.

Eglinton is an unmanned Station with east and west points of entry to the station concourse, subject to development commencing by the landowner to the East of the rail corridor. Voids and lifts separate pedestrian crossing and amenity zone of the concourse with the vertical access (stairs, lifts) to the platforms reducing passenger conflict. The voids provide natural light and ventilation to the platforms. Public amenities and staff facilities are located at the southern edge of the pedestrian crossing.

The east entrance integrates station access with future urban interface, based on ultimate developer levels provided by the land owner. The west entrance provides direct access to the busway, carparks, PSP and kiss-and-ride. Bus stand locations will be clearly signposted and illuminated with a direct and convenient pedestrian accessway via canopy shelters linking the station and stands. Kiss-and-ride area includes universal accessible drop-off bays and short-term car parking bays. PTA staff car parking and kiosk tenant car parking is located in the North West of the rail station with park-and-ride long-term parking.

Natural Light and Ventilation

Principles of natural light, ventilation and weather protection have informed this station architectural design, with the following noteworthy design points:

- Predominantly glazed facades to the station building facades on the east, west and north frontage.
- Two separate entrances provide for breeze into and through the concourse level.
- Glazed skylights incorporated in the roof structure.
- Void space at the first floor concourse and within the bus interchange areas, improving ventilation and providing natural light infiltration to the station platform level.
- The platform coverage achieves the 'Green Star – Railway Stations' requirement of 20% of the platform area to be shaded for the afternoon peak periods during the warmest half of the year.

Station Identity

Design interpretation was derived from the Grevillia plant and forest significant to the Traditional Landowners of the Eglinton area providing a station connection to the land expressed in colour, form, texture, and public art.

These references are best viewed in the artists impressions provided in the figures below, but it must be noted that the interior design of the station building (such as the ceiling features) may be subject to change.

Bus Interchange Design



The bus interchange will be located immediately west of the train station platform, located between the future Eglinton Town Square and station entrance. The interchange is 'at grade' with the street, meaning access to the station from the adjacent station or town square is direct and intuitive.

The majority of the bus stands are located on the station side of the busway, meaning passengers do not need to cross the busway to access the station entrance.

The bus interchange area is designed as a bus only space, ensuring that there will not be standard vehicles passing by the station entrance. This serves the logical benefit of creating a low traffic environment which is more accommodating to pedestrian movements.

The bus interchange includes a continuous canopy weather shelter between the station entrance and bus stops. This canopy is a simply low-pitched roof.

Pedestrian / Cyclists Infrastructure and Wayfinding



Pedestrian and cyclists accessibility to, from and around the station is summarised as follows:

The PSP west of the rail corridor will provide the regional pedestrian and cycling network. To avoid conflict with the station entrance, this becomes a grade separated PSP travelling beneath the station forecourt.

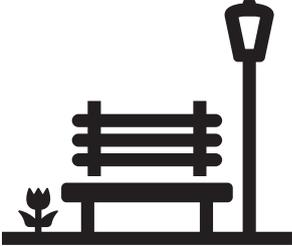
Access to the station from the PSP is provided via ramps located at the southern and northern ends of the station forecourt.

Given Eglinton is a District Centre (being the lowest order centre for new YRE stations), the centre is likely to be a relatively lower destination attractor. This design has therefore been selected for Eglinton to minimise disruption between pedestrians accessing the station and passing cyclists.

This PSP path will connect to the wider PSP network, which is being extended from Butler Station to the future Yanchep Station as part of the METRONET works. This PSP network runs west of the tracks for the entire alignment, within the railway corridor.

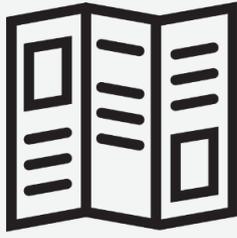
Bike shelters are provided to the north of the station building (adjacent to the kiss-and-ride area) and south of the building (adjacent to the bus interchange area). These areas are logical for the bike shelter as they are near to the PSP connection ramp, but outside of the core area of the station forecourt (reducing potential conflict between pedestrians and cyclists).

Pedestrian modelling has been assessed using the LEGION modelling tool for the peak 2031 customer patronage, which calculates pedestrian congestion based on a level of service performance criteria. This assessment concludes that the pedestrian network supports the projected patronage numbers.

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| <p>Station Parking</p>  | <p>To ensure the parking facilities do not undermine transit oriented development principles, the long-term park-and-ride bays are located with greatest distance from the station entrances. This design serves two key purposes, being:</p> <ul style="list-style-type: none"> • Encouraging pedestrian and bus transport ahead of private vehicle use; and • Encouraging 'park-and-ride' patrons to travel through the town centre to access the station to promote safety and activation. <p>In accordance with the Transperth operational requirements, the car parking will only be made available to the Transperth patrons (similar to the management of all Transperth dedicated parking facilities across Perth). However, as parking is applied on a 'day-rate' basis, this management measure enables patrons to undertake incidental multi-purpose trips within the Eglinton town centre combined with their commute.</p> |
| <p>Other Station Amenities</p>  | <p>Essential station amenities, including ticketing and information areas, passenger toilets and other services such as vending machines will be provided within the concourse level of the station building. This will include the following public lavatory facilities:</p> <ul style="list-style-type: none"> • Four female toilets and three hand basins; • Two male toilets, two urinals and three hand basins; • One separated universal access toilet. <p>Figure 16 below displays the public and staff amenities within the Eglinton Building.</p> |
| <p>Landscaping</p>  | <p>High quality hard and soft landscaping design has been proposed for the Eglinton Station. The key principles underpinning the landscape design are as follows:</p> <ul style="list-style-type: none"> • The regular use of Grevillea varieties, drawing on the station character chosen for the Eglinton Station. • Retention and transplanting of vegetation where possible. This remains subject to detailed civil and construction requirements. • Reduction of heat island impacts. This includes diamond tree planting between parking spaces within the long-term parking area. Some deciduous trees will also be provided along pedestrian routes to achieve summer shade and winter sun infiltration. • Selection of low maintenance vegetation, including minimising irrigation. This is achieved by using local natural species (such as the Grevillea varieties) where possible, supported by exotic species only where specific vegetation characteristics are required. • Paving and road materiality is used to create subtle wayfinding cues and define pedestrian priority areas. This includes the use of high-quality pavers around the station forecourt and key area of the |

| | |
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| | <p>busway to achieve a distinctly different feel to the thoroughfare areas.</p> <ul style="list-style-type: none"> • Large quantities of seating is required, but must be delivered in a manner which minimises obstruction to key movement areas. In-situ seating incorporated into raised planters will be applied where possible to achieve this. <p>The preliminary landscape plan is provided at Appendix F of this report</p> |
| <p>Crime Prevention Through Environmental Design (CPTED)</p>  | <p>Designing out crime and the creation of a perception of safety is recognised as an important consideration in the delivery of a contemporary public transport node. Whilst a thorough surveillance system and security presence is an important part of this, the design of the physical environment to incorporate CPTED principles plays an important role in providing basic foundations to manipulate human behaviour towards crime prevention, as and ultimately creating a safe environment for passengers.</p> <p>CPTED measures which may be pragmatically applied to the station design are broadly summarised as follows:</p> <ul style="list-style-type: none"> • The station building contains three active facades with an entrance point to the east, south and west. These active frontages provide surveillance along the planned main street and pedestrian network east and west of the station, and the station plaza to the south. • The alignment of the station plaza with the adjoining busway provides mutual surveillance between the two areas. • High activity zones, such as the busway and kiss-and-ride area, are located closest to the station entrance. More dormant uses such as the long-term car park is located towards the station periphery. • An unobstructed view corridor is created between the western and eastern forecourt through the station concourse. • The station concourse is designed in a mezzanine type structure with a void to the platform below. This allows for surveillance between the concourse and station levels. • Pedestrian movements around the station are channelled through the use of defined pedestrian paths and supporting landscaping cues, such as raised planters and tree corridors. • Reducing large vegetation canopy around the station building to ensure CCTV view is not restricted. The landscape design will also incorporate hard landscaping elements (such as raised planters and street furniture) to enforce an anti-vehicle (hostile threat) environment around the station building to deter unwanted vehicles from entering pedestrian only spaces. |

Supporting Bus Services



Bus access for the proposed Eglinton Station is partially staged as follows:

- Day 1 Operation will initially require buses to access and egress from the bus interchange via the Pipidinny Road crossover.
- Final Design will provide the option for bus access and egress via Carphin Road. This access is reliant on the construction of Carphin Road, which will be delivered by the landowner.

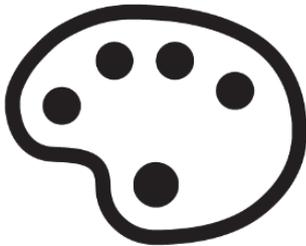
To deliver an integrated transport solution which connects the key activity areas within the rail extension area, a comprehensive and supportive feeder bus network will be delivered through the final design. A number of future bus routes have been identified for further development that typically loop between the new stations and service the suburbs in between.

The ultimate bus network is expected to include new routes for Eglinton operating under the standard 'station-to-station loops' model, drawing from the success of the Joondalup and Mandurah lines model. Existing bus services will be extended from Butler Station to Alkimos Station and new routes introduced to link Alkimos Station with Eglinton Station, then with Yanchep Station.

The bus services are expected to increase the number of passengers arriving at Eglinton stations via public transport and reduce demand for station car parking.

Final service specifications of the day one and ultimate scenarios will be subject to detailed planning, allocation of funding, and community consultation, which is ongoing.

Public Art



Public art within the station will be delivered in accordance with the requirements of the WA State Government Percent for Art Scheme, which requires 1% of the construction budget for new works over \$2 million to be spent on artwork.

This artwork will be delivered to be consistent with the themes of the wider 'METRONET Public Art Strategy' and associated 'Yanchep Rail Extension & Thornlie-Cockburn Link Projects Public Art Strategy', with the thematic framework strongly built around the Gnarla Biddi story of 'Our Pathways'.

A summary of the scope of works for public art is provided at **Appendix G** of this report.

The integration of this artwork into the station design will be further developed through the detailed design phase, and it is expected that an associated standard condition of approval will be applied.

Figure 7 - Aerial view of station building



Images are included for illustrative purposes only

Figure 8 - Station Building, as viewed from the east



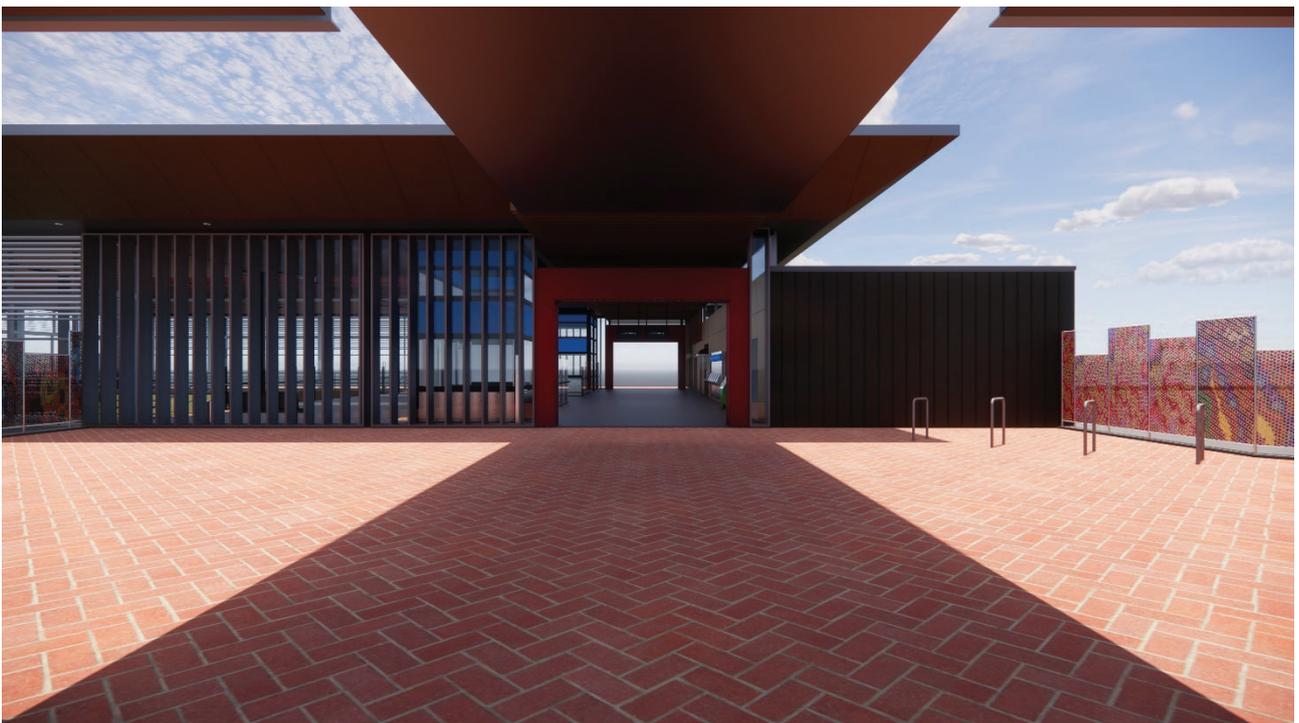
Images are included for illustrative purposes only

Figure 9 - Station building and bus interchange canopies, as viewed from the west



Images are included for illustrative purposes only

Figure 10 – Station building western entrance



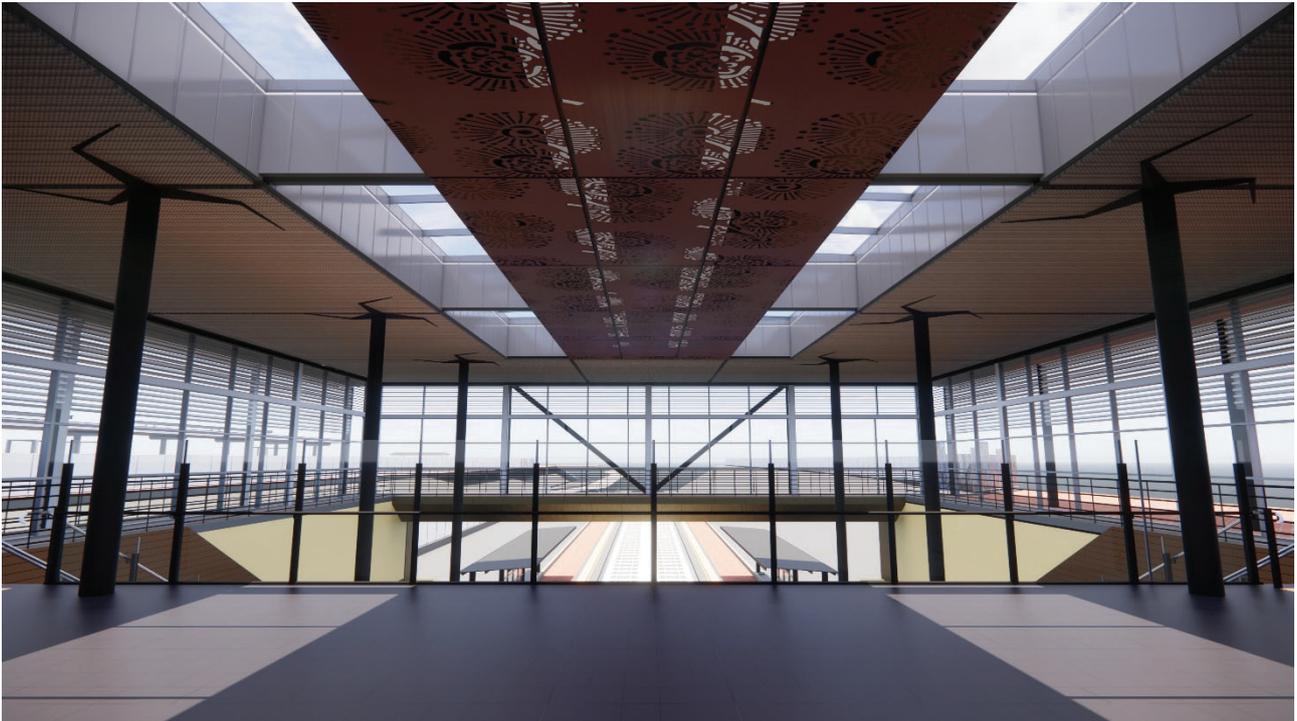
Images are included for illustrative purposes only

Figure 11 - Station building eastern entrance



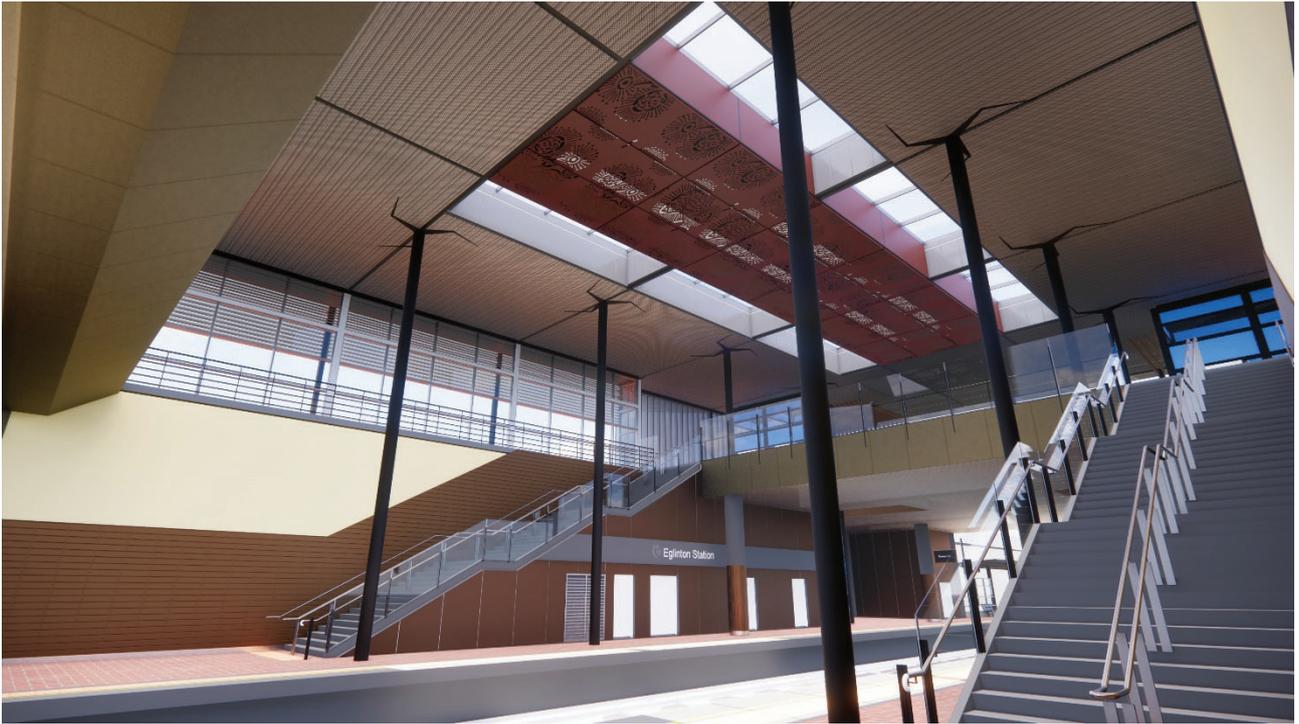
Images are included for illustrative purposes only

Figure 12 - Station concourse level looking north



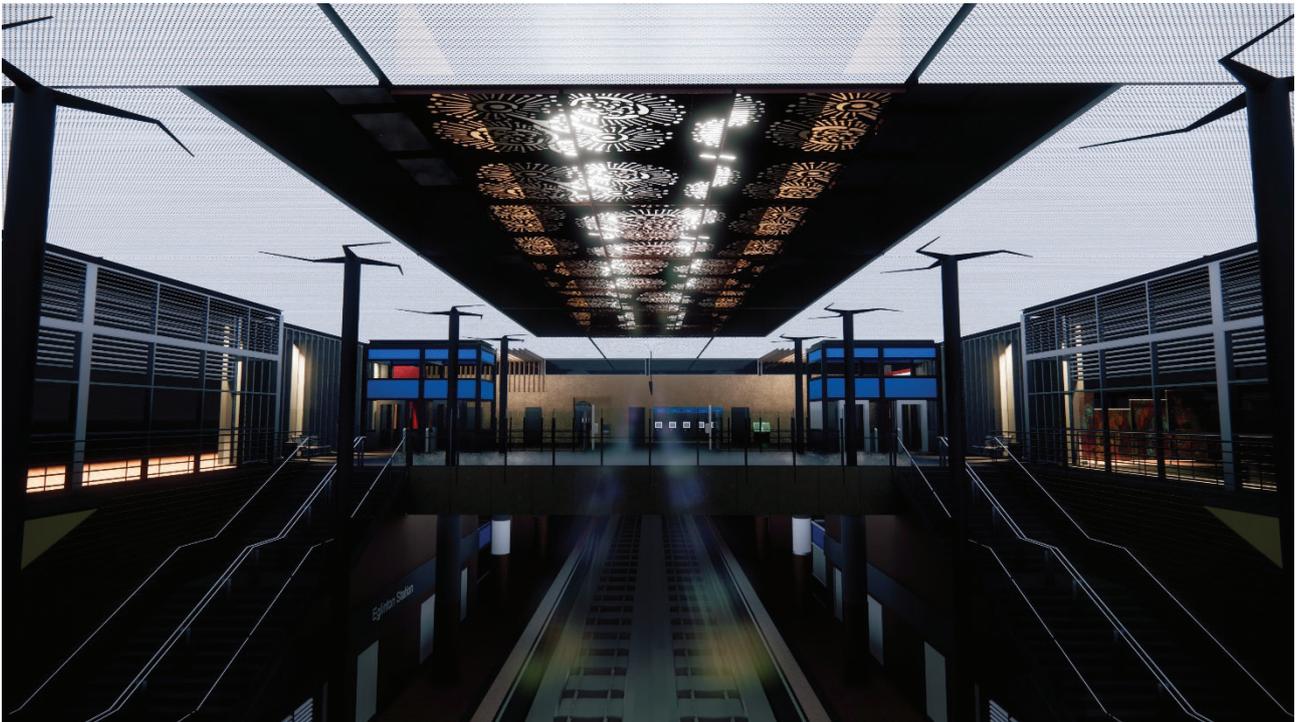
Images are included for illustrative purposes only. Interior design may be subject to change.

Figure 13 - Station building platform level



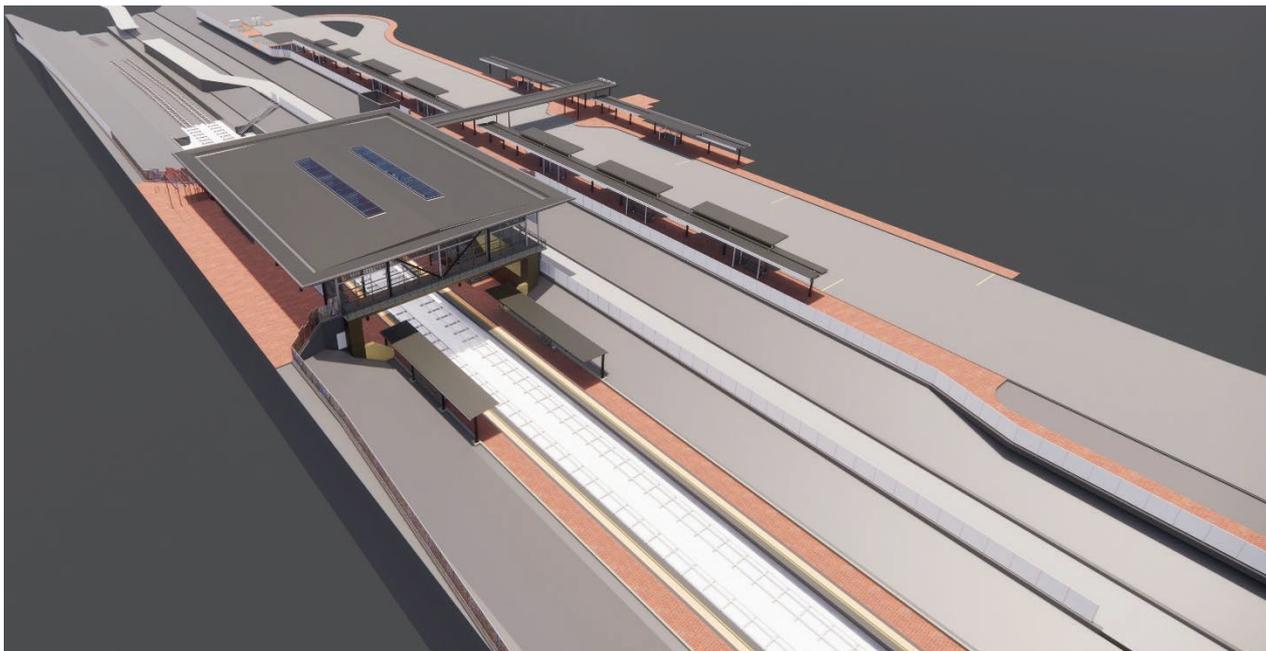
Images are included for illustrative purposes only. Interior design may be subject to change.

Figure 14 - Station building skylight infiltration



Images are included for illustrative purposes only. Interior design may be subject to change.

Figure 15 - Artists impression of station layout



Images are included for illustrative purposes only. Interior design may be subject to change.

Figure 16 – Artists impression of future design of Eglinton Station Precinct

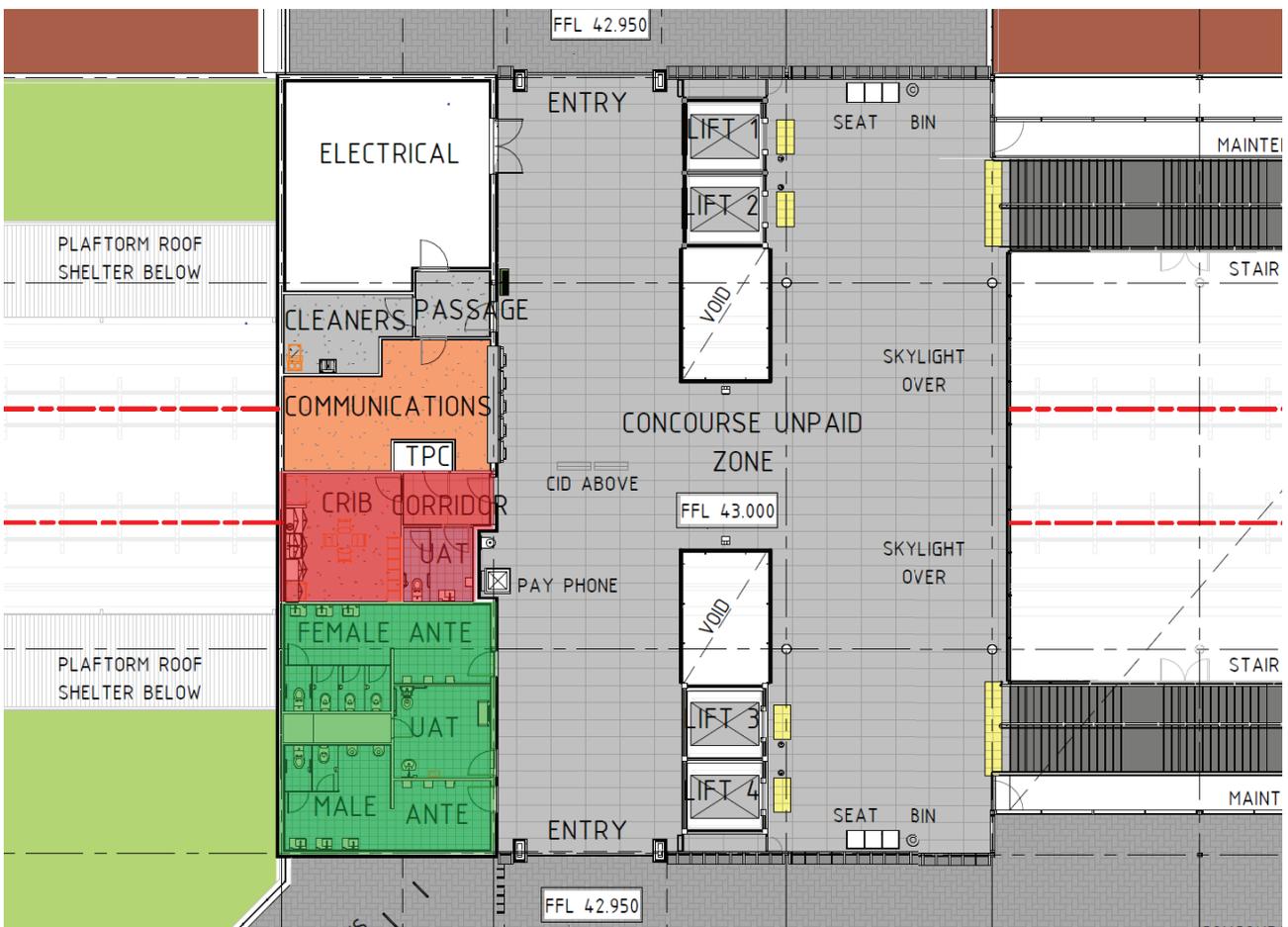


Images are included for illustrative purposes only. Interior design may be subject to change.

Figure 17 - Station Section Design



Figure 18 – Public (green) and staff (red) amenities within concourse level



4. AGENCY AND STAKEHOLDER CONSULTATION

Since the formal announcement of the YRE line, the YRE line and associated stations have been the subject of significant public consultation and stakeholder sessions. A detailed summary of these consultations including key outcomes is provided at **Appendix H** of this report.

These consultations included two development application focussed pre-lodgement meetings conducted by Urbis on 14 July 2020 (focussed around Eglinton Station and Yanchep Station) and 17 August 2020 (focussed on Alkimos Station), which included discussion around the planning process and relevant planning considerations. Key outcomes of these meetings were as follows:

- Agreement that the application would be the subject of a 14-day consultation period conducted by the METRONET department of DPLH, and on this basis, no consultation period was required to be conducted by the local government directly.
- Formal referral to the City of Wanneroo's Council meetings was not required prior to the City making its recommendation to the DPLH. This decision was formed on the basis that the City is a referral agency only, and the DPLH is ultimately responsible for a decision on the application.

Importantly, the NEWest Alliance will continue to conduct regular public and stakeholder consultation sessions throughout this project, which will occur independent of this development application assessment process. This includes regular interface meetings between NEWest Alliance with the interfacing land developer to discuss design matters and construction interfaces.

5. TECHNICAL REPORTS

5.1. CATCHMENT ANALYSIS

Given there is limited opportunity to ‘retro-fit’ the train station operations, an important consideration in the Eglinton Station design is the future-proofing of the station, including ensuring that the design of the station appropriately considers the long-term catchment and associated mode demands. To support this objective, the Eglinton Station has been the subject of a number of access planning studies and regional transport modelling, which has informed the SWTC. The key findings are summarised in a memo provided at **Appendix I** of this report.

The future catchment, including the likely mode transport mode, forms an important component of this catchment analysis and associated station design. The methodology applied to the various transport modes as part of this catchment analysis is as follows:

- A catchment distance of 800m to 1600m is applied to the future walkable catchment, which translates to a 10 to 20 minute walk.
- A 3km catchment distance is applied to the cyclable catchment, which is equivalent to a 10 minute cycle.
- A catchment distance of 400m is applied to indicative future bus routes.

The presumption for all modes is that patrons are most likely to travel down-stream to access the station, rather than back-tracking from the destination. For the Eglinton Station, this suggests that the future catchment will be predominately from the north, east and west, with the patrons south of the station most likely to travel to Alkimos Station.

With the goal of encouraging transit oriented development in mind, higher weighting has been given to ‘bus and ride’, cycling and walking modes of transport in the catchment analysis.

The resultant daily forecast patronage for the Eglinton Station is presented in Table 5 below.

Table 5 Eglinton Patronage

| Patronage by Mode | 2021 | 2031 |
|--------------------------|-------------|-------------|
| Walking | 54 | 441 |
| Cycling | 90 | 110 |
| Bus | 540 | 771 |
| Kiss-and-Ride | 360 | 375 |
| Park-and-Ride | 756 | 507 |

In determining whether the Eglinton Station provides enough parking bays to cater to the ‘park-and-ride’ patronage, an assumed 1.1 parking space turnover rate was applied. This results in a predicted requirement for 625 bays at Day 1 Operation, which is then predicted to reduce to 420 bays by 2031, as the supporting bus network is established.

This analysis demonstrates that the over four hundred bays provided for Eglinton appropriately caters to the ultimate design parking requirements for the Eglinton Station, where supporting bus networks are in place. Modelling for Day 1 Operation does suggest a shortfall in parking may result, but this is directly attributed to a lower proportion of uptake of alternative active transport modes. Catering to this short-term parking demand would compromise the long-term transport oriented development principles which are sought for the Eglinton Activity Centre, and ultimately reduce the incentives for passengers to consider non-car modes of travel.

5.2. TRANSPORT IMPACT ASSESSMENT (TIA)

A Transport Impact Assessment assessing the suitability of the road network is provided at **Appendix J** of this report. As a multi-modal station, this assessment has considered the following:

- The suitability and capacity of the road network to accommodate vehicle movements;
- Supporting bus routes and associated bus interchange servicing and design; and
- Pedestrian and cyclist access and connectivity.

The following sections provide a summary of the relevant information and key findings for each area.

5.2.1. Road Capacity

Given the currently lack of supporting road network and timeframes for delivery yet to be disclosed by the responsible developer, the assessment of the road network has been undertaken based on the two key project stages, being:

- 'Day 1 Operation' (modelled at 2021) where access is assumed to be from Pipidiny Avenue only for both cars and buses for station access. Refer Figure 19 below.
- 'Future Scenario' modelled at 2031 accordance with the assessment requirements under the WAPC Transport Impact Assessment Guidelines (refer Figure 20). This assumes that remaining internal road connections are constructed as part the draft Eglinton Activity Centre Plan (refer to Section 7 of this report).

Figure 19 - TIA 'Day 1 Operation' Road Network

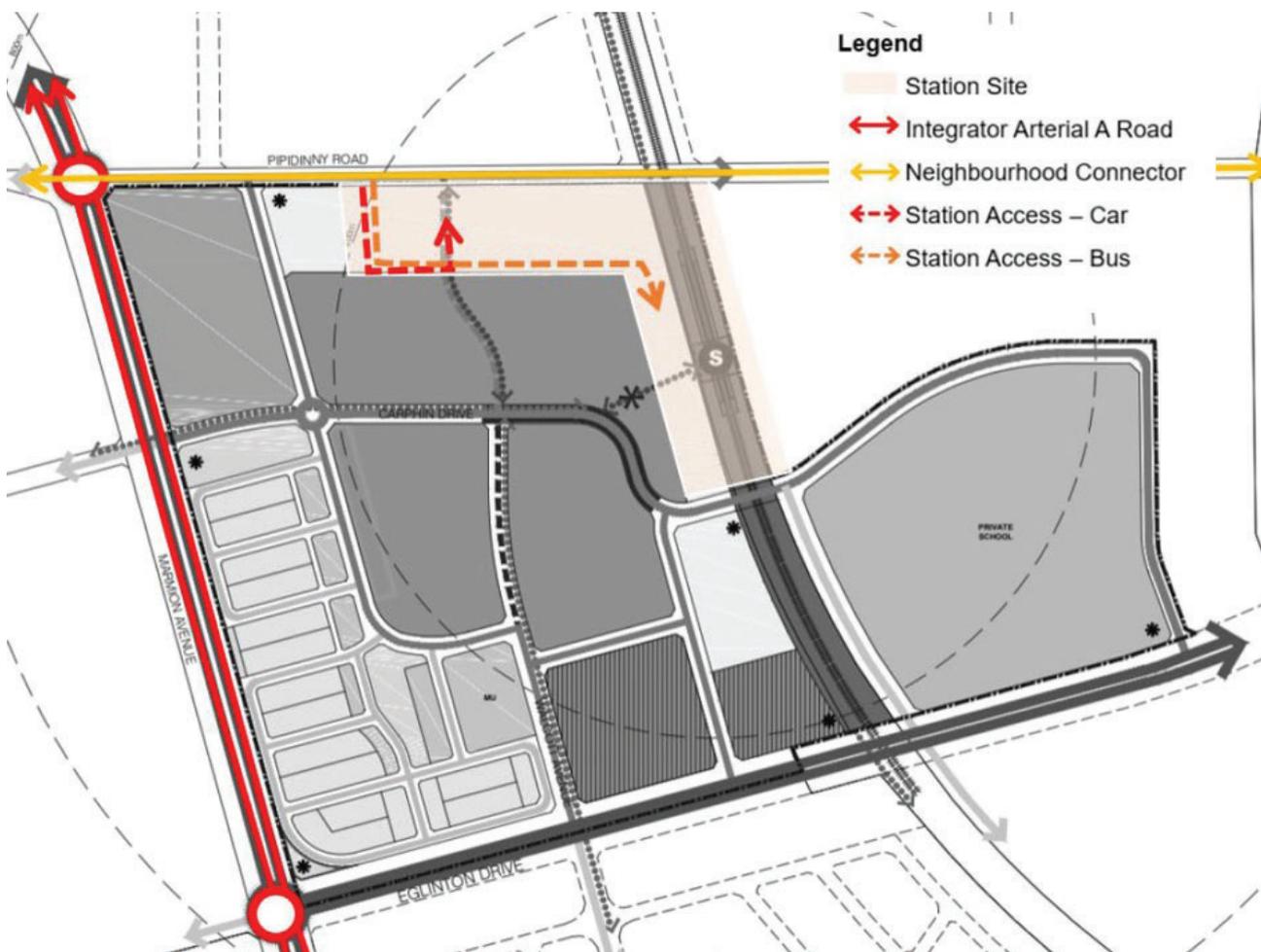
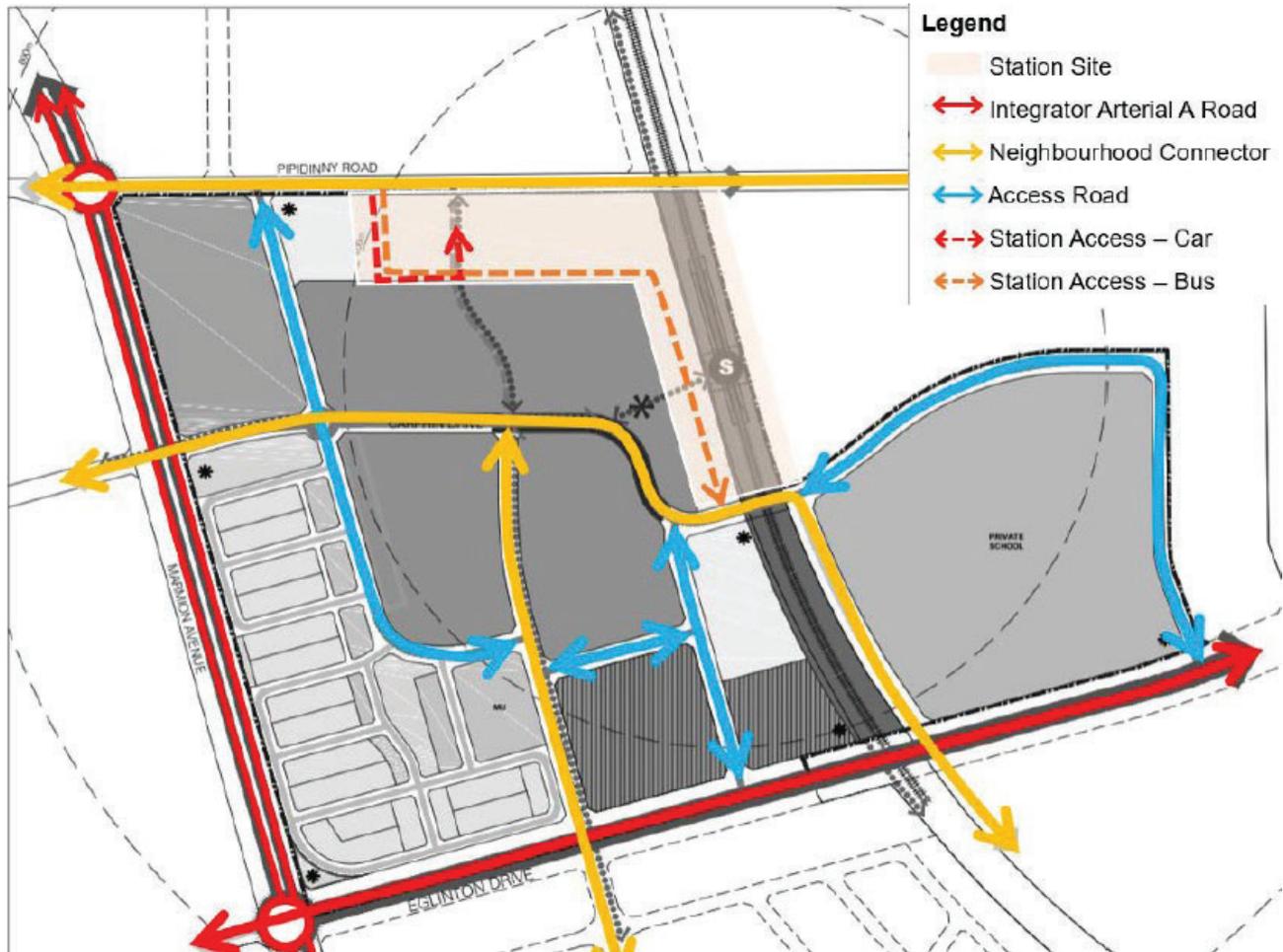


Figure 20 - Future Scenario Road Network



The AM/PM peak period for the Eglinton Station has logically been identified as 7:00 to 8:00am and 5:00 to 6:00pm respectively. Key findings of the TIA are as follows:

- Surplus capacity is provided for 'Day 1 Operation' with all intersections providing a Level of Service A result in the SIDRA analysis, indicating a maximum wait time of 10 sec.
- Satisfactory capacity is provided for the established operation scenario. The worst-case scenario resulted in a Level of Service B, which continues to deliver a highly functional design with a maximum wait time of only 13 seconds.

Overall, the modelling outcomes suggest a suitable outcome for a town centre environment, which appropriately balances the road capacity requirements with a desire to not over-supply infrastructure for the private vehicle long-term.

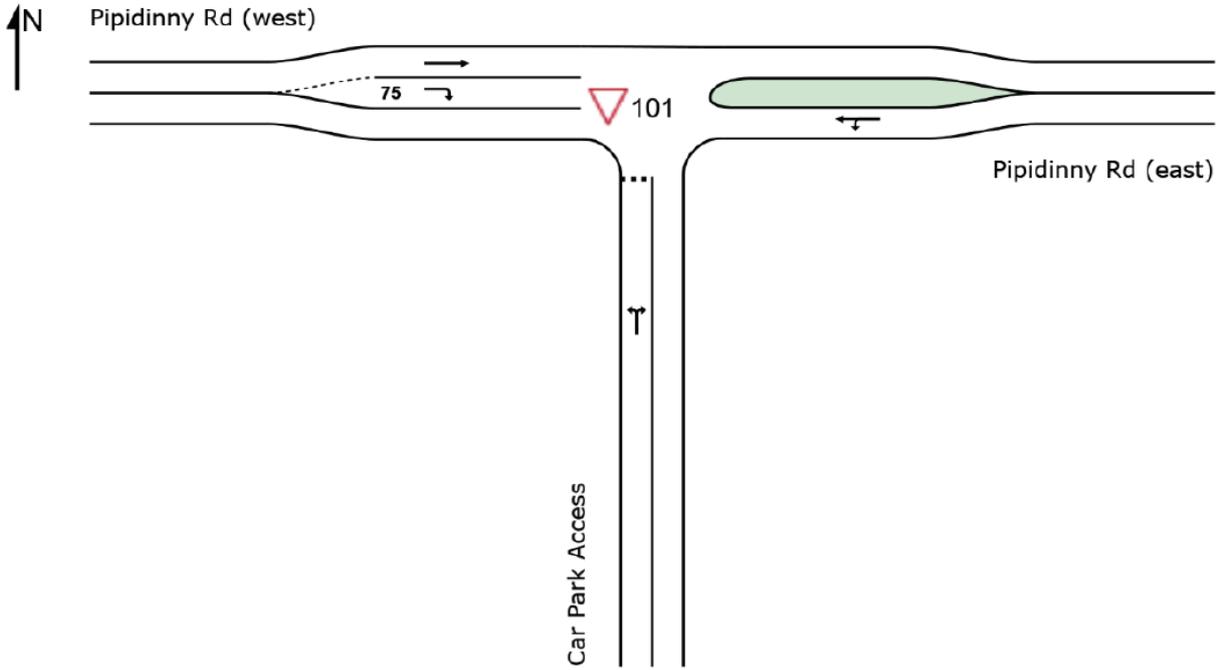
Commentary on the capacity of the roundabout intersection of Pipidiny Road with Marmion Avenue has also been included in the TIA, informed by the recent assessment completed for the draft Eglinton Activity Centre Plan. This commentary noted that despite the intersection showing early signs of capacity issues, this is not expected to have significantly detrimental impact on the roundabout operation. Importantly, these early capacity constraints are attributed to regional traffic growth and the resultant limited gaps in oncoming traffic along Marmion Avenue, rather than traffic generated by the Eglinton Station.

5.2.1.1. Pipidiny Intersection Upgrade

The TIA provides a recommendation that the site access point from Pipidiny Road is upgraded to allow for right turn storage along Pipidiny Road to allow for safe access to the station, as viewed in Figure 21 below. This intersection design has been modelled for the TIA SIDRA analysis reported above.

Detailed design of this intersection may be delivered through a condition of approval, following further negotiation with the City and/or Main Roads, as required.

Figure 21 - TIA Recommended Pipidinnny Road Upgrade Design

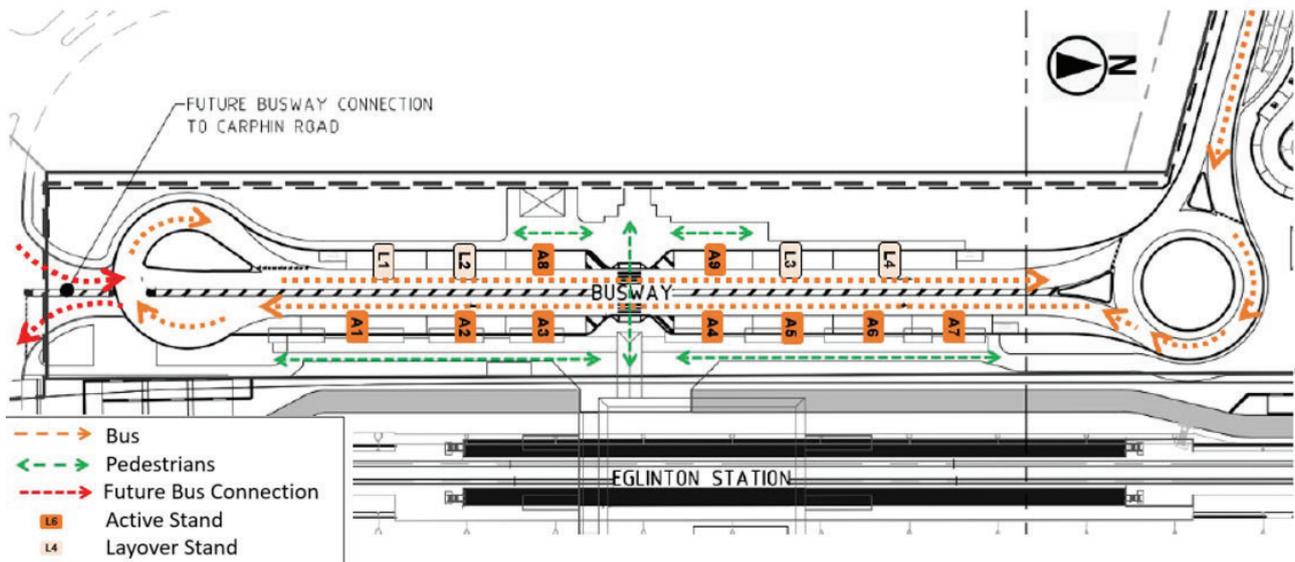


5.2.2. Bus Servicing and Interchange Design

All new stations proposed under the YRE will be multi-modal stations, meaning that the stations will contain a bus interchange and supported by numerous bus services. For the Eglinton Station, this bus servicing will include a mix of high frequency and standard bus services, noting that these bus services are still to be finalised.

The Eglinton Station provides the bus interchange immediately west of the station building, which integrates the interchange with the future activity centre. A visual summary of the bus and pedestrian movement network around this bus interchange is detailed in Figure 22 below.

Figure 22 - Bus Interchange Layout



5.2.3. Pedestrian and Cycling

A regional PSP connection will be established as part of the YRE project, which will provide a complete 13.8km network extension from Butler Station to Yanchep Station. The PSP will be a 4m pathway with 0.5m shoulders on each side, located west of the railway tracks within the railway corridor.

For the Eglinton Station, the PSP will travel to the west of the rail alignment and travel beneath the station forecourt. Ramp connections are provided both to the north and south of the station building. This PSP network is expected to be supported by a local cycle network implemented as part of the future Eglinton ACP as detailed design progresses.

5.3. ENVIRONMENTAL NOISE AND VIBRATION MANAGEMENT PLAN

The PTA are committed to the management of airborne noise, ground-borne vibration and ground-borne noise arising from the operation of the new railway infrastructure. It is also a requirement of the SWTC for NEWest to design and build new stations to comply with both the *Environmental Protection (Noise) Regulations 1997*, as guided by State Planning Policy 5.4 – Road and Rail Transport Noise and Freight Considerations in Land Use Planning (**SPP 5.4**).

The following provides a summary of the noise modelling outcomes applicable to the station itself, as well as the ongoing assessment which is being conducted by the PTA for the rail operation (which is not subject of this development application).

5.3.1. Station Operation Noise Modelling

The key acoustic issues associated with the station are predominantly environmental noise emission from station and entry buildings (including public address announcements and passenger movements), noise emission from car parking areas and bus movements. The report provided at **Appendix K** outlines the outcomes of this assessment.

Noise emission – mechanical plant

Environmental noise levels from the Eglinton station due to building services noise has not been assessed as the mechanical design has not sufficiently progressed to establish equipment selections. However, it is expected that standard noise control measures will be sufficient to control mechanical services plant noise in order to meet the required environmental noise criteria at adjacent noise-sensitive receivers.

Noise emission – car parking areas

The noise from the proposed western and eastern car parks has been assessed, based on the car park layout and pavement design undertaken by the civil consultant. The predicted noise levels at the noise-sensitive receivers nearest the car park were found to be below both the day time and night time environmental noise criteria.

Noise emission – public address system

Noise levels at nearby noise-sensitive receivers from the station's PA system has not been assessed as the PA design has not sufficiently progressed to establish equipment selections. However, a limiting sound power level for the equipment has been established which should enable the environmental noise criteria to be achieved.

Noise emission – new station entry road and bus movements

The noise from the proposed new car park connection road to Pippidiny Road, associated vehicles on Pippidiny Road and bus routes accessing the new bus station has been assessed. The predicted noise levels are predicted to achieve the SPP5.4 traffic noise targets at the nearest potentially-affected receivers to the south west and south east, but exceed these targets at the nearest receiver to the north of Pippidiny Road. However, no mitigation measures are proposed, as:

- Predicted traffic noise levels associated with the station alone are expected to be minimal and indiscernible when compared to traffic noise levels generated at this receiver from traffic in the larger development area

- The selected receiver location may be overly conservative, with realistic worst-case receiver location set further back from the road / rail corridors
- Construction of noise walls where there is currently no development is not required, as these future dwellings are expected to comply with the requirements of SPP5.4, and adopt quiet house design measures.

5.3.2. Rail Operation Noise Modelling

Noise modelling for the rail operation will be completed independent of this development application process, given the rail and associated train operation is exempt from the requirement of planning approval. Preliminary noise modelling completed on the rail operation indicates that noise targets may be exceeded at a number of sensitive receiver locations. As a result, some degree of noise and vibration mitigation is intended to be incorporated into the rail corridor, likely in the form of acoustic walls and potentially ballast matting.

The PTA have also committed to a further operation noise monitoring program will be implemented within three months of the opening of the proposal, and again at 18 months. Further detail on these ongoing management measures is provided within Section 6 of this report.

5.4. OTHER TECHNICAL ANALYSIS

Table 6 below provides a summary of the other supporting technical reports applicable relevant to this development application.

Table 6 - Summary of Other Technical Inputs

| Input | Details |
|---|--|
| <p>Bushfire (Appendix L)</p> | <p>The Bushfire Attack Level (BAL) assessment provided at Appendix L of this report confirm that the post-development site conditions will still provide some habitable buildings within areas above a BAL-low rating. As a result, it is recognised that a Bushfire Management Plan (BMP) is required to support the development application, and this will be provided under a separate cover.</p> <p>It has been recognised that achieving full compliance with State Planning Policy No. 3.7 – Planning in Bushfire Prone Areas from day one operation will be a challenge for all new stations along the YRE line. Compliance for the Eglinton Station is of particular concern, as it is acknowledged that development east of the station is outside of the draft ACP area, and not expected to occur within the next 10 years or more.</p> <p>The proposed solution will be to progress the Eglinton Station through the ‘unavoidable development’ pathway, but still seek to achieve the highest level of bushfire protection which is pragmatically achievable. Details of this will be provided through the BMP.</p> |
| <p>Stormwater Drainage Design</p> | <p>A grated trench drain is provided as a threshold drain along the eastern boundary of the precinct. As the catchment area is small, the runoff is discharged into soakwells which have been sized to accommodate the 10% AEP. Larger flows are expected to flow out of the precinct to the east. A cutoff drain has been provided to prevent external flows from the adjacent batter from entering the eastern portion of the precinct. The relevant developer should be approached to determine if a threshold drain is required in this location; considering the small catchment size ideally runoff from the station exterior would flow into the adjacent development.</p> <p>Stormwater from the bus interchange is captured in a traditional pit and pipe network running from south to north towards the carpark. Pits are located within the</p> |

| Input | Details |
|-------|--|
| | <p> painted median to allow crossfall to be applied away from the active and layover bus bays. A single pit is provided as a point for hydraulic connections from Eglinton Station building. Runoff from the eastern side of the station building is discharged to the rail reserve. Further design may explore the opportunity to discharge all of the station building runoff to the rail reserve, reducing the amount of storage required within the station precinct and reducing flows within the piped network. </p> <p> The central area of the drop off is utilised as a swale which will incorporate drain blocks at intervals to promote the storage and infiltration of stormwater up to 300mm depth. A catchpit is provided at the western end of the swale to allow captured runoff to overflow into the piped drainage network. </p> <p> Another swale is provided between the busway and the drop off, also utilising drain blocks and an overflow catchpit. Kerb openings are provided at regular intervals to allow stormwater into the swales. Runoff from the eastern side of the carpark is captured traditional pit and pipe networks and conveyed westwards. Pits are positioned within the circulating aisles. A single swale is located at along the western edge of the eastern carpark. </p> <p> Stormwater from the western part of the carpark is captured in both traditional pit and pipe networks, and swales. These swales will utilise drain blocks to promote the storage and infiltration of stormwater up to 300mm depth. Catchpits are provided to allow captured runoff to overflow into the piped drainage network. Piped drainage conveys stormwater westwards to the basin. </p> <p> Runoff from the access road is captured in traditional pit and pipe networks and conveyed to the basin. The northernmost pit is to be positioned at the same level as the TWL of the basin to provide an overland flow route during large storm events. </p> <p> A basin is located between the western side of the carpark and the access road. The basin is walled on all sides and has been sized to accommodate the 10% 12-hour AEP storm event. Storm events exceeding the 10% 12-hour AEP are discharged off site to the north via an overland flow path. Assuming an infiltration rate of 2m/day the maximum depth of the basin is 1.5m. Further design and favourable permeability testing may allow the depth of the basin to be reduced. </p> <p> Soakwells have been utilised at the intersection of the carpark access and Pipidinny Road to collect and detain runoff from the section of the carpark access road lower than the basin. These soakwells have been sized to accommodate the 10% 12-hour AEP storm event, with the remainder of the 1% AEP storm event flowing out of the site to the north/west via an overland flow path. The intersection of the carpark access is located at the low point of Pipidinny Road. </p> <p> The northern section of the carpark access road and the intersection with Pipidinny Road is too low to drain into the basin and therefore a shallow swale has been proposed on the western side of the access road to accommodate flows from the intersection and low point. This swale is located on land set aside for a future carpark, and will either need to be accommodate by the future carpark design or other drainage provisions will be required. This swale is designed to accommodate </p> |

| Input | Details |
|-------|---|
| | <p>the 10% 12-hour AEP storm event, with the remainder of the 1% AEP flowing out of the site to the north via overland flow paths.</p> <p>The intersection of the carpark access road and Pipidinny Road falls over the low point of Pipidinny Road and the surrounding area. While the runoff from the surrounding bushland areas is expected to be minimal due to sandy soils and existing vegetation, future design should consider the impact and depth of ponding expected in the adjacent low areas due to existing and external catchments, along with discharge from the station precinct during the 1% AEP. The stormwater management plans for the area should be obtained from the Local Authority and/or relevant developer to determine the proposed drainage strategy for this trapped-low area.</p> <p>All pits are typically either grated gully pits or manholes as per Main Roads standard details with 1200 mm diameter liners. Biofiltration material shall be required in all swales to meet WSUD initiatives.</p> <p>Pipidinny Road is an existing unkerbed road which borders the northern edge of the station. No piped drainage or open drains are present along Pipidinny Road; surface runoff is expected to sheet into the adjacent bushland and infiltrate there. The construction of the station carpark prohibits these existing overland flow routes, and therefore an open drain will need to be constructed in the southern verge of Pipidinny Road to convey runoff westwards towards the low point of Pipidinny Road.</p> <p>A preliminary stormwater design is provided at Appendix M of this report. A final stormwater design is also expected to be delivered through a condition of approval.</p> |

6. SUPPORTING APPROVALS AND MANAGEMENT PLANS

The following table provides a summary of those approvals.

Table 7 Summary of Supporting Approvals and Management Measures

| CONSIDERATION | DETAIL |
|--|--|
| <p>Environmental Approvals</p> | <p>Ministerial Statement 1100 (Butler Station to Eglinton) has granted approval for the clearing and disturbance of vegetation associated with the construction of the extension from Butler Station to Eglinton, including the Eglinton Station. A further Ministerial Statement 1129 also grants approval for clearing north of the Eglinton Station, up to Yanchep Station.</p> <p>A condition of Ministerial Statement 1100 is the implementation of a management plan for the Alkimos Park and Recreation Reserve. This plan has been approved by the regulator.</p> <p>Five deeds of agreement in place between PTA and adjacent land developers to use their Commonwealth environmental approvals under the <i>Environment Protection and Biodiversity Conservation Act 1999</i>.</p> <p>Amendments to this approval is likely to be required due to subsequent changes to the development envelopes, however these will be progressed independent of the development application process.</p> <p>A summary of the YRE Environmental Management Strategies is provided at Appendix N of this report.</p> |
| <p>Noise Monitoring Program</p> | <p>A noise monitoring program will be implemented within three months of the opening of the YRE line, and again at 18 months, to assess the effectiveness of noise mitigation. Specifically the program will:</p> <ul style="list-style-type: none"> • Confirm the as-built and operating railway achieves the Policy target LAeq (Day) 55 dB and LAeq (Night) 50 dB unless higher levels are permitted due to the incorporation of specified house facade protection. • Assess the accuracy of the pre-construction noise modelling predictions that were used to determine noise reduction treatments. <p>The PTA also has existing procedures for receiving noise complaints, which will be extended to the YRE operations.</p> |
| <p>Out of Hours Work</p> | <p>Due to the nature and scale of the project, it is likely that some degree of 'out of hours' and 'night shift' work will be required during the construction stage of this project.</p> <p>An Out of Hours Construction Noise and Vibration Management Plan will be provided to the City of Wanneroo prior to these out of hours works occurring. Acceptance of this Construction Noise and Vibration Management Plan will meet the notification / approval requirements as required by the Environmental Noise Regulations.</p> <p>For the purpose of the planning approval process, we request that any condition of approval related to construction hours is worded in a manner that</p> |

| CONSIDERATION | DETAIL |
|--------------------------------|--|
| | does not restrict these out of hours works (subject to acceptance of the Construction Noise and Vibration Management Plan). |
| Construction Management | <p>A construction management plan will be delivered by the PTA / NEWest Alliance prior to works commencing on site, which is expected to be reflected through a condition of development approval.</p> <p>A summary of the YRE Construction Program is provided at Appendix O of this submission.</p> |

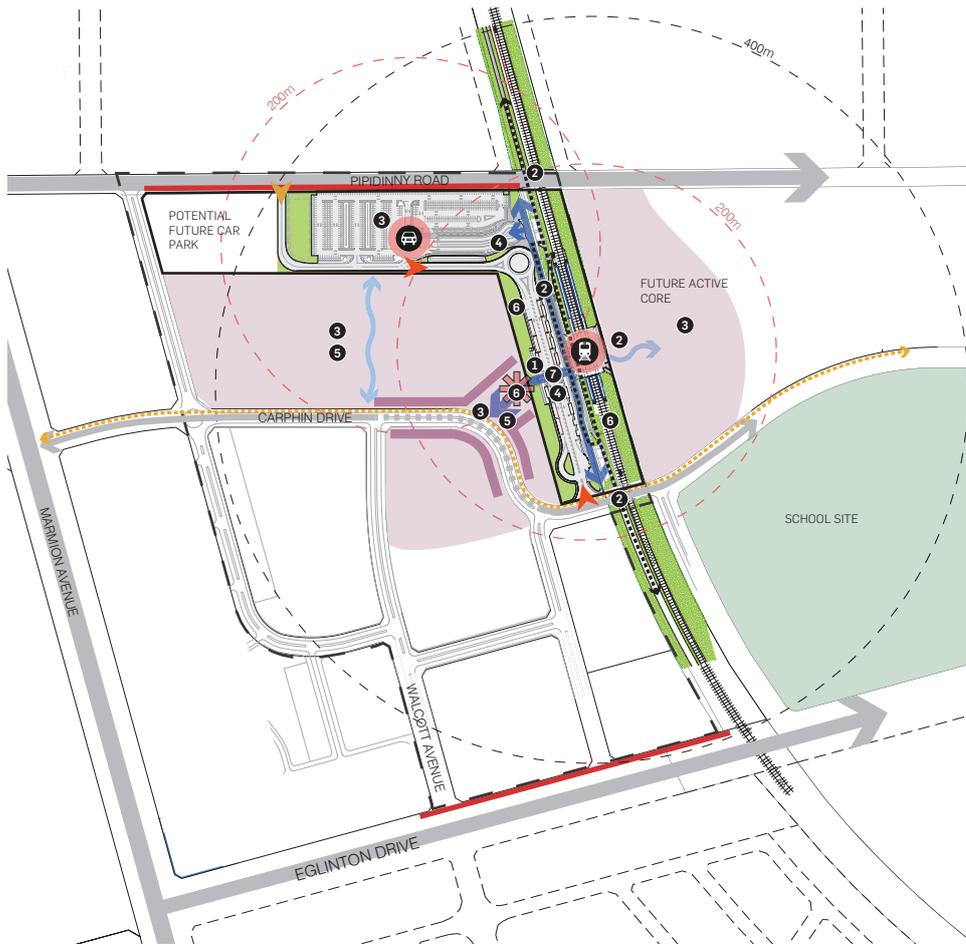
7. PLANNING ASSESSMENT

7.1. STATION DESIGN PRINCIPLES AND DESIGN REVIEW

State Planning Policy No. 7 – Design of the Built Environment (SPP7) provides a broad framework intended to facilitate qualitative performance-based assessment, with the ultimate aim of achieving desired quality outcomes. The framework is underpinned by the 10 design principles, which are considered and applied through the design assessment and review process.

The YRE project as a whole was subject to initial design comments from the Office of Government Architect (OGA) in February 2020, as well as a further State Design Review Panel (SDRP) review in June 2020. Whilst the Eglinton Station was not the primary focus of these comments due to it being the lowest order centre, the principles and design foundations are universal to the YRE station designs. As a result, the key outcomes of these design review sessions have equally been applied to the Eglinton Station. A summary of the comments, recommendations and associated modifications to the plans arising from these design review sessions is detailed at **Appendix P** of this submission.

Given all stations on the YRE line are placed within an activity centre, the alignment of the YRE station layout with the future desired layout of the activity centre is essential. Figure 23 below provides the 'Design Principles Plan' demonstrates this alignment, and includes specification of the key principles underpinning the station's design within its context.



LEGEND:

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DESIGN PRINCIPLES:

1 INTEGRATED TRANSIT HUB

- Street level integration of bus and train station to town centre
- Creation of station square plaza as an active open space which acts as an entry for the station and prioritises pedestrian access
- Strong visual connection between main street and station
- Dedicated bus station provides a low traffic environment adjacent to station
- Station building provides a connection point for transit services as well as cycle and pedestrian routes, with clear access to park & ride and kiss & ride services to the north

2 CONNECTED AND LEGIBLE

- Dual entry to station with access to development west and east of the rail corridor
- Key pedestrian links between transit nodes and town centre
- Regional PSP allows for connection to local level streets and cycle routes
- Transit nodes act as landmarks for easy wayfinding with clear visual and physical links

3 ACTIVATION AND SAFETY

- Train and Bus station reinforces activity through the town centre and main street
- Active edges along main street and station square provide a welcoming journey to and from the station while also enabling passive surveillance of the station and surrounding streets
- Station creates an opportunity for high intensity development within walking and cycling proximity
- Park and ride facility located off the station provides opportunity for riders to engage with the town centre on their journey to and from the station

4 AMENITY

- Station acts as a central node, connecting development east and west of the rail corridor with active and safe pedestrian links
- Transit hub provides various transport modes including train, bus, car parking and drop off access, pedestrian and cycle links
- Station provides a safe and comfortable environment with sheltered waiting zones for bus and vehicle pick up, bicycle lock up facilities and sheltered access to and from the main station building
- Transit hub acts as a catalyst for future development, encouraging a variety of uses for potential residents, employees and riders

5 SUSTAINABILITY AND COMMUNITY

- Station is a community focal point enabling social and community activities by providing integrated access and various transport modes
- Station square plaza facilitates social interaction, interfaces with development and provides an accessible space for town events
- Transit amenity supports a diverse range of relevant destinations for the local and wider community
- Encourages development of active town centre, creating opportunities for a variety of uses supported by sustainable modes of transport

6 AESTHETIC AND LANDSCAPE

- Station square provides a welcoming entrance to station services
- Vehicle access to park and ride facility off Pipidiny Road separated vehicle congestion from pedestrian focussed main street core
- Landscaping acts as a buffer to soften hard infrastructure edges
- Lowered rail line allows for visibility of station buildings and lessens impact of rail corridor on visual and physical access

7 CONTEXT AND SCALE

- Town centre intensity and scale built up around the station site highlights the transit hub as an important anchor for the precinct
- Lower scale station building responds to surrounding landscape

7.2. METRONET STATION PRECINCT DESIGN GUIDE

The METRONET Station Precinct Design Guide provides specific design guidance aimed at the design and planning of station precincts, including the design objectives which are fundamental to the delivery of a METRONET station.

Importantly, the METRONET Station Precinct Design Guide emphasises that a ‘one-size-fits-all’ approach cannot be applied to station design, and instead a station must be designed on a case-by-case basis considering the transit function, context and development potential over time. This is particularly relevant to the YRE stations given the surrounding centres are still at various stages of planning, and the ultimate activity centre station including ultimate form of landside development will be refined over many decades.

The Station Precinct Design Guide sets out 8 critical element objectives which require the specific planning response to support successful long term station development. These requirements vary depending on the station precinct type. As Eglinton Station is a ‘District Centre’ the station best being classified as a ‘SP3 - Town Centre’ form of station precinct type, with the following station precinct type description

Town centre station precincts are hubs for the immediately surrounding suburbs, and provide a range of shops, employment opportunities, community services and facilities to the local and wider area. They have significant transit oriented development potential, and support a variety of housing types including higher density residential in mixed use environment close to the station and centre amenities.

Many of these ‘critical elements’ are most applicable to the development surrounding the station, and is beyond the scope of the Eglinton station itself. However, the aspects which are applicable in some aspect are:

- Critical Element 3: Street Design and Movement Priority
- Critical Element 4: Intersections and Crossings
- Critical Element 5a: Transit Integration – Rail
- Critical Element 5b: Transit Integration – Bus
- Critical Element 6: Station Type
- Critical Element 7a: Station Dedicated Parking
- Critical Element 8: Public Realm and Public Open Space.

The following table applies these ‘Town Centre’ critical elements to the proposed Eglinton station design.

Table 8 Eglinton Station Design Principles

| STATION CRITICAL ELEMENT | DETAILS |
|--|--|
| Critical Element 3: Street Design and Movement Priority | |
| <i>Preferred: balanced access ped/bike & bus/car</i> | <p>The hierarchy of transport mode design applied to the Eglinton station is best demonstrated by the proximity to the station entrance. This hierarchy is as follows:</p> <p>Pedestrian / cyclists infrastructure is closest to the station. Short term unsecured bicycle bays are provided adjacent to the station entrance, and long term secured parking is located south and north of the station entrance.</p> <p>Bus interchange facilities are immediately adjacent, between the station entrance and future Eglinton town square.</p> <p>Private vehicle infrastructure is located furthest from the station entrance. The ‘kiss-and-ride’ drop-off and pick-up area is located</p> |

| STATION CRITICAL ELEMENT | DETAILS |
|--|--|
| | <p>approximately 140m from the station entrance, and long term parking located beyond.</p> <p>This hierarchy encourages use of alternative means of transport, as these services are most convenient to the station entrance.</p> |
| <p><i>Shared zone (station interface area): 20km/hr</i></p> | <p>Designed to 15km/hr.</p> |
| <p><i>Local/ urban streets: up to 40km/hr</i></p> | <p>The construction of all other local and arterials roads will be completed by the landowner consistent with the Eglinton Activity Centre Plan, and are outside of the scope of this development application.</p> |
| <p><i>Urban Arterials (frame): 50km/hr</i></p> | |
| <p>Critical Element 4: Intersection and Crossings</p> | |
| <p><i>Preferred: controlled four way intersection, no splitter lanes. Micro roundabout</i></p> | <p>All intersections within the PTA car park and busway are sign-controlled intersections with no splitter lanes. The busway roundabouts are designed to the required swept path (noting that this area will accommodate over-sized articulated buses.</p> <p>This design is consistent with the preferred layout for a Town Centre station precinct.</p> |
| <p>Critical Element 5a: Transit Integration - Rail</p> | |
| <p><i>Preferred minimum rail integration type:</i></p> <div style="display: flex; flex-direction: column; gap: 10px;"> <div style="display: flex; align-items: center;">  <i>Underground Tunnel</i> </div> <div style="display: flex; align-items: center;">  <i>Cut and Cover</i> </div> </div> | <p>Eglinton Station will be a 'cut and cover' station, consistent with the preferred station design for a Town Centre station precinct.</p> |
| <p>Critical Element 5b: Transit Integration – Bus</p> | |
| <p><i>Preferred: on street. Integrated/stacked interchange loop at grade</i></p> | <p>The Eglinton station provides an at grade bus interchange immediately adjacent to the future town square. This is consistent with the preferred approach.</p> |
| <p>Critical Element 6: Station Type</p> | |
| <p><i>Preferred: integrated station, underground station.</i></p> | <p>The following design elements demonstrate that the Eglinton Station is best classified as an integrated station, consistent with the 'preferred' approach for a town centre station.</p> <p><u>Integrated into the streetscape / form a seamless part of the urban streetscape</u></p> <p>Multiple aspects of the station have been designed to appropriately interface with surrounding future development. This is best demonstrated in the Design Principles Plan at Figure 23 of this report.</p> |

| STATION CRITICAL ELEMENT | DETAILS |
|--|--|
| | <p><u>Avoid the creation of movement barriers</u></p> <p>A direct movement line is created between the planned town square and main street west of the station, the station concourse and the planned priority pedestrian route east of the station (refer to the Design Principles Plan at Figure 23 of this report).</p> <p><u>Streetscape to be dedicated for entry ways to the station</u></p> <p>The west and west station entrances connect to the main street and pedestrian priority areas respectively. A station plaza space is provided to the west.</p> |
| Critical Element 7a: Station Dedicated Parking | |
| <p><i>Preferred (Core): no park-and-ride</i></p> <p><i>Considered (Core): limited park-and-ride (stacked/decked)</i></p> | <p>The Eglinton station applies an ‘at-grade’ park-and-ride separated design’, which is not recognised as either a preferred or considered form of parking for a town centre station precinct type.</p> <p>As the Eglinton station is located in an emerging centre, this is considered an appropriate form of parking for this context. As at-grade parking requires the least structural investment, at-grade parking is more conducive to urban redevelopment than constructing major structures to deliver stacked or decked parking.</p> <p>Importantly, the station layout places this at-grade parking area the furthest distance from the station entrance to ensure opportunities for alternative travel are still explored and prioritised. The opportunities to deliver a more consolidated form of car parking will be reviewed as the activity centre development progresses, and the ‘highest and best use’ of the land evolves.</p> |
| Critical Element 8: Public Realm and Public Open Space | |
| <p><i>Preferred: people streets plaza/square, playspace urban park</i></p> | <p>The station design provides a direct at-grade pedestrian link between the station entrance and the planned Eglinton town square, via the dedicated pedestrian link. This provides the basic foundations for a people oriented street network, consistent with the preferred design for a town centre station precinct.</p> |

7.3. ASSESSMENT PROCESS AND APPROVAL REQUIREMENTS

7.3.1. Planning Control Area No. 131 (PCA131)

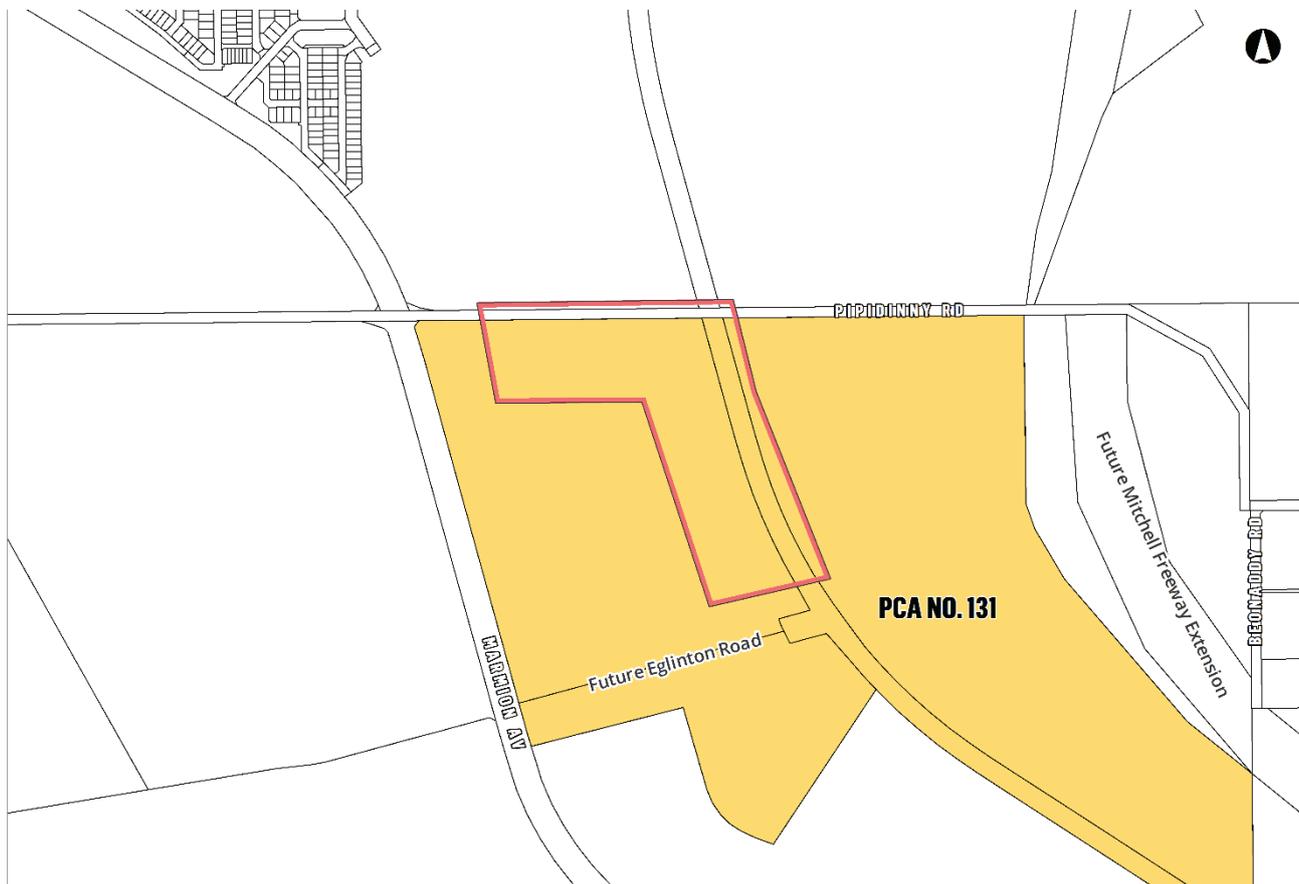
The proposed Eglinton Train Station works are wholly located within PCA131, which has been established for the purpose of facilitating the development of the land for the purpose of railways and related public purposes. Refer Figure 24 below.

The *Planning and Development Act 2005 (PD Act)* outlines the planning processes for a PCA. This process is summarised as follows:

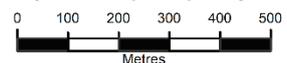
- The development application is to be lodged with the local authority. The local authority is to forward the application and its recommendation to the WAPC within 30 days of receiving the application (Section 115(3) of the PD Act).
- A 60 day deemed refusal period applies to development in a PCA (Section 250(3) of the PD Act).

Under Section 130 of the PD Act, the PCA provisions prevail over every other provision of the PD Act, including any region planning scheme or local planning scheme. However, this alone does not negate the requirement to obtain approval under the region planning scheme or local planning scheme, where applicable.

Figure 24 - PCA Map



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LEGEND:

-  Planning Control Area
-  Indicative Station Envelope

PLANNING CONTROL AREA

7.3.2. Railway (METRONET) Act 2018

The *Railway (METRONET) Act 2018 (METRONET Act)* is the enabling legislation applicable to the construction of the METRONET railway extensions. Section 3 specifically provides the authority to construct the Yanchep Rail Extension. The legislation constitutes a special Act for the purposes of the *Public Works Act 1902*.

From a planning approvals perspective, this enabling legislation introduced a number of exemptions from planning approval beyond what is provided for within the PD Act and Metropolitan Region Scheme. Specifically, Section 6 of the METRONET Act provides the following exemption applicable to this application:

Despite anything in the Metropolitan Region Scheme, the following development may be commenced or carried out without the approval of the Planning Commission —

...

(B) METRONET works on non-railway land.

This clause will provide an exemption from planning approval for METRONET works which extend beyond the Railways reservation. Importantly, for the construction or alteration of a railway station, or any related car parks, public transport interchange facilities or associated means of pedestrian or vehicular access, the requirements under the *Planning and Development Act 2005* and the Metropolitan region Scheme will apply.

As this development application fundamentally involves the construction of a railway station, a development application is required. However, some works ancillary to the station will be exempt from approval under this clause. A detailed summary of the exemptions is provided at Section 7.2.5 of this report.

For completeness and transparency, we have included detail on the full scope of works reasonably associated with the Eglinton Station within this application.

7.3.3. Section 6 Public Works

Section 6 of the PD Act states provides exemption for the requirement to obtain planning approval under the relevant local planning scheme for 'public works' or the taking of land associated with that public work.

To achieve this public works test, the following two tests must be met:

1. The authority undertaking the work is an agent of the crown; and
2. The scope of works meet the definition of 'public work' as defined by the *Public Works Act 1902*.

The PTA is considered an 'Agent of the Crown', and the NEWest Alliance acts on behalf of the PTA. The proposed forward works will therefore meet the first test of public works.

Section 2 of the *Public Works Act 1902* includes the following within the definition of 'Public Work'.

- (2) any railway authorised by special Act or any work whatsoever authorised by any Act;*
(20) any road, stock route, viaduct, or canal;

Given the proposed Eglinton station works are included within the scope of the METRONET Act enabling legislation, the proposed works also meet this second test.

The Eglinton station works will thereby meet the Section 6 exemption, and does not require approval under the City's local planning scheme. We do however note that public works may still require approval under the Metropolitan Region Scheme, unless further exemptions are provided.

7.3.4. Metropolitan Region Scheme (MRS) Exemptions

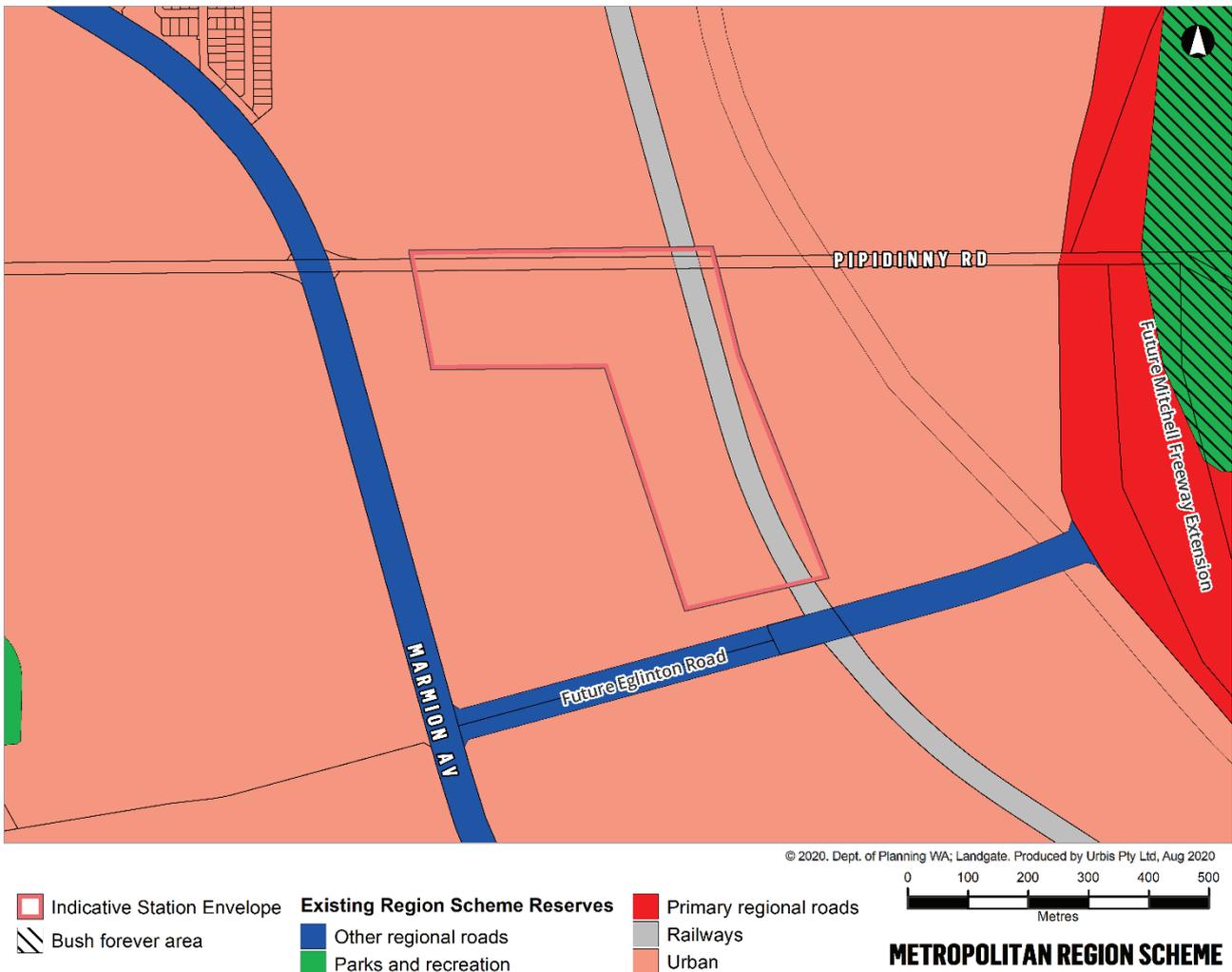
The site is identified within the 'Railway' reservation and 'Urban' zone under the MRS – refer to 24.

Exemptions available under the MRS are provided through the following clauses:

- Reserved Land: Clause 16(1a), where the development is 'Permitted Development' or expressly authorised under an Act to be commenced or carried out without the approval of the WAPC.
- Zoned Land: Clause 24, which broadly enables a public authority to complete works in a local road.

Under Section 24(2)(a) of the MRS the exemptions for planning approval cannot be applied to land which is declared under Section 112 of the *Planning and Development Act 2005* – i.e. a Planning Control Area. This means that the MRS does not provide any exemptions from planning approval for zoned land. However, for this METRONET project, the enabling legislation of the METRONET Act re-instates the majority, but not all, of these exemptions.

Figure 25 – Metropolitan Region Scheme (Extract)



7.3.5. Summary of Exemptions

The following table provides a summary of the METRONET Act and MRS exemptions, and associated conclusions regarding the scope of works which require formal development approval.

Table 9 – Summary of Exemptions

| MRS Zone / Reservation | Exemption | Conclusion |
|-------------------------------|--|---|
| <p>'Railways' Reservation</p> | <p>Clause 16(1a) of the MRS states that development approval is not required for development on reserved land owned or vested in a public authority, and are:</p> <p><i>works on land reserved for railways for the purpose of or in connection with a railway, <u>not</u> including the construction or alteration of a railway station or any related car parks, public transport interchange facilities, or associated means of pedestrian or vehicular access;</i></p> | <p>The conclusion drawn from this is clause as follows:</p> <ul style="list-style-type: none"> • The Railway track works and any associated noise walls within a 'Railway' reservation will <u>not</u> require planning approval. • The majority of the remaining station works (station building, platforms etc.) will require approval. |
| <p>'Urban' Zoning</p> | <p><i>Despite anything in the Metropolitan Region Scheme, the following development may be commenced or carried out without the approval of the Planning Commission —</i></p> <p>...</p> <p><i>(B) METRONET works on non-railway land.</i></p> <p>'METRONET Works' are defined as:</p> <p><i>means works for the purpose of, or in connection with, a METRONET railway but does <u>not</u> include the construction or alteration of a railway station, or any related car parks, public transport interchange facilities or associated means of pedestrian or vehicular access;</i></p> | <p>The conclusion drawn from this clause is as follows:</p> <ul style="list-style-type: none"> • Station works which are available for public access will generally require approval. • Most other works included within the scope of this METRONET project will <u>not</u> require formal statutory planning approval. <p>As noted in Section 3.2.1 of this report, this exemption is determined to extend to the 'road over rail' bridges to be constructed at Pipidiny Road and Eglinton Avenue, on the basis these bridges do <u>not</u> provide <i>direct</i> access into the station.</p> <p>However, it is expected that this exemption will <u>not</u> cover the upgrades to Pipidiny Road, given these provide direct access to the station precinct. As a result, the detailed design of the Pipidiny intersection upgrade (as noted in Section 5.2.1 of this report) is proposed to be provided through a condition of approval.</p> |

7.4. PLANNING FRAMEWORK ASSESSMENT

7.4.1. State Framework Assessment Summary

Table 10 State Framework Assessment Summary

| STATE FRAMEWORK | DETAILS |
|---|--|
| <p>Perth and Peel @ 3.5 Million (PP@3.5)</p> <p>AND</p> <p>North-West Sub-Regional Planning Framework (Sub-Regional Framework)</p> | <p>PP@3.5 and the associated Sub-Regional Framework identifies the Eglinton Station area as a ‘District Centre’ within the surrounding land being Urban. This is consistent with the status of the site within the Metropolitan Region Scheme and State Planning Policy 4.2 – Activity Centres for Perth and Peel. This places the Eglinton Station within the lowest order centre of all new stations under the YRE.</p> <p>The Sub-Regional Framework directly identifies the timely delivery of the YRE line including new Eglinton Station as an essential pre-requisite to achieving a high-density urban environment characterised by lower car dependency. The importance of the ‘infrastructure first’ model of urban development is therefore well established in the high level strategic planning framework. This approach enables the town centre to be defined by the railway station from day one, and ensures that movement and built form is defined holistically to the magnetism of the railway station.</p> <p>The Sub-Regional Framework identifies all METRONET Stage 1 works within the framework, including the Eglinton Station. This proposal is therefore entirely consistent with the outcomes sought through the Sub-Regional Framework.</p> |
| <p>Metropolitan Region Scheme (MRS)</p> | <p>As noted in Figure 25 above, the proposed Eglinton station will be located within the ‘Railways’ reservation and ‘Urban’ zone under the MRS.</p> <p>Eglinton Station is appropriately placed within these reserves and zones for the following reasons:</p> <ul style="list-style-type: none"> • The development of a ‘Railways’ for a railway station is indisputably consistent with the intent of the reserve. • The construction of a multi modal railway station within the ‘Urban’ zone is entirely complementary with contemporary urban development principles as it enables development to progress without creating a reliance on the private vehicle. This transit oriented form development is widely accepted as best practice planning for a contemporary urban area. |

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| <p>State Planning Policy No. 7 – Design of the Built Environment (SPP7)</p> | <p>As identified in Section 7.1 of this report, the YRE project as a whole was subject to initial design comments from the OGA and SDRP. Whilst these review sessions were focussed around the Alkimos and Yanchep Station, the design learnings which are universal to the YRE line have also been applied to Eglinton.</p> <p>So despite the Eglinton Station itself has not been the subject of design review, the consideration of the design principles of SPP7 have still been applied to the development.</p> |
| <p>State Planning Policy No. 4.2 – Activity Centres for Perth and Peel (SPP4.2)</p> | <p>The Eglinton Station is located within the Eglinton Activity Centre, which is identified as an ‘emerging’ District Centre under the activity centres hierarchy of SPP4.2.</p> <p>Key themes and objectives of SPP4.2 which are directly applicable to this development application are as follows:</p> <ul style="list-style-type: none"> • Accessibility to public transport, and planning in line with transit oriented development principles. • Prioritising mode-shift towards public transport, walking and cycling, and reducing reliance on private cars. <p>The design principles outlined in preceding sections of this report have demonstrated the various ways in which the Eglinton Station has met these objectives.</p> |
| <p>State Planning Policy No. 5.4 – Road and Rail Noise (SPP5.4)</p> | <p>SPP5.4 guides the interface of noise sensitive development and major road and rail transport routes, with the overall aim of protecting significant transport routes whilst minimising the adverse impact of transport noise on sensitive development.</p> <p>As all new proposed railways are required to meet the specified noise targets of SPP5.4, a noise and vibration assessment has been completed in support of the Eglinton Station (refer to Appendix K of this report).</p> <p>Importantly, the PTA has also committed to undertaking further operational modelling to ensure the modelled noise outcomes are accurate (refer to Section 6 of this report).</p> <p>As the area immediately surrounding the train station is currently undeveloped, the provisions of SPP5.4 will also apply to any new noise sensitive development proposed within 100m of the rail alignment, which will likely result in ‘quiet house’ design standards being applied to this subsequent development.</p> <p>This ‘belt and braces’ approach to noise mitigation effectively meets the objectives of SPP5.4.</p> |

| | |
|--|---|
| <p>Development Control Policy No. 1.6 – Planning to Support Transit Use and Transit Oriented Development (DCP1.6)</p> | <p>The Eglinton Station indisputably supports transit oriented development principles, given it provides a multi-modal station with the core of a future secondary level activity centre. But the detailed station design remains an important component to ensuring these TOD principles come to fruition.</p> <p>In summary, the following design components of the Eglinton Station support TOD principles:</p> <ul style="list-style-type: none"> • The modal hierarchy of the station design places active modes of transport first, and locates long-term parking to the periphery of the station precinct. • The co-location of the bus interchange and rail station building, combined with a comprehensive future bus network makes multi-modal trips more desirable for passengers. • The station will ultimately be supported by a main street connection to the west of the station building, and a priority pedestrian route to the east. • The PSP provides direct pedestrian and cyclist access <p>Combined, these supporting measures expand the reach of TOD beyond simply development in proximity to the station, and creates real opportunities to decrease car dependence.</p> |
|--|---|

7.4.2. Local Planning Assessment

As noted earlier in this report, the proposed development meets the categorisation of ‘Public Works’ and is exempt under Section 6 of the *Planning and Development Act 2005*. Regardless, as the interface between the Eglinton Train Station and surrounding Eglinton District Centre is an essential consideration in the successful station planning design, the driving principles and objectives of the have been considered for this application.

In this respect, the City of Wanneroo Local Planning Framework which is directly applicable to the Eglinton station is as follows:

- Eglinton Local Structure Plan No. 82; and
- Draft Eglinton Activity Centre Plan No. 104.

The following sections provide a contextual summary of these documents.

7.4.2.1. Eglinton Local Structure Plan No. 82. (Eglinton LSP82)

The Eglinton LSP82 was endorsed in November 2012, and provides broad guidance on the development outcomes for the urban development zones in Eglinton. The Eglinton LSP82 Part 1 map identifies the land immediately surrounding the Eglinton Station as within the ‘Centre’ zone, as depicted within Figure 26 below. SPP4.2 identifies Eglinton as an ‘District Centre’ in accordance with the activity centre hierarchy, and requires an activity centre plan prior to development occurring.

The draft Eglinton Activity Centre Plan is currently being progressed by the landowners Eglinton Estates, and will apply to the ‘Centre’ land west generally west and south east of the Railway corridor. This draft Eglinton Activity Centre Plan is addressed in more detail within Section 7.4.2.2 of this report below.

Figure 26 – Local Structure Plan 82 Map



The Eglinton LSP82 requires the following to be implemented prior to subdivision occurring within the LSP82 area:

Noise Assessment Report for sensitive land uses adjacent to or in the vicinity of Marmion Avenue, Eglinton Drive and / or the Railway Reserve.

This requirement demonstrates that all future lots and associated dwellings within the Eglinton LSP82 area should be designed with 'quiet house design' acoustic measures to mitigate rail noise from the planned railway line. Further acoustic noise walls along the railway corridor are therefore not required to protect future dwellings along the Yanchep Rail Extension track alignment.

7.4.2.2. Draft Eglinton Activity Centre Plan No. 104 (Draft Eglinton ACP)

Once endorsed by the WAPC, the Draft Eglinton ACP will provide the guiding framework for the Eglinton District Centre, which includes the land immediately abutting the Eglinton train station. At the time of writing this report, the Draft Eglinton ACP was with the WAPC for review, with final determination expected in the coming months.

The Draft Eglinton ACP has been advertised by the City of Wanneroo and was adopted for final determination at the 5 November 2019 OCM. The Draft Eglinton ACP is therefore given the status of a 'seriously entertained' document. Whilst the framework may be subject to change prior to adoption, this still remains the most relevant publicly available ACP to guide development within the Eglinton District Centre.

Figure 27 below outlines the Part 1 Eglinton ACP Map, as presented to the City of Wanneroo OCM in November 2019. The land immediately east of the Eglinton station is located within the 'Centre' zone, but is not currently within the scope of this activity centre plan. As a result, this land will need to be subject to further planning prior to development occurring, with development presumed to occur on a longer horizon to the remaining centre.

This long term development horizon does present a challenge to the Eglinton Station, as there is limited opportunity to retrofit the station building for when development east of the station occurs. We also note that there are ongoing negotiations with the landowner to resolve earth working and final design level interfaces.

As a result, this development application continues to seek development approval for the eastern station entrance and associated eastern station forecourt, but this eastern entrance will remain closed-off until development east of the station progresses and the design level interfaces are resolved. .

The Draft Eglinton ACP is also divided into precincts, with associated specific land use and development outcomes and vision statements. The Eglinton Station will have interface with the following precincts (also refer Figure 28 below):

- Main Street Precinct; and
- Shopping Precinct.

Figure 28 - Draft ACP Precincts



Table 11 below outlines the direct outcomes sought for the Eglinton ACP precincts, as they apply to the Eglinton Station, and concludes that the Eglinton Station building design and overall station precinct layout will appropriately align and support the objectives of the Eglinton ACP.

Table 11 Precinct Land Use and Development Outcomes

| PRECINCT | PROPOSED |
|--|--|
| <p><i>Main Street Precinct: Provide for development that activates the street.</i></p> <p><i>Shopping Precinct: Provide for development which activates the main street.</i></p> | <p>The location of the busway and station entrance is a deliberate measured intended to connect the main street. The layout of the Eglinton station encourages park-and-ride passengers to move through the future Eglinton main street precinct prior to accessing the station.</p> |

| PRECINCT | PROPOSED |
|--|--|
| <p><i><u>Main Street Precinct:</u> Focus high intensity and active uses adjoining Station Square.</i></p> | <p>The station entrance and busway provide a direct connection between the planned station square and Eglinton station entrance.</p> |
| <p><i><u>Main Street Precinct:</u> Provide for convenient, safe and pleasant access between the train station and other parts of the district centre.</i></p> <p><i><u>Shopping Precinct:</u> Provide a convenient district shopping centre environment.</i></p> | <p>The station design and layout provides a direct, at-grade and weather protected connection from the station entrance to the future town square. CPTED design principles have informed the station design, which will ultimately be supported by lighting and CCTV measures.</p> |

8. CONCLUSION

The METRONET Yanchep Rail Extension from Butler Station to Yanchep set out to implement best practice urban design and transport planning principles to the emerging north west corridor of Perth. The Eglinton Station is an exceptional example of this approach, which by placing the Eglinton multi-modal station within the planned Eglinton District Centre creates the foundations for successfully achieving transit oriented development, and embedding opportunities for urban development without creating sole reliance on the private vehicle.

The successful application of transit oriented development extends beyond simply placing a train station within an activity centre. Thereby a well designed multimodal station also requires careful consideration of desire lines, as well as convenience and opportunities for engagement with the activity centre. This report concludes that the Eglinton Station achieves these essential pillars of a contemporary multimodal station, as evidenced through the following:

- A pedestrian first approach to the station building design. Specifically, the ‘cut and cover’ design of the Eglinton Station creates an ‘at-grade’ entrance experience to the station concourse, and enables the station building to form a seamless link across the railway line during operational times.
- The co-location of the bus interchange and station building reduces the total journey time for multi-modal trips, making bus-to-train transport a more practical and feasible option for patrons. The Eglinton Station layout provides this bus interchange as part of the pathway to the future Eglinton activity centre core and town square, concentrating pedestrian activity and encouraging mutual surveillance between the spaces.
- Providing essential pedestrian connecting infrastructure, including an extension of the existing PSP network from Butler Station to Yanchep Station, with ramp connection to the Eglinton Station forecourt.
- Recognising the need for park-and-ride facilities for a train station in an emerging urban centre, but deliberately locating these facilities beyond the immediate station precinct. This approach encourages movement through the activity centre on the way to and from the station, as well as reducing the number of vehicle movements within the immediate station area.

Whilst the development application is for ‘public works’ and has limited statutory assessment controls, this has in no way resulted in a compromised design outcome for the Eglinton Station. As demonstrated via a planning assessment against the qualitative controls of SPP7, the METRONET Station Design Guide and other relevant State and local planning frameworks, the Eglinton Station is designed to be fit for purpose, and will be the catalyst for further supporting high quality development within Eglinton.

DISCLAIMER

This report is dated 5 May 2020 and incorporates information and events up to that date only and excludes any information arising, or event occurring, after that date which may affect the validity of Urbis Pty Ltd (**Urbis**) opinion in this report. Urbis prepared this report on the instructions, and for the benefit only, of Newest Alliance (**Instructing Party**) for the purpose of Development Application (**Purpose**) and not for any other purpose or use. To the extent permitted by applicable law, Urbis expressly disclaims all liability, whether direct or indirect, to the Instructing Party which relies or purports to rely on this report for any purpose other than the Purpose, and to any other person which relies or purports to rely on this report for any purpose whatsoever (including the Purpose).

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All surveys, forecasts, projections and recommendations contained in or associated with this report are made in good faith and on the basis of information supplied to Urbis at the date of this report, and upon which Urbis relied. Achievement of the projections and budgets set out in this report will depend, among other things, on the actions of others over which Urbis has no control.

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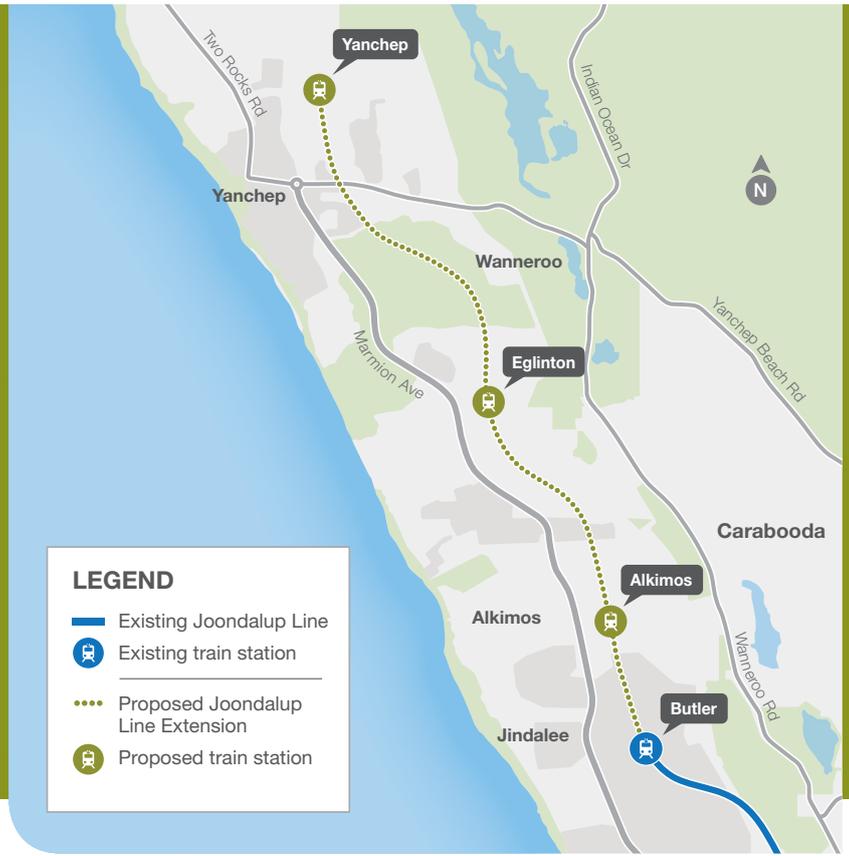
This report has been prepared with due care and diligence by Urbis and the statements and opinions given by Urbis in this report are given in good faith and in the reasonable belief that they are correct and not misleading, subject to the limitations above.

APPENDIX A

**SUMMARY OF METRONET YRE
PROJECTS AND EGLINTON STATION**

Yanchep Rail Extension

The 14.5 kilometre Joondalup Line extension is essential in managing the planned growth of Perth's northern suburbs, addressing road congestion and creating the focus for progressive mixed use development that will provide local amenity, services and employment.



LEGEND

- Existing Joondalup Line
- Existing train station
- Proposed Joondalup Line Extension
- Proposed train station

The project addresses three key local issues:

Worsening urban congestion due to a lack of efficient transport alternatives.

Continued land development that promotes private vehicle use and limits opportunities to create higher density residential areas.

Social inequality and lower levels of opportunity for people who do not own or are unable to use a private vehicle.

Project snapshot*

19,440 Total daily boardings (2031)

2,000 Total parking bays

49 min Train journey from Perth to Yanchep

30 Total u-rails and
6 Total bike shelters

30 Total bus stands

14.5 km Joondalup Line extension

5 Fauna underpasses

13.8 km Principal-shared path

9 Road-over-rail bridges

3 New stations at Alkimos, Eglinton and Yanchep

Bus stowage depot at Alkimos

Modifying Butler Station into a through station

*Final details are subject to detailed design and may change.

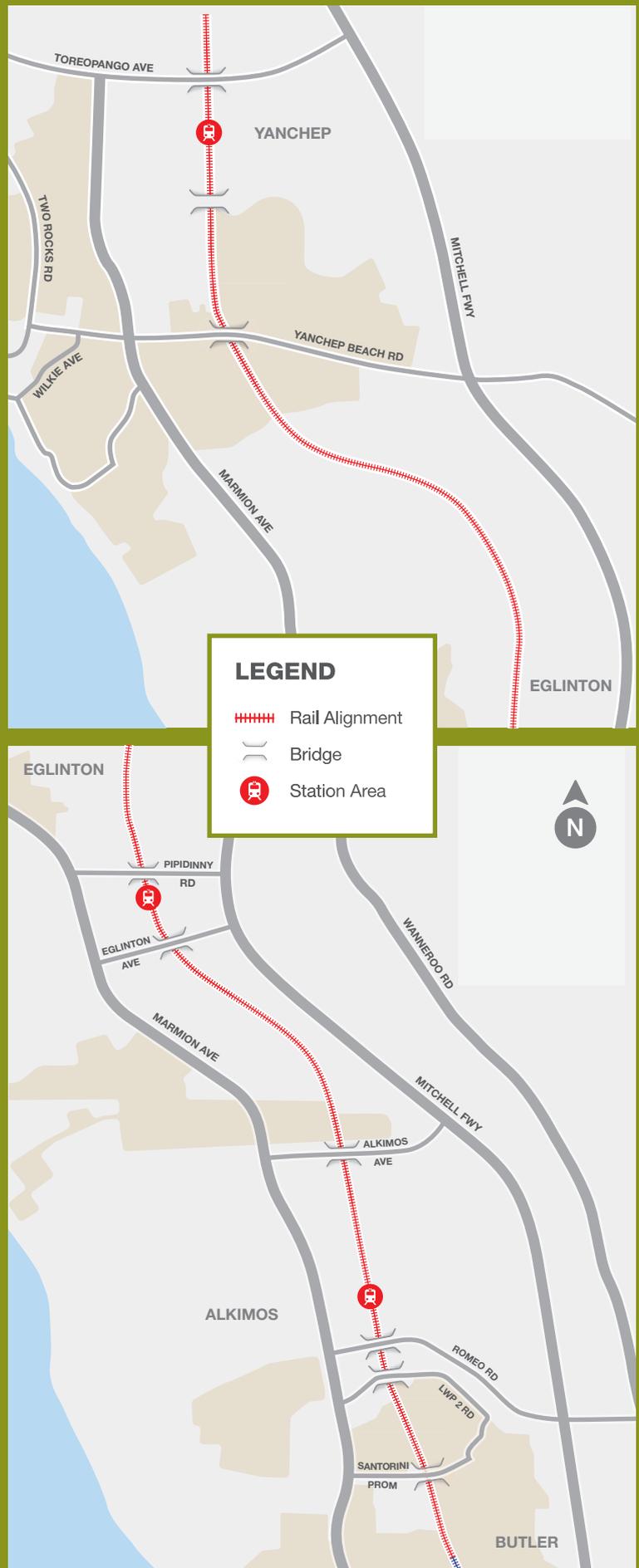
Rail alignment

The majority of the 14.5 kilometre rail extension will be in a cutting to support community connections and integration, reduce noise and improve overall amenity.

The Yanchep Rail Extension will deliver nine road-over-rail bridges, which will also support access and early staging of development around the stations. Eleven potential crossings are identified along the route as part of longer term development intentions. These have been future proofed in the design, but are subject to further planning and delivery by third parties.

The rail alignment will travel through some Parks and Recreation sites and a Bush Forever area. While every effort was made to avoid these areas, including careful consideration of alternative alignments, the undulating landscape, tight rail curve (not conforming to strict railway design standards) and impact on existing and future residents meant this was not viable.

One Parks and Recreation site will have a fauna underpass and four fauna underpasses will be built through the Bush Forever area. In these areas every effort will be made to minimise impacts.



The Project

The Yanchep Rail Extension's transport infrastructure will be delivered by the Public Transport Authority and includes:



14.5 kms of new dual-track to extend the Joondalup Line.



Alkimos Station with a cut-and-cover tunnel construction, including parking, bus interchanges, passenger amenities and cycling facilities to cater for approximately 3,616 daily boardings (2031) and offering an approximate 41-minute journey to Perth.



Eglinton Station including parking, bus interchanges, passenger amenities and cycling facilities to cater for an estimated 4,792 daily boardings (2031) and offering an approximate 46-minute journey to Perth.



Yanchep Station with a cut-and-cover tunnel construction, including parking, bus interchanges, passenger amenities and cycling facilities to cater for an estimated 11,032 daily boardings (2031) and offering an approximate 49-minute journey to Perth.



Two stow roads north of Yanchep Station for four six-car trains.



Nine road-over-rail bridges.



New bus stowage depot at Alkimos.



Noise and vibration mitigations measures.



Modifying Butler Station into a 'through' station.



13.8 kms of new shared path for cyclists and pedestrians adjacent to the rail line.

As a result of the integrated METRONET approach the Yanchep Rail Extension will also promote and encourage higher-density development surrounding the stations.

The METRONET Office will continue to work closely with stakeholders and landowners to ensure planning for these new urban centres makes the most of the public transport infrastructure.

Walk, cycle, bus and share

While ample parking will be provided, the Yanchep Rail Extension will look to encourage passengers to access the stations by walking, cycling, bus and drop-off.

The METRONET Office is working with stakeholders to plan the area around the station with a diverse mix of uses and density that support walkable communities that are safe and accessible.

Along the western side of the rail extension will be a 13.8 kilometre principal shared path (PSP) that will follow the natural ground levels, except where it passes under road bridges, to ensure a continuous and safe option for pedestrians and cyclists. This path will be connected to existing local pathways and to the future stations.

Each station will have dedicated passenger drop-off areas, secure bicycle parking shelters, bike u-rails and the ability to add additional secure bicycle parking shelters in the future.

The area's existing bus services will be reviewed to create a comprehensive feeder bus network that will see routes 'loop' between train stations. Final service details will be determined closer to when rail operations begin following detailed planning and community consultation.

Minimising noise and vibration

To minimise noise and vibration impacts on the surrounding proposed residential developments, the majority of the Yanchep Rail Extension will be in a cutting. Other measures to be investigated when the contractor is appointed include:

- noise walls;
- ballast matting;
- encouraging developers neighbouring the railway to have appropriate setbacks from the rail reserve via road reserves or public open space; and
- encouraging homes yet to be built in the 'first row' facing the route to implement 'quiet house design'.

TIMELINE Transport infrastructure delivery



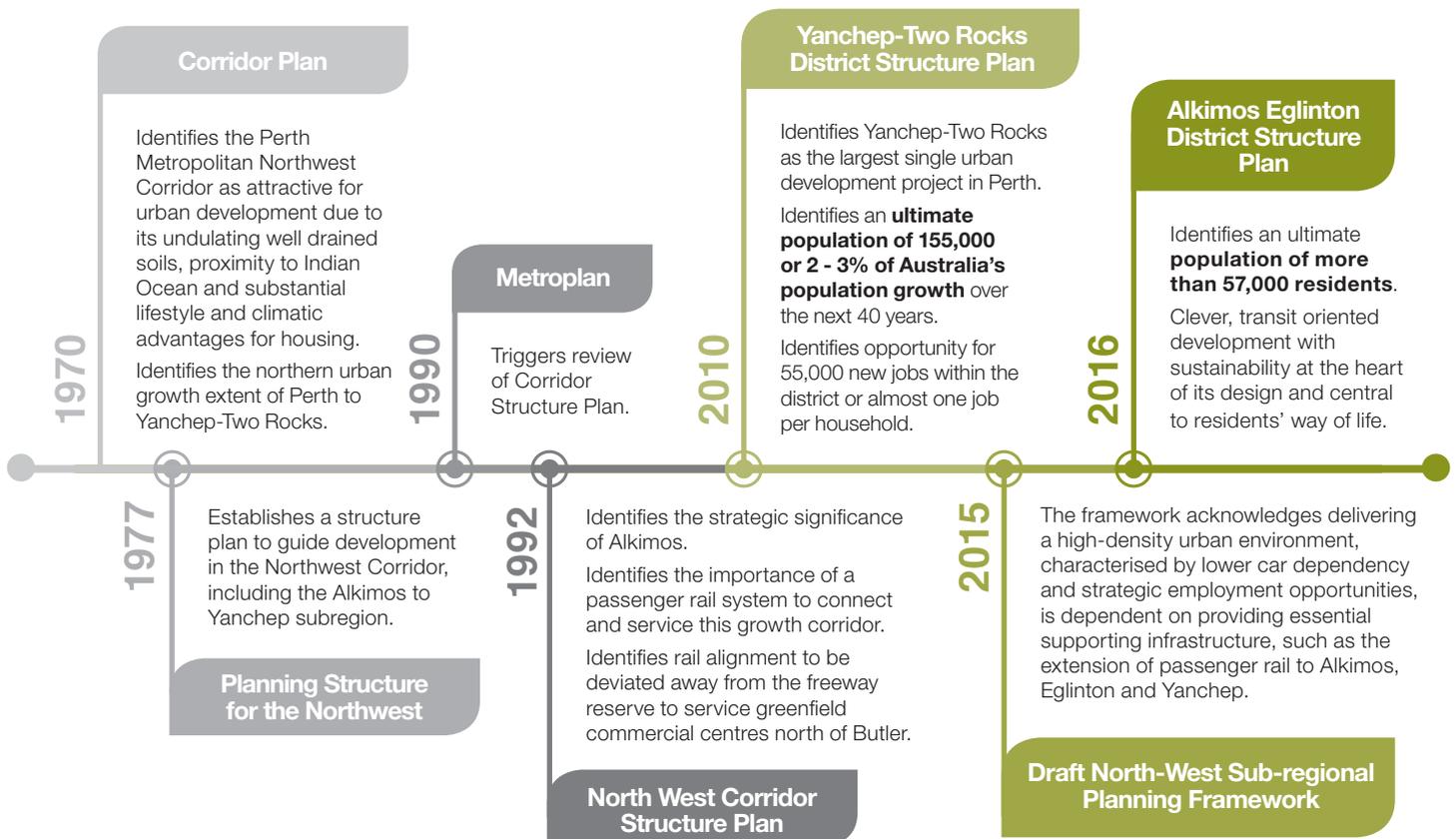
Land development delivery

Transport projects can be planned and delivered in a relatively defined timeframe.

However, the associated development around a station can take 30 to 40 years (or longer) to reach target densities and is often not within the State Government's control. In addition, land uses are impacted by planning, investment and policy factors beyond the investment in transport infrastructure alone.

For the Yanchep Rail Extension, the METRONET Office will continue to work with state agencies, local governments and the private sector to help transition the areas around Alkimos, Eglinton and Yanchep stations into mixed-use centres over time.

Planning history in Perth North-West sub-region



MORE INFORMATION

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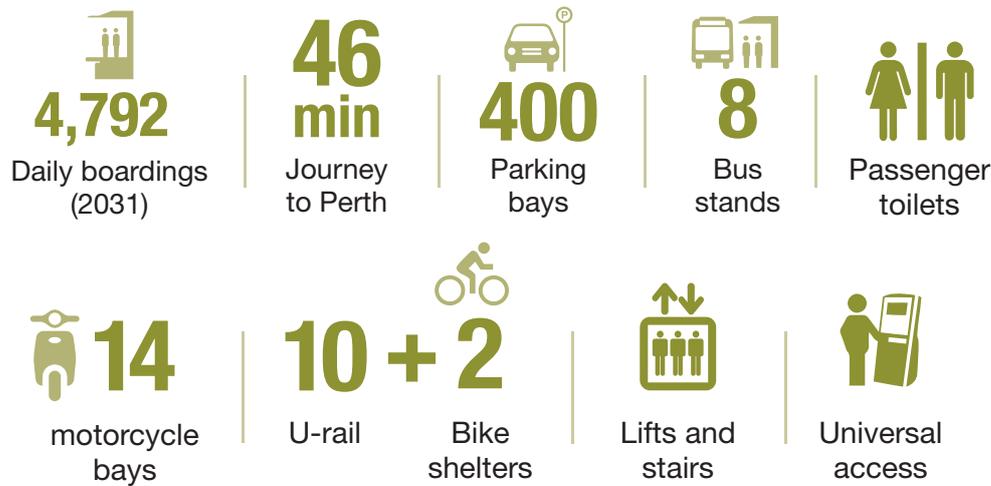


Eglinton Station

Approximately 46 minutes from Perth by train, Eglinton Station will be built in a cutting at the edge of the future Eglinton District Centre.



Station snapshot*



*Final details are subject to detailed design and may change.



Location

Eglinton Station will be built south of Pipidinny Road, east of Marmion Avenue and west of Wanneroo Road, and is designed to support a localised community.

Station design

The early station design work looked into the location, scale and general features of the future station. This work detailed how the station fits within the planned 'neighbourhood' precinct type and caters for passengers on day one of operations.

Accessed via a station building at ground level, the two platforms will be located in a cutting with at least 50 per cent coverage.



Features of the universally accessible station:



Passenger amenity

Public services (such as vending machines), passenger ticketing/information, storage/cleaning and operational facilities.



Pedestrian/cycle access

Well connected to a principal-shared path west of the station, with two secure bicycle parking shelters, bike u-rails and ability to add two additional secure bicycle parking shelters in the future.



Bus interchange

Eight stands with weather protection, seating and information facilities. The interchange includes four layover bays.



Vehicle access

Dedicated passenger drop-off area and approximately 400 parking bays. As future demand increases, the parking can expand up to approximately 1,000 bays.

The station architecture and final design will be developed when a contractor is appointed.



Precinct development

The Eglinton District Centre, planned to support a predominately residential community with services, facilities and jobs that reflect the immediate needs of the local area, is on land privately owned by Eglinton Estates.

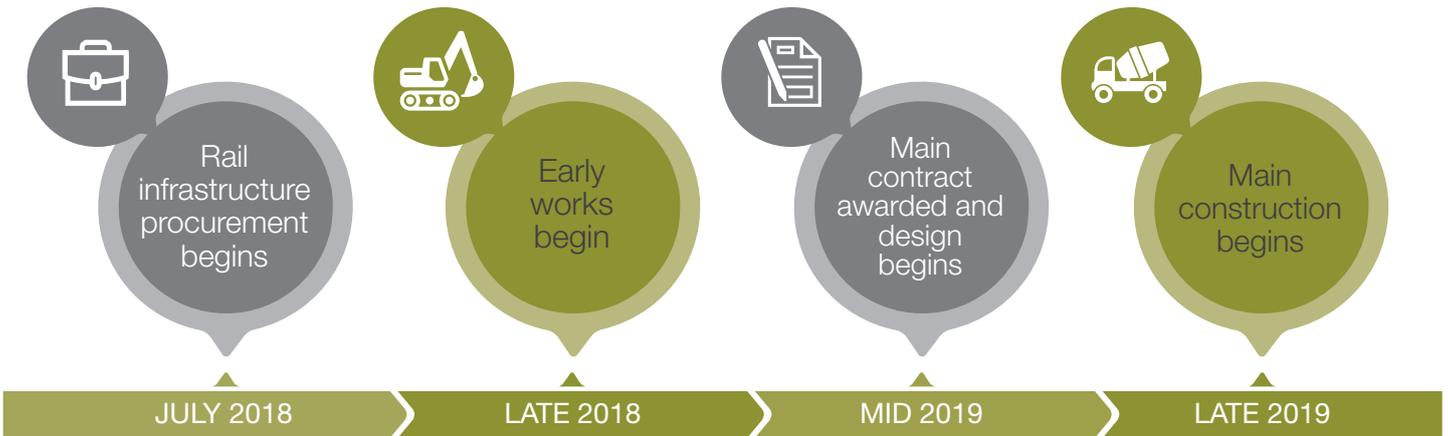
A structure plan is in its preliminary stages and proposes between 25,000 square metres and 35,000 square metres of commercial floor space, with approximately half used for retail purposes including street-based retail.

To create a comfortable, safe and active pedestrian environment in and around Eglinton Station, 'main street' principles will be applied.

Landowner consultation will continue to ensure the plan and proposed station design supports and responds to the State Government and landowner's vision for the area.



TIMELINE Transport infrastructure delivery



Eglinton Station Precinct Planning Phase

| Structure Plan | In development | Lodged | Advertised | Modified | Approved |
|---|-------------------------|--------------------|------------------------|----------------------|---------------------------|
| Subdivision (Stage 1 Station Precinct) | Further Information | Lodged | Conditionally Approved | Conditions Satisfied | Titles Issued |
| Land Sales | Lots released to market | Offer & Acceptance | Settlement | | Lots sold |
| Development | Conceptual Design | DA Lodged | DA Assessment (WAPC) | DA Approved | Construction & Occupation |

About the project

METRONET's Yanchep Rail Extension, extends the Joondalup Line 14.5 kilometres north with new stations at Alkimos, Eglinton and Yanchep. Connected by a 13.8 kilometre principal shared path, nine road-over-rail bridges and a comprehensive bus feeder network, the project is the catalyst for progressive mixed use development around each station that will provide local amenity, services and employment.

MORE INFORMATION

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APPENDIX B

EGLINTON STATION SWTC EXTRACT

19.1.3 Eglinton Station – Description

- 19.1.3.1 Eglinton Station – Description is to be read in conjunction with 19.1.6 Eglinton Station – Schedule of Accommodation & Specific Requirements – Unstaffed Option (below) in determining scoped items.
- 19.1.3.2 Eglinton Station is to be located approximately 45km north of Perth on the new YRE line. Being the second station on the new line, after Butler Station it will

- allow for public transport access from surrounding areas to the emerging strategic metropolitan centre of Yanchep. The station must be a multi-modal interchange station ie: bus interchange and rail station located south of Pippidiny Road, east of Marmion Avenue and west of Wanneroo Road within the future Eglinton district centre.
- 19.1.3.3 The station is to be located centrally to the main retail, commercial and residential areas of the future Eglinton district centre and will be easily accessible to those users who rely most heavily on public transport.
- 19.1.3.4 The station must provide passenger parking, bus transfer, passenger drop-off by bus and car, and pedestrian/cycle access with the station building at concourse level forming a connection over the new rail line. The station incorporates two (2) marginal platforms at rail level with a concourse over providing access to the bus interchange to the west of the station and to the city centre east and west of the station.
- 19.1.3.5 Station car parking must include two long-term car parks, both west of the rail line, with one south of the station and one north of the station. Short Term Parking including a dedicated drop-off area is located north-west of the station.
- 19.1.3.6 Pedestrian and cyclist access will be from future shared street/road footpaths east and west of the station and the PShP west of the station with bicycle parking facilities located immediately adjacent to the station entry points.
- 19.1.3.7 The station must incorporate 426 car bays including long-term car parking bays, long-term accessible car parking bays, long-term motorcycle/scooter parking bays, Short Term Parking, accessible Short Term Parking, drop-off bays and accessible drop-off bays.
- 19.1.3.8 Car park facilities must include parking ticketing/information facilities (Smart Parker Machines & PVMs).
- 19.1.3.9 A bus interchange must be provided with eight active bus stops and four bus layover bays to both sides of a dedicated two lane busway with continuous canopy shelters to each line of bus stop stands and crossing the busway provides weather protection to patrons boarding/alighting bus services and transferring to rail services. Bus interchange facilities must include seating with weather protection screening at each dedicated bus stand and passenger information facilities (BIDs and information modules).
- 19.1.3.10 Bicycle parking facilities must include two secure bicycle parking shelters (shelters with door access control and CCTV coverage) and bike u-rails are located immediately adjacent to the station entry points with the provision for two additional secure bicycle parking shelters to be added in the future.
- 19.1.3.11 The station building with access from both the east and west sides of the rail line forms the un-paid concourse area of the station. The un-paid concourse area must include public toilet facilities (male toilet, female toilet & unisex accessible toilet), public service facilities (automatic teller machine, vending machines & pay phones), passenger ticketing/information facilities (CIDs, PSP with TVMs, information modules & help phones), staff amenity facilities (crib room, male toilet, female toilet, unisex accessible toilet & staff changing areas), station operational facilities (transformer room, Communications room, electrical room & mechanical plant room), station storage/cleaning facilities (cleaners room & store room).
- 19.1.3.12 The vertical transport elements of the station include four lifts and four sets of stairs providing access to the platforms below.

- 19.1.3.13 The 150m long platforms must cater for six car trains below the station concourse will provide access to train services to and from Perth with both platforms having approximately 50% of platform length in cover providing weather protection to patrons. Both platforms include passenger safe zones (dedicated seating central to platform), passenger information facilities (PIDs & PSMs), staff amenity facilities (driver's toilets), station storage/cleaning facilities (cleaner's rooms & store rooms) and station operational facilities (Communications rooms, electrical rooms & mechanical plant rooms).

19.1.6 Eglinton Station

Table 5: Schedule of Accommodation & Specific Requirements – Unstaffed Option

| No. | Element | Applicable (Yes / No) | Minimum Requirements | Notes |
|------------|--------------------|-----------------------|--|-------|
| 1.0 | PATRONAGE | | | |
| 1.1 | Patronage Forecast | Yes | Forecast Year 2021 - 1799 daily boardings. Forecast year 2031 - 2204 daily boardings | |
| 2.0 | ACCESS | | | |
| 2.1 | Pedestrian Access | Yes. | <p>Provide sufficient pathways:</p> <p>a) from all passenger transport infrastructure delivered as part of the Works to the station entry</p> <p>b) from all existing, created and anticipated/known future pedestrian and cycle pathways in the local area to the station entry building</p> <p>c) make all connections to and through the Station Precinct to the station entry.</p> <p>d) make all connections to and through the Station Precinct</p> <p>e) accessible pathways as required to link the station with the surrounding community.</p> <p>f) access for the disabled to be in accordance with DSAPT, AS 1428 (all parts) & BCA.(NCC</p> | |
| 2.2 | Bicycle Access | Yes. | <p>Provide sufficient pathways:</p> <p>a) to the station - from all existing, created and anticipated/known future pedestrian and cycle pathways in the local area to the bicycle shelters and U-rails.</p> <p>b) through the station - from all existing, created and anticipated/known future pedestrian and cycle pathways in the local area to connect with the same through the Station Precinct along desired travel pathways.</p> <p>c) make all connections to and through the Station Precinct to the station bicycle facilities.</p> <p>d) do not create cross flows with pedestrian traffic.</p> | |
| 2.3 | Shared Paths | Yes. | As required to link the station to all existing / future Principal Shared Path(s). | |
| 2.4 | Vehicle Access | Yes. | Vehicle access to all parking facilities and drop off areas directly from future main roads. | |
| 2.5 | Bus Access | Yes. | Bus access to busway directly from future main roads. | |

| No. | Element | Applicable (Yes / No) | Minimum Requirements | Notes |
|-------|---------------------------------|-----------------------|--|---|
| 2.6 | Taxi Access / Drop-off | Yes. | Within drop-off area with immediate access to the station entry. | |
| 2.7 | Universal Access / Drop-off | Yes. | Within drop-off area with immediate access to the station entry. | |
| 2.8 | Rubbish Removal Access / Pickup | Yes. | Provide direct access with minimum disruption to bus services. Must be fully enclosed, with drainage and wash-down hosecock. | |
| 2.9 | Emergency and Service Access | Yes. | Access from future public road network for emergency and operational vehicles. Note DFES requires access to booster pumps from left hand side of DFES vehicle. | Close proximity to station entry / forecourt is required. |
| 3.0 | STATION FACILITIES | | | |
| 3.1 | Bus Interchange | | | |
| 3.1.1 | Bus Bays (Active) | Yes. | 8 No. active bays including: – 7 No. rigid bus bays – 1 No. articulated bus bays. Prioritise location of active bays as close as possible to station entry Minimise land take wherever possible. | |
| 3.1.2 | Bus Bays (Layover) | Yes. | 4 No. layover bays including: – 3 No. rigid bus bays. – 1 No. articulated bus bays. Travel between bus layover areas and bus stands must be prioritised. Minimise land take where possible. | |
| 3.1.3 | Busway and Recirculating Route | Yes. | Buses to re-circulate within station busway. Enable buses to circulate from set down to layover to pick up bays with minimum circulation movement. | |
| 3.1.4 | Bus Stands | Yes | Number to suit active bus bays. PTA bus stands in accordance with PTA standard requirements. Ensure that bus stands have sufficient shelter from rain and sun and that the shelters can be maintained without the need for traffic management. | |

| No. | Element | Applicable (Yes / No) | Minimum Requirements | Notes |
|-------|------------------------------------|-----------------------|---|---|
| 3.1.5 | Busway Clearances | - | 1.0m min horizontal clearance of structures from busway kerb | Except for bus stand module / sign. |
| | | | 3.7m min vertical clearance of structures from busway pavement. | |
| 3.1.6 | Secondary Transit Service | Yes | System by land developer but to be integrated into bus interchange. | |
| 3.2 | Vehicle Parking | | | |
| 3.2.1 | Car Parking | Yes. | 426 car bays in total minimum. | |
| 3.2.2 | Long-term parking | Yes | Long-term Parking including: – 20 No. 'Accessible' parking bays. – 10 No. 'Motorcycle' parking bays. (over and above 426 bays) – 2 No. 'Taxi' parking bays. – No. 'Electric Car' charging bays. | Close proximity to station entry / forecourt. |
| 3.2.3 | Drop-off parking | Yes. | Drop-off Parking including: – 20 No. 'Drop-off' bays. – 2 No. 'Accessible' drop-off bays. – 1 No. 'Accessible Taxi' drop-off bay. | Immediately adjacent to station entry, in accordance with the PTA modal hierarchy. Drop off parking must not be at 45 degrees. Drop-off bays must be placed on the left of the path of travel to ensure safety of alighting passengers. |
| | | | Universal/taxi set down bay is not required to be covered. | |
| | | | Co-locate service bays and emergency bays. | |
| 3.3 | Service & Staff Parking | | | |
| 3.3.1 | Emergency Vehicles | | 2 No. bays (Ambulance & State Transit Police). | Close proximity to station entry / forecourt. |
| 3.3.2 | Fire Brigade | | 1 No. bay to DFES requirements. Location to suit fire services infrastructure ie: Booster Cabinet. | Close proximity to station entry / forecourt. |

| No. | Element | Applicable (Yes / No) | Minimum Requirements | Notes |
|-------|------------------------|-----------------------|---|---|
| 3.3.3 | PTA Staff | | 4 No. bays (including car park attendant). | Close proximity to station entry / forecourt. |
| 3.3.4 | PTA Services | | 2 No. bays | Close proximity to station entry / forecourt. |
| 3.3.5 | Kiosk Tenant | No. | | |
| 3.4 | Bicycle Parking | | | |
| 3.4.1 | Bike Lockers | No. | | |
| 3.4.2 | Bike U-rails | Yes. | 10 No. U-Rails. Equally located to both sides of rail reserve. Refer PTA standard detail. | Close proximity to station entry / forecourt. |

| No. | Element | Applicable (Yes / No) | Minimum Requirements | Notes |
|-------|------------------------------|-----------------------|---|--|
| 3.4.3 | Secure Bike Parking Shelters | Yes. | 2 no. x 96 capacity shelter, with space identified and allocated for at least 1 no. 96 capacity future shelter. Refer PTA standard 00-A-09-0159-TYPE B Module Arrangement. | Provide shelters as separate structures to station entry building. Located adjacent to station building. Located to enhance the public domain space planning and minimise conflict of cycle and pedestrian traffic. Located on natural pathways to the station entry. Potentially 2 locations with future expansion capabilities. Installed and future shelters are to be within 100m of the station entry. Minimum two PTZ CCTV cameras within each shelter. Provide gates at either end of shelters. Provide a PSM-style unit with full two way emergency telephone for communications with the CMR. |
| | | | Bicycle storage to accommodate 2.6% of expected patronage (calculated up to 4 years in advance). | |
| | | | Install Velopa easy lift bike racks within each secure bicycle parking shelter (refer https://www.youtube.com/watch?v=6qrBR9341bw). Provision for expansion of each Bike Shelter. | |
| 3.4.4 | Bike Showers / Change | No. | | |
| 3.5 | Public Amenities | | | |

| No. | Element | Applicable (Yes / No) | Minimum Requirements | Notes |
|-------|--------------------------|-----------------------|---|--|
| 3.5.1 | Public Toilets | Yes | Male Toilet (22.5m ² enclosed floor area) including: <ul style="list-style-type: none"> - 2 No. Urinal. - 2 No. WC pans and cubicles including 1 No. pan / cubicle for ambulatory patrons compliant with AS 1428 (all parts). - No. hand basins. - With airlock. | To be located at station entry building, within after-hours secure area. |
| | | | Female Toilet (22.5m ² enclosed floor area) including: <ul style="list-style-type: none"> - 4 No. WC pans and cubicles including 1 No. pan / cubicle for ambulatory patrons compliant with AS 1428 (all parts). - No. hand basins. - With airlock. | |
| 3.5.2 | Accessible Public Toilet | Yes | Unisex accessible public toilet (9.0m ² enclosed floor area) including: – 1 No. WC pan. <ul style="list-style-type: none"> - 1 No. hand basin. - 1 No. baby change facility. - To comply with AS 1428 (all parts) - No airlock. | To be located at station entry building, within after-hours secure area. |
| 3.5.3 | Water Drinking Fountain | Yes | – 1 No. water drinking fountain (recessed, plumbed alcove, tiled) | Locate along wall of station entry building |
| 3.6 | Staff Amenities | | | |
| 3.6.1 | Staff Crib Room | Yes | 1 No. shared bus & train staff crib room to station entry building (minimum 20.0m ² enclosed floor area not including adjacent staff WC). Room to include: <ol style="list-style-type: none"> 4 seated at dining table, kitchenette which includes hot/cold filtered and boiling water, sink, 1 PC, power and data provisions, TV, vending machines, pie warmer, microwave, 1 x 450l upright fridge, under bench and over bench storage cupboards. 6 No. double lockers | Located at concourse level, close to the station entry for use by bus drivers. |
| 3.6.2 | Staff Toilet | Yes | Unisex Ambulant Toilet (3.5m ² enclosed floor area) accessed directly from within staff crib room including: <ul style="list-style-type: none"> – 1 No. WC pan. – 1 No. hand basin. | |

| No. | Element | Applicable (Yes / No) | Minimum Requirements | Notes |
|------------|---|-----------------------|--|---|
| 3.6.3 | Staff Platform Toilet | Yes. | 1 No. toilet required to platform 1 No. unisex cubicle and WC pan, 1 hand basin Minimum area of 3.0m x 1.5m (with airlock) | Located at platform level on each platform. |
| 3.6.3 | Staff Change Areas | No. | | |
| 3.6.4 | Drivers Sign-on Facilities. | No | | |
| 3.6.5 | Transit Guard Sign-on Facilities. | No. | | |
| 3.7 | Administration / Office Facilities | | | |
| 3.7.1 | Station Booth | No. | | |
| 3.7.2 | Customer Services Office | No. | | |
| 3.7.3 | Staff Office(s) | No. | | |
| 3.7.4 | CAB | No | | |
| 3.7.5 | Drivers Sign-on Facilities. | No. | | |
| 3.7.6 | Transit Guard Sign-on Facilities. | No. | | |
| 3.8 | Operational Facilities | | | |
| 3.8.1 | Electrical Sub Station. | Yes. | 1 No. at Carpark Ground Level (minimum of 25m ² ground area). | Electrical accommodation to comply with Western Power requirements. |
| 3.8.2 | Transformer Room | Yes. | 1 No. at Station Entrance Level (In accordance with Section 17.6.2.3). | Electrical accommodation to comply with Section 17.6.2 of Book 4A. |

| No. | Element | Applicable (Yes / No) | Minimum Requirements | Notes |
|------------|--|-----------------------|---|--|
| 3.8.3 | Main Electrical Room | Yes. | 1 No. at Station Entrance Level (minimum of 50m ² enclosed floor area). | Electrical accommodation to comply with Section 17.6.2 of Book 4AProvide sufficient space for future Solar PV Equipment. |
| 3.8.4 | Signalling Equipment Room | No. | | |
| 3.8.5 | Fire Control Room | No. | | |
| 3.8.6 | Communications Rooms | Yes. | 2 No. at Platform Level (Room 1 – minimum of 40m ² enclosed floor area, including a minimum of 5m ² allowance for an Electrical Distribution Board, Room 2 – minimum of 20m ² enclosed floor area, including a minimum of 5m ² allowance for an Electrical UPS Distribution Board). | Electrical accommodation to comply with Western Power requirements. |
| 3.8.7 | LCR | Yes | 1 No. at Concourse Level (minimum of 21m ² enclosed floor area, including a minimum of 3m ² allowance for an Electrical UPS Distribution Board,). | Electrical accommodation to comply with Western Power requirements. |
| 3.8.8 | Electrical Rooms | Yes | 2 No. at Platform Level (minimum of 6m ² enclosed floor area on each platform). | Electrical accommodation to comply with Western Power requirements. |
| 3.8.9 | Mechanical Room | No. | | |
| 3.8.10 | Third Party Cupboard | No. | | |
| 3.8.11 | GSS Cupboard(s) | Yes. | 1 No. at Platform Level (1.0m ² enclosed floor area) as required for Gas Suppression System. | |
| 3.8.12 | Sewer Pump | Yes. | 1 No. below Platform Level. | |
| 3.8.13 | Vending Machine Recess | No. | | |
| 3.9 | Storage & Cleaning Facilities | | | |
| 3.9.1 | Bulk Bin Store | No. | | |
| 3.9.2 | Internal Bin Store | No. | | |
| 3.9.3 | Kiosk Store Room | No. | | |

| No. | Element | Applicable (Yes / No) | Minimum Requirements | Notes |
|--------|--------------------------------|-----------------------|---|--|
| 3.9.4 | Cleaners Store Room | Yes | <ul style="list-style-type: none"> – 1 No. cleaners room at concourse level within station entry building (5.0m² minimum enclosed floor area) including: <ul style="list-style-type: none"> – stainless steel cleaner's sink with sand filter – room to be mechanically ventilated – accommodate scrubber filling and discharge – store 1 scrubber cleaners and all cleaning equipment – note: scrubbers not required if floor tiles are not used – provide storage for all consumables – provide power for recharging scrubber batteries | |
| 3.9.5 | Store Room(s) | Yes. | 1 No. per platform (20.5m ² enclosed floor area). | |
| 3.10 | Other Facilities | | | |
| 3.10.1 | Shopping Trolley Rack | No. | | |
| 4.0 | STATION EQUIPMENT | | | |
| 4.1 | Smart Parker Machines | Yes. | 2 No. | Close proximity to station entry / forecourt. |
| 4.2 | Parking Vending Machine | Yes. | 1 No. | Close proximity to station entry / forecourt. |
| 4.3 | SmartRider Card Pole | Yes. | 2 No. | |
| 4.4 | Passenger Service Module | Yes. | 2 No. modules (1 No. per platform within a designated safe zone area). Modules to include: <ul style="list-style-type: none"> –ET facility. –PSM. – audio loops. - Customer Information Voice Annunciator. | |
| 4.5 | Passenger Services Panel Suite | Yes. | 1 No. Panel Suite | Located at concourse level close to the CSO booth in the un-paid zone. |

| No. | Element | Applicable (Yes / No) | Minimum Requirements | Notes |
|-----------------------------|-----------------------------|-----------------------|---|--|
| | | | To be part of CCR and include audio loops. Suite to include: – 2 No. TVMs. – ET Facility. –PSM – Communications equipment. | |
| 4.6 | Automatic Fare Gates | No. | | |
| 4.7 | Manual Fare Gate | No. | | |
| 4.8 | Public Telephone(s) | Yes. | 1 No. Public Telephone. Telephone must be accessible to people with disabilities and allow access as per AS 1428.2. | Located at concourse level in un-paid zone. |
| 4.9 | Emergency Telephones | Yes. | 4 No. ETs contained within PSP & PSMs. | |
| 4.10 | Staff Telephones | No. | | |
| 4.11 | Station System Master Clock | Yes. | To be integrated with PIDs, CIDs and BIDs | |
| 4.12 | DAVS | Yes. | | Design of DAVS locations to avoid shadows, low light etc., and position should be split screen or best sighting distance along platform. |
| 4.13 | AV System | Yes. | - Local PA announcements - Remote PA announcements - Audio loops | |
| 5.0 STATION SERVICES | | | | |
| 5.1 | Water, Fire and Sewerage | Yes. | | |
| 5.2 | Stormwater Drainage | Yes. | Stormwater drainage to station building, bus interchange, accessways and car parks. | |

| No. | Element | Applicable (Yes / No) | Minimum Requirements | Notes |
|-----|---------------------------------|-----------------------|---|-------|
| | | | Designed in accordance with the Annual Exceedence Probability requirements outlined in Specification 8803-000-005 Rev 1.00 – Stations and Buildings Civil Works. Service inlets designed to prevent ponding and silt removal 'in-ground' service pits. | |
| 5.3 | Lighting & Power Systems | Yes. | To all buildings, functional areas, pedestrian access ways & pathways, illuminated signage. In accordance with PTA electrical standards. Lighting levels to comply with PTA standards. Luminaire selection to be in accordance with PTA Lighting Standards. Platform lighting will include 5.0m to 6.5m 'Break' type lighting columns. Conduits & cabling in accordance with PTA Standards. Ducting and pits within platforms to ACA Standards. Cable pits on platforms to remain accessible. | |
| 5.4 | Fire Detection & Alarm Systems | Yes. | FIP located at station entry / foyer. | |
| 5.5 | Gaseous Fire Suppression System | Yes. | Gaseous fire suppression system to all electrical & Communications rooms. | |
| 5.6 | Communications Systems | Yes. | Systems include DAVS, passenger information, ticketing systems / modules and bike parking shelters. Conduits & cabling to be provided / included in accordance with PTA Standards. Ducting and pits within platforms to ACA Standards. Cable pits on platforms to remain accessible. | |
| 5.7 | CCTV System | Yes. | Full CCTV coverage of station is required. Remote monitoring of CCTV is required. | |

| No. | Element | Applicable (Yes / No) | Minimum Requirements | Notes |
|------|---------------------|-----------------------|--|---|
| | | | <p>CCTV coverage of the following locations is required:</p> <ul style="list-style-type: none"> – platform(s). – concourse. – lifts / escalators. – entry foyers & ticketing areas. – bus transfer areas. – bus stands (1 camera per stand capable of facial recognition). – drop-off areas. – all parking areas (including access / paths to parking areas). – bike parking shelters and bike U-rails with "Home View" | |
| 5.8 | Audio System | Yes. | <p>System to allow / include:</p> <ul style="list-style-type: none"> – local PA system announcements. – remote PA zoned announcements for all passengers. – audio loops to be provided when there is a PA. – bike parking shelters. | |
| 5.9 | BAS | Yes. | Required to all doors. | |
| 5.10 | Duress Alarm System | Yes. | <p>Alarm alerts to go back to CMR</p> <p>Visual display light outside universal access toilet</p> | <p>Locations where applicable to this SoA: Universal Access toilet;</p> |

| No. | Element | Applicable (Yes / No) | Minimum Requirements | Notes |
|------|--------------------------------|--------------------------|--|---|
| | | | Duress alarm buttons must be accessible to people with disabilities and allow access as per AS 1428.2. | <p>Passenger Service Modules; Passenger Service Panels; Passenger Lifts; Station Booths Staff Office Cubicle (on platform); and Secure Bike Parking Shelters. Car Parks at safe locations – when car bays are at 150m distance or more from the station entry. Note: safe locations in the car park means a location with good lighting and CCTV coverage, for example, generally where the car park ticket machines are, where there is already a congregation point. Provide a PSM-style unit with full two way emergency telephone for communications with the CMR for car park duress alarm purposes. Provide two way emergency telephone for communications with the CMR for PSMs, PSPs, Passenger Lifts and Secure Bike Parking Shelters.</p> |
| 5.11 | Building Intruder Alarm System | No. | | |
| 5.12 | Mechanical Systems | Yes. | Air-Conditioning to: – CCR. – Communications Room(s) & Electrical Room(s). | |

| No. | Element | Applicable (Yes / No) | Minimum Requirements | Notes |
|------|---------------------------|-----------------------|--|--|
| | | | Natural / Mechanical Ventilation to: – Cleaner’s Store Room(s). – Store Room(s). | |
| 5.13 | Diversion of Ex. Services | Yes. | As required. | Review with existing Third Party Utility Providers. |
| 6.0 | STATION SITE | | | |
| 6.1 | Forecourt(s) | Yes. | To be located immediately adjacent to station entry. Forecourts to include: – public activation / interaction to integrate into surrounding urban precinct. – hard & soft landscaping feature (raised planter boxes / seats, shade structures etc...). | |
| 6.2 | Pathways | Yes. | From all existing, created & anticipated / known future pedestrian & cycle paths in the local area to the station entry. Slip resistant concrete or brick paving. Tree root guards. Wheel stops to be provided where car bays are adjacent to pathways | Make all connections to and through the Station Precinct |
| 6.3 | Shared Paths | Yes. | Minimum 3.0m wide and red asphalt surface. From all existing, created and anticipated/known future pedestrian and cycle pathways in the local area to the station entry building. PSP must not route through station entry areas. | Make all connections to and through the Station Precinct |
| 6.4 | Landscaping (Soft) | Yes. | Low maintenance native landscaping. Area specific and attractive landscape treatment. Low and open to maintain sight lines and not obscure lighting or CCTV. Create safe environment for passengers. Enhance the approach to the Station Precinct and the station building from the surrounding area. Landscaping to be reticulated with reticulation controllers housed in lockable cabinets. Integrate station planting with surrounding development planting. | |

| No. | Element | Applicable (Yes / No) | Minimum Requirements | Notes |
|------------|--------------------------------|-----------------------|--|---|
| 6.5 | Rail Reserve Landscaping | Yes. | To irrigated plant stock, minimise as much as possible. Source from a bore and/or suitable recycled water sources if able | |
| 6.6 | Rail Reserve Fencing | Yes. | 1.8m high black PVC coated Linkmesh to Station Precinct only. | Accommodate isolation panels as necessary to provide for EEZ between WPC and Traction Power Earthing systems. |
| 6.7 | Irrigation | | | |
| 6.8 | Station Precinct fencing | Yes. | 1.2m high black PVC coated Linkmesh. | Accommodate isolation panels as necessary to provide for EEZ between WPC and Traction Power Earthing systems. |
| 6.9 | Station car park fencing | Yes. | 1.2m high black PVC coated Linkmesh. | Accommodate isolation panels as necessary to provide for EEZ between WPC and Traction Power earthing systems. |
| 6.10 | Stormwater basin fencing | Yes. | 1.8m high black PVC coated Linkmesh. | Accommodate isolation panels as necessary to provide for EEZ between WPC and Traction Power earthing systems. |
| 6.11 | Muster Points | Yes. | As required by station FEB. | To be located at ground level. |
| 7.0 | STATION BUILDING | | | |
| 7.1 | Entry Building / Foyer | Yes. | Station required to be secure when closed (out of hours). | |
| 7.2 | Ticketing / Access Control | No. | | |
| 7.3 | Afterhours Access | Yes. | Staff afterhours access point required. | |
| 7.4 | Materials / Finishes / Colours | | In accordance with PTA Guideline for Maintainability and Constructability 8803-000-002. Colours from the Australian Standard Colour Palette and Paint Systems to be used. | |

| No. | Element | Applicable (Yes / No) | Minimum Requirements | Notes |
|------------|---------------------------------------|-----------------------|--|--|
| | | | Luminance contrasting required for patrons with vision disabilities. | |
| 8.0 | ROOFS, CANOPIES & SHELTERS | | | |
| 8.1 | Station Building Roofs | Yes | Cover to station entry building, pedestrian overpass & station concourse. Roof structure to be designed to accommodate loading and installation of future solar panels (by others). Cover to all vertical circulation elements. Cover provided must as a minimum ensure no wind driven rain or associated runoff affects or touches pedestrian stairs, escalators, lifts, fare gates, ticketing machines, dedicated platform safe zones etc unless otherwise agreed in writing by PTA. | |
| 8.2 | Platform Roof / Canopy | Yes. | Cover required to minimum 50% of platform. Cover provided must as a minimum ensure no wind driven rain or associated runoff affects or touches pedestrian stairs, escalators, lifts, fare gates, ticketing machines, dedicated platform safe zones etc unless otherwise agreed in writing by PTA. | |
| 8.3 | Busway Walkway Canopies | Yes. | Continuous cover from station entry to all active bus stands including cover to all active bus stand seating. | |
| 8.4 | Busway Crossing Canopy | Yes. | | |
| 8.5 | Drop-off Parking Canopy | No. | | |
| 8.6 | Motorcycle Parking Shelter | Yes | Roof cover to all motorcycle parking bays 300mm high 'u-rail' hitching rails at front of each motorcycle bay to securely chain motorcycles to. | |
| 8.7 | Smart Parker Machines & PVM Shelter | Yes. | Shelter for queuing space that will not cast any shadow on the Smart Parker Machines and PVM solar panels. | |
| 9.0 | PLATFORM | | | |
| 9.1 | Configuration | | 2 No. marginal platforms. | |
| 9.2 | Length | | 150m (to suit 6 car set). | |
| 9.3 | Width | | 4.0m marginal platform without structures and/or 6.5m marginal platform with structures. | Refer PTA Standard Drawing 00-C-04-1398. |

| No. | Element | Applicable (Yes / No) | Minimum Requirements | Notes |
|------|---|-----------------------|--|---|
| 9.4 | Horizontal Distance | | 1550mm + / - 5mm gap tolerance (horizontal distance from track centreline to platform edge). | Refer PTA Standard Drawing 00-C-04-0076. |
| 9.5 | Vertical Distance | | 1085mm + / - 5mm gap tolerance (vertical distance from top of rail level to platform edge). | Refer PTA Standard Drawing 00-C-04-0076. |
| 9.6 | Materials | | Platform wall / edge detail to PTA's requirements. | |
| 9.7 | Form / Profile | | Platform wall / edge detail to PTA's requirements. – Minimum overhang of 750mm and maximum 900mm. | NGCoP |
| 9.8 | Surface | | Brick pavers generally with tiles on concrete for platform edge zones. Minimum P5 rating for slip resistance. Tiled surface to be subjected to an accelerated wear test and achieve a minimum BPN of 44 (P5) after 5000 scrubs by a NATA approved testing laboratory in accordance to AS 4586 and Handbook 198-2014. | |
| | | | Platform surface material should be suitable for easy cleaning, strong to withstand the wear and tear of foot traffic and mobile plant used in the maintenance of lighting and high level infrastructure, slip resistant. Tactile and directional pavers in accordance with AS 1428.4. | |
| | | | Minimum cross fall of 1:100. | NGCoP |
| 9.9 | Drainage | Yes | Contained within platform. Platform surface to fall away from platform edge. | |
| 9.10 | Wash down Taps | Yes. | Taps at 40m centres on platforms, secured behind stainless steel recessed wall boxes with key lock door or purpose made, free standing, stainless steel tap boxes with key lock door (where not recessed in walls). | Locate next to column or light pole, not stand-alone. |
| 9.11 | Platform End Balustrade(s) and/or Gates | Yes. | Prevent public from accessing perway. To standard PTA details - galvanised steel balustrade with emergency egress gate at each end of platform. | To be located at each end of platform. |
| 9.12 | Platform End Stairs | Yes. | To standard PTA details - galvanised steel stairs & handrails to platform end for emergency access to rail reserve. | To be located at each end of platform. |
| 9.13 | Primary Door Position | No. | | |
| 9.14 | Railcar Stopping Positions | Yes. | 2, 3, 4 & 6 car stopping positions. | |

| No. | Element | Applicable (Yes / No) | Minimum Requirements | Notes |
|------|---------------------------------|-----------------------|---|--|
| 9.15 | Safe Zone | Yes. | Centrally located on platform in front of ticketing facilities and include CCTV coverage and an audio loop. | |
| 9.16 | Planter Boxes & Tubs | No. | | |
| 10.0 | VERTICAL CIRCULATION | | | |
| 10.1 | Passenger Stairs | Yes. | Minimum width of 1.8m clear width or as required by BCA and / or FEB and passenger modelling Enable direct and intuitive passenger movement. Enable even loading and unloading of platforms. | |
| 10.2 | Emergency Egress Stairs | Yes. | 2 No. stairs per platform. | From platform level to concourse level (ground level). |
| 10.3 | Passenger Lifts | Yes. | 2 No. lifts per platform. Lifts at platform levels are to be fully protected from wind driven rain In accordance with PTA lift specifications 8880-000-003. Machine room less, walk thru type lifts. | From platform level to concourse level (ground level). |
| 10.4 | Passenger Escalators | No. | | |
| 11.0 | SIGNAGE & WAYFINDING | | | |
| 11.1 | Signage & Wayfinding | Yes. | All Signage & Wayfinding to be to PTA standards and developed in conjunction with PTA. All Signage & Wayfinding to be accessible to people with disabilities where required. Alternatives to print signage to be provided for people with print disabilities. Braille and tactile signage to comply with the BCA and DPI Transport requirements. | |
| 11.2 | Passenger Information Displays | Yes. | Displays to include: – 4 No. PIDs with 2 No. to each platform (PIDs back to back). – 2 No. CID located on wall of concourse above PSP. –BIDs at each bus stand. | |

| No. | Element | Applicable (Yes / No) | Minimum Requirements | Notes |
|-------------|---------------------------------|-----------------------|---|--|
| 11.3 | Car park Information Displays | No. | | |
| 11.4 | PTA Signage | Yes. | All applicable signage as required by the PTA Signage Guide. | |
| 11.5 | Statutory Signage | Yes. | As required. | |
| 11.6 | Rail Signage & Markers | Yes. | Signage to face of platform walls for 2, 3, 4 & 6 car stopping positions. | |
| 11.7 | Road Signage | Yes. | As required. | |
| 11.8 | Car park Signage & Linemarkings | Yes. | As required. | |
| 11.9 | Emergency Exit Signage | Yes. | As required. | |
| 11.10 | Directional Signage | Yes. | As required. | |
| 11.11 | Passive Information Systems | TBC | To be confirmed. All passive information systems must be accessible to people with disabilities. | |
| 12.0 | PUBLIC ARTWORK | | | |
| 12.1 | Murals, Mosaics, Sculpture | Yes. | In consultation with PTA public artist. | |
| 13.0 | STATION FURNITURE | | | |
| 13.1 | Station Furniture | Yes. | Furniture to comply with the requirements of: – DSAPT. – AS 1428 (all parts) – Design for Access & Mobility. All furniture to have a 30% luminance contrast with the surrounding material. | |
| 13.2 | Stainless Steel Seating | Yes. | For 9 persons per platform and additional seating at key locations throughout station including at each bus stand. | Refer PTA standard seat details. |
| 13.3 | Stainless Steel Rubbish Bins | Yes. | Adjacent to all seating. | Refer PTA standard bin details. |
| 13.4 | Cigarette Bins | Yes. | To be located on all approaches at least 20m away from station entry. | Entire station is non-smoking environment. |

| No. | Element | Applicable (Yes / No) | Minimum Requirements | Notes |
|-------------|-------------------------------|-----------------------|--|---|
| 14.0 | RETAIL SERVICES | | | |
| 14.1 | Advertising | TBC | To be confirmed. | |
| 14.2 | Kiosk (Leased) | No. | | |
| 14.3 | Vending Machine(s) | No. | | |
| 14.4 | Automatic Teller Machine(s) | No. | | |
| 14.5 | Additional Retail Facilities | No. | | |
| 15.0 | RAILWAY INFRASTRUCTURE | | | |
| 15.1 | Track Centrelines | - | 5.20m minimum. | |
| 15.2 | OLE Level (contact wire) | Yes | 5.250m | From top of rail |
| 15.3 | Station Structure Clearance | - | 6.30m min from top of rail to underside of concourse / structure adjacent to and over platforms. | |
| | | | 3.00m minimum clearance of structures on platform from platform edge for structures on platform that are 0-3m in length (parallel to edge of platform) as per PTA drawing 00-C-04-1399 | |
| | | | 3.35m minimum clearance from platform edge for structures on platform that are 3m -14m in length (parallel to edge of platform) as per PTA drawing 00-C-04-1399 | |
| | | | 4.00m minimum clearance of columns on platform from centreline of track. | |
| 15.4 | Structural Clearance (Urban) | - | 2140mm minimum structural clearance from track centreline, except for platform edge. | Structural Clearance & Rolling Stock Outlines – Narrow Gauge Lines. |
| | | | 5200mm minimum structural clearance from top of rail level. | Structural Clearance & Rolling Stock Outlines – Narrow Gauge Lines. |
| 15.5 | Station Railway Signalling | No. | Not part of station works. | |
| 15.6 | Station Railway OLE | No. | Not part of station works. | |

| No. | Element | Applicable (Yes / No) | Minimum Requirements | Notes |
|------|----------------------------------|-----------------------|---|-------|
| 15.7 | Pedestrian Crossing | No. | | |
| 15.8 | Earthing & Bonding of Structures | Yes. | Earthing & Bonding at passenger stations in accordance with PTA Specification. | |
| 15.9 | Overhead Wire Protection | Yes. | Overhead wire protection in accordance with PTA Specification. | |
| | | | Screen protection including walls or 1.8m high glass screens to concourse and overpass. | |
| | | | All glass screening to have a luminance contrasted strip at eye level. | |

APPENDIX C

CERTIFICATES OF TITLE

WESTERN



AUSTRALIA

| | |
|--|--|
| REGISTER NUMBER 802/DP404604 | |
| DUPLICATE EDITION 1 | DATE DUPLICATE ISSUED 9/1/2017 |

RECORD OF CERTIFICATE OF TITLE
UNDER THE TRANSFER OF LAND ACT 1893

VOLUME **2917** FOLIO **460**

The person described in the first schedule is the registered proprietor of an estate in fee simple in the land described below subject to the reservations, conditions and depth limit contained in the original grant (if a grant issued) and to the limitations, interests, encumbrances and notifications shown in the second schedule.



REGISTRAR OF TITLES

LAND DESCRIPTION:

LOT 802 ON DEPOSITED PLAN 404604

REGISTERED PROPRIETOR:
(FIRST SCHEDULE)

WESTERN AUSTRALIAN PLANNING COMMISSION OF 140 WILLIAM STREET PERTH
(T N512345) REGISTERED 16/12/2016

LIMITATIONS, INTERESTS, ENCUMBRANCES AND NOTIFICATIONS:
(SECOND SCHEDULE)

1. THE RIGHT TO MINES OF COAL OR OTHER MINERALS BEING EXCLUDED FROM PORTION OF THE SAID LAND - SEE SKETCH ON DEPOSITED PLAN 404604.
2. SAVE AND EXCEPT THE RIGHTS TO MINES OF COAL OR OTHER MINERALS INCLUDING THOSE SPECIFIED IN TRANSFER 594/1933.
3. EXCEPT AND RESERVING METALS, MINERALS, GEMS AND MINERAL OIL SPECIFIED IN TRANSFER 594/1933

Warning: A current search of the sketch of the land should be obtained where detail of position, dimensions or area of the lot is required.
* Any entries preceded by an asterisk may not appear on the current edition of the duplicate certificate of title.
Lot as described in the land description may be a lot or location.

-----END OF CERTIFICATE OF TITLE-----

STATEMENTS:

The statements set out below are not intended to be nor should they be relied on as substitutes for inspection of the land and the relevant documents or for local government, legal, surveying or other professional advice.

SKETCH OF LAND: DP404604
 PREVIOUS TITLE: 1909-59, 2820-860, 2820-861
 PROPERTY STREET ADDRESS: 251 PIPIDINNY RD, EGLINTON.
 LOCAL GOVERNMENT AUTHORITY: CITY OF WANNEROO
 RESPONSIBLE AGENCY: WESTERN AUSTRALIAN PLANNING COMMISSION

WESTERN



AUSTRALIA

| | |
|--|---|
| REGISTER NUMBER 800/DP404604 | |
| DUPLICATE EDITION 2 | DATE DUPLICATE ISSUED 10/6/2019 |

RECORD OF CERTIFICATE OF TITLE
UNDER THE TRANSFER OF LAND ACT 1893

VOLUME 2917 FOLIO 458

The person described in the first schedule is the registered proprietor of an estate in fee simple in the land described below subject to the reservations, conditions and depth limit contained in the original grant (if a grant issued) and to the limitations, interests, encumbrances and notifications shown in the second schedule.



REGISTRAR OF TITLES

LAND DESCRIPTION:

LOT 800 ON DEPOSITED PLAN 404604

REGISTERED PROPRIETOR:
(FIRST SCHEDULE)

EGLINTON ESTATES PTY LTD OF UNIT 5/20 ALTONA STREET WEST PERTH
(AF N512341) REGISTERED 16/12/2016

LIMITATIONS, INTERESTS, ENCUMBRANCES AND NOTIFICATIONS:
(SECOND SCHEDULE)

1. SAVE AND EXCEPT THE RIGHTS TO MINES OF COAL OR OTHER MINERALS INCLUDING THOSE SPECIFIED IN TRANSFER 594/1933.
2. EXCEPT AND RESERVING METALS, MINERALS, GEMS AND MINERAL OIL SPECIFIED IN TRANSFER 594/1933
3. *O178891 CAVEAT BY WESTERN AUSTRALIAN PLANNING COMMISSION AS TO PORTION ONLY LODGED 24/6/2019.

Warning: A current search of the sketch of the land should be obtained where detail of position, dimensions or area of the lot is required.
* Any entries preceded by an asterisk may not appear on the current edition of the duplicate certificate of title.
Lot as described in the land description may be a lot or location.

-----END OF CERTIFICATE OF TITLE-----

STATEMENTS:

The statements set out below are not intended to be nor should they be relied on as substitutes for inspection of the land and the relevant documents or for local government, legal, surveying or other professional advice.

SKETCH OF LAND: DP404604
PREVIOUS TITLE: 1909-59, 2820-860
PROPERTY STREET ADDRESS: 301 PIPIDINNY RD, EGLINTON.
LOCAL GOVERNMENT AUTHORITY: CITY OF WANNEROO

INSTRUCTIONS

1. If insufficient space in any section, Additional Sheet, Form B1 should be used with appropriate headings. The boxed sections should only contain the words "see page..."
2. Additional Sheets shall be numbered consecutively and bound to this document by staples along the left margin prior to execution by the parties.
3. No alteration should be made by erasure. The words rejected should be scored through and those substituted typed or written above them, the alteration being initialled by the persons signing this document and their witnesses.

NOTES

1. **DESCRIPTION OF LAND**
Lot and Diagram/Plan/Strata /Survey-Strata plan number or Location name and number to be stated.
Extent - Whole, part or balance of the land comprised in the Certificate of Title to be stated.
The Volume and Folio or Crown Lease number, to be stated.
If this document relates to only part of the land comprised in the Certificate of Title further narrative or graphic description may be necessary.
2. **CAVEATOR.**
State full name of the Caveator.
3. State the address, or a number for a facsimile machine in Australia for service of notice on the Caveator.
4. **REGISTERED PROPRIETOR**
State full name and address of the Registered Proprietor/ Registered Proprietors as shown on Certificate of Title or Crown Lease and any address/addresses to which future notices can be sent.
5. Specify the Estate or Interest claimed.
6. Specify the grounds on which claim is made.
7. State whether "Absolutely" or "Unless such Instrument be expressed to be subject to the Caveator's claim", or "until after notice of any intended registration or registered dealing to the Caveator at the address for service of notice".
8. **CAVEATOR'S OR AGENTS EXECUTION**
A separate attestation is required for every person signing this document. Each signature should be separately witnessed by an Adult Person. The full name, address and occupation of the witness must be stated.

EXAMINED

NOTICES TO BE SENT:

0178891 C

24 Jun 2019 14:03:28 Perth



CAVEAT

| | |
|-----------------|---------------------------------|
| LODGED BY | State Solicitors Office |
| ADDRESS | 28 Barrack Street Perth WA 6000 |
| PHONE No. | 9264 1176 |
| FAX No. | 9264 1440 |
| REFERENCE No. | SSO 2072-19 MC1 |
| CLIENT REF: | ANDREW HAWKINS |
| ISSUING BOX No. | 59N |

| | |
|-------------|---------------------------------|
| PREPARED BY | State Solicitors Office |
| ADDRESS | 28 Barrack Street Perth WA 6000 |
| PHONE No. | 9264 1176 |
| FAX No. | 9264 1440 |

INSTRUCT IF ANY DOCUMENTS ARE TO ISSUE TO OTHER THAN LODGING PARTY

| |
|-----|
| 1/1 |
|-----|

TITLES, LEASES, DECLARATIONS ETC. LODGED HERE WITH

| | | |
|----|---------------------|-----------------|
| 1. | <u>VOI</u> | Received Items |
| 2. | <u>PIC CONTRACT</u> | 1-3 |
| 3. | <u>Cover Sheet</u> | |
| 4. | _____ | Nos. |
| 5. | _____ | Receiving Clerk |
| 6. | _____ | <i>MS</i> |

Lodged pursuant to the provisions of the TRANSFER OF LAND ACT 1893 as amended on the day and time shown above and particulars entered in the Register.

FORM C1

WESTERN AUSTRALIA
TRANSFER OF LAND ACT 1893 AS AMENDED

AGREEMENT DATED
STAMPED
SIGNED

CAVEAT

DESCRIPTION OF LAND (Note 1)

That part of Lot 800 on Deposited Plan 404604 as is delineated and marked 'Eglinton Station Car Park and Bus Interchange' on the plan annexed hereto

EXTENT

VOLUME

FOLIO

Part

2917

458

CAVEATOR (Note 2)

WESTERN AUSTRALIAN PLANNING COMMISSION

ADDRESS OR FACSIMILE MACHINE NUMBER FOR SERVICE OF NOTICE ON CAVEATOR (Note 3)

The office of the Deputy State Solicitor - Commercial State Solicitor's Office 28 Barrack Street Perth WA 6000

REGISTERED PROPRIETOR (Note 4)

EGLINTON ESTATES PTY LTD ACN 009 460 397 of 5/20 Altona Street West Perth WA 6005

ESTATE OR INTEREST BEING CLAIMED (Note 5)

An equitable estate or interest as purchaser of the fee simple.

The CAVEATOR claims an estate or interest as specified herein of the estate or interest of the abovenamed REGISTERED PROPRIETOR in the land above described BY VIRTUE OF (Note 6)

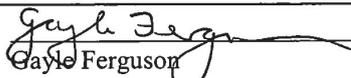
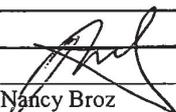
An Agreement dated the 13th day of June 2019 made between the registered proprietor as vendor and the caveator as purchaser.

And FORBIDS the registration of any Instrument affecting the estate or interest (Note 7)

Absolutely

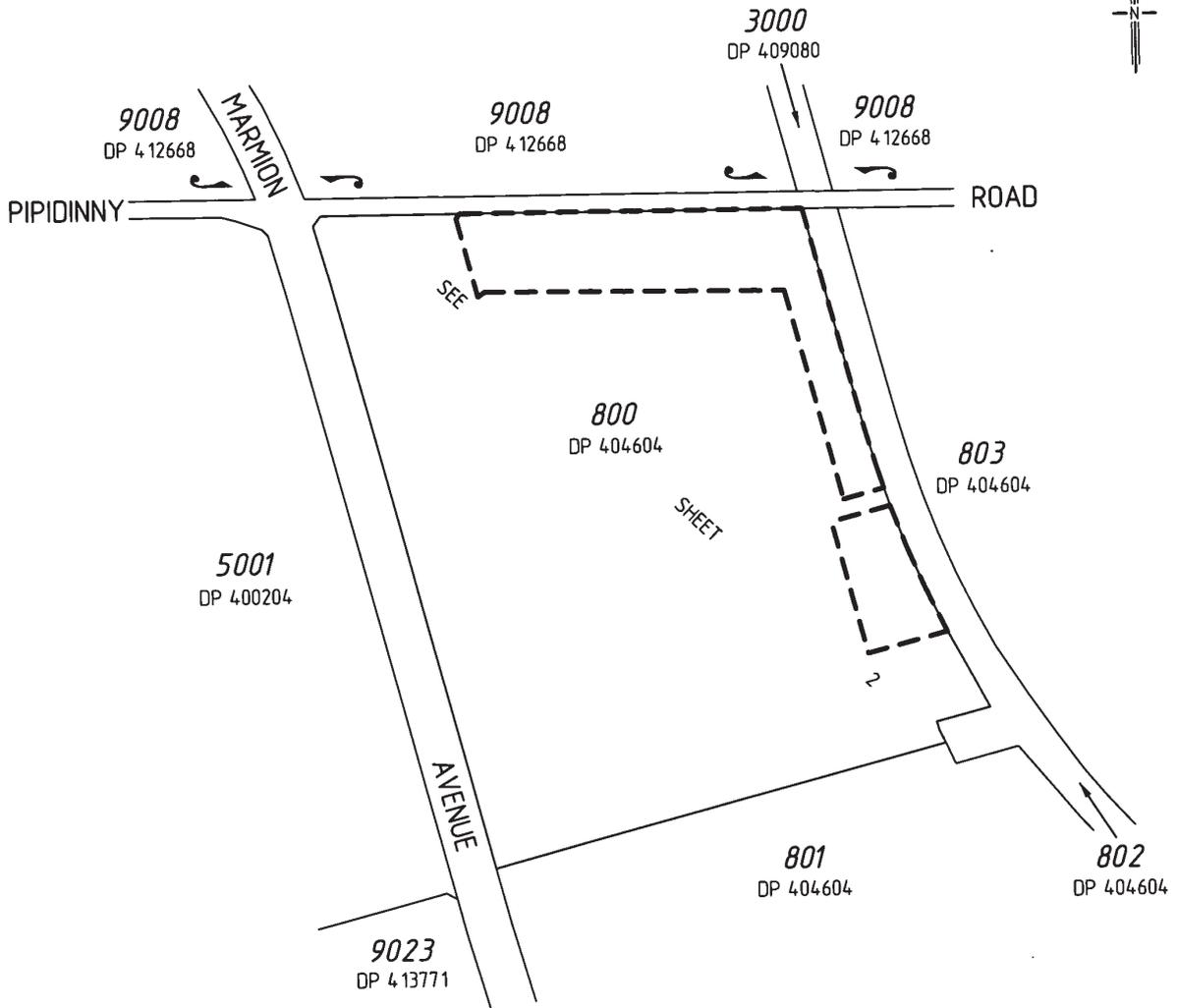
Dated this 24th day of June Year 2019

CAVEATOR OR AGENT SIGN HERE (Note 8)

| | |
|---|---|
|  Gayle Ferguson COMMERCIAL & CONVEYANCING STATE SOLICITOR'S OFFICE PERTH AS SOLICITOR FOR THE CAVEATOR |  Nancy Broz CLASSIFIED OFFICER, STATE PUBLIC SERVICE STATE SOLICITORS OFFICE DEPARTMENT OF JUSTICE 28 Barrack Street Perth WA 6000 |
|---|---|



LOCATION SKETCH

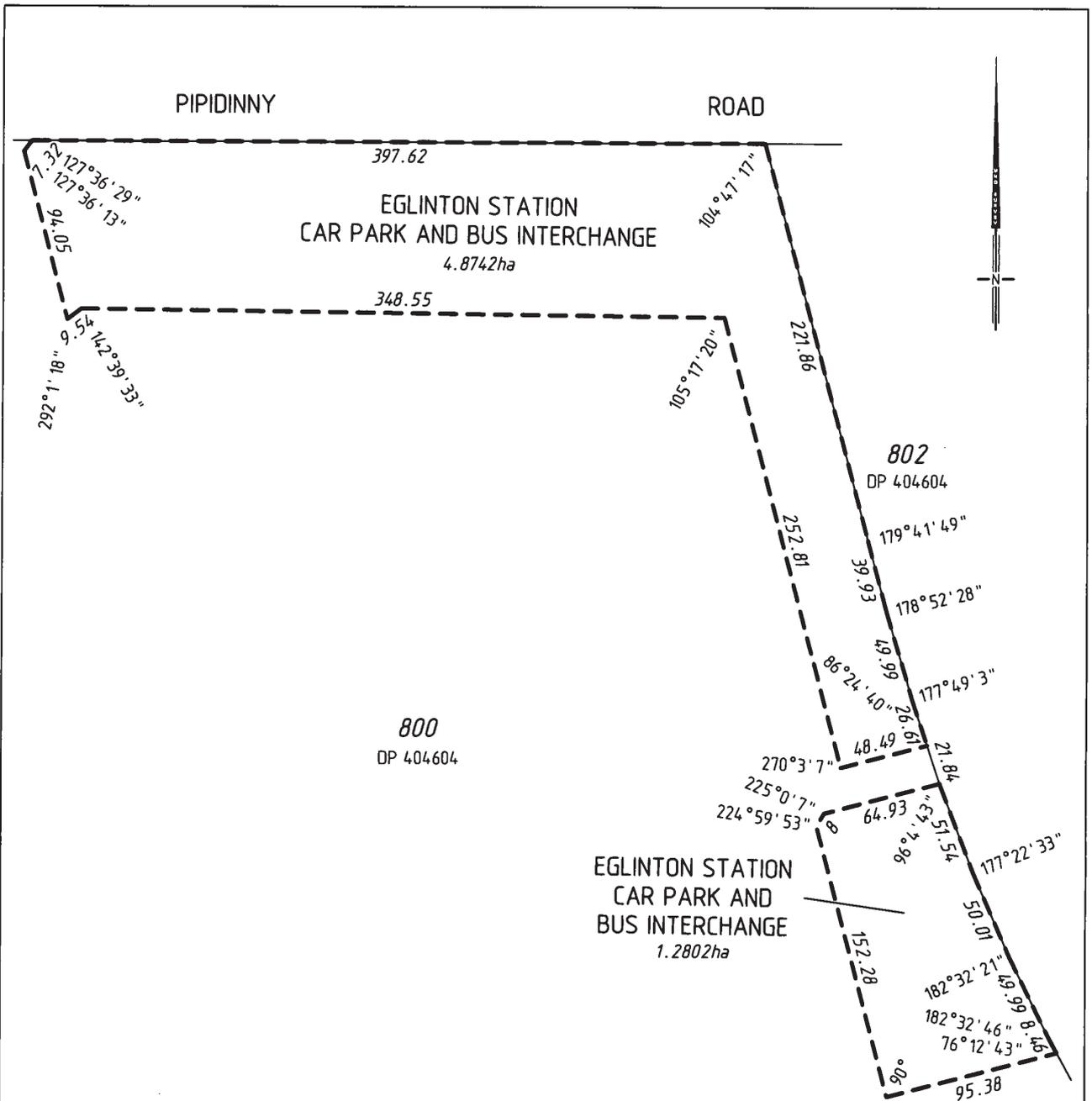


SEE SHEET 2 FOR PTA LAND REQUIREMENT DETAILS

Contractor No: 101751sk-012a-Sheet 1/2 REV : A

| | |
|----------------------|----------------------|
| SCALE : | DESIGNED : |
| 1 : 7500 (A4) | DRAWN : |
| REFERENCES : | CHECKED : |
| DESIGNED : | APPROVED FOR ISSUE : |
| DRAWN : | DATE : |
| CHECKED : | DATE : |
| APPROVED FOR ISSUE : | DATE : |
| DATE : | DATE : |

| CONCEPT DESIGN | |
|--|---------|
| | |
| SKETCH OF CAVEAT OVER LOT 800 ON DP 404604 | |
| PTA Drawing No: YRE-MNG-SV-SKT-00002 | REV : A |



| | | | | | | | | | |
|---------------------------------------|---------|-----------------------|----|--|-----|----------|----------------------|--|--|
| Contractor No: 101751sk-012a-Sheet2/2 | | REV: A | | SCALE: 1:3000 (at A4) | | DESIGNED | | CONCEPT DESIGN Government of Western Australia Public Transport Authority | |
| | | | | REFERENCES | | DRAWN | | | |
| A | 31/1/19 | Initial Issue | | XEY | SDW | MBW | CHECKED | | SKETCH OF CAVEAT OVER LOT 800 ON DP 404604 |
| REV | DATE | AMENDMENT | | DSN | DRN | CHKD | APP | APPROVED FOR ISSUE | |
| ORIG SIZE | A4 | 0 | 15 | 30 | 45 | 60mm | PTA ACCEPTANCE STAMP | | |
| | | AT ORIGINAL PLOT SIZE | | This document must not be copied without PTA's written permission, and the contents thereof must not be republished or in any way used for any unauthorized purpose. | | DATE | | PTA Drawing No: YRE-MNG-SV-SKT-00002 | REV: A |

[Handwritten signature]



STATE SOLICITOR'S OFFICE

David Malcolm Justice Centre
28 Barrack Street
Perth, Western Australia 6000

GPO Box B83 Perth WA 6838
Telephone (08) 9264 1888
Fax (08) 9264 1440
Email sso@sso.wa.gov.au
DX 175

SSO Ref: 2072-19
Enquiries: Gayle Ferguson
Telephone: 9264 1176
Email: g.ferguson@sso.wa.gov.au

Date: 24 June 2019

Registrar of Titles
Landgate
P O Box 2222
MIDLAND WA 6936

EV001099053 VOI



VERIFICATION OF IDENTITY STATEMENT

CAVEATOR: WESTERN AUSTRALIAN PLANNING COMMISSION

LAND: PART OF LOT 800 ON DEPOSITED PLAN 404604 AND BEING PART OF THE LAND IN CERTIFICATE OF TITLE VOLUME 2917 FOLIO 458

I act for the Caveator in the attached Caveat.

I confirm that I have verified that the Caveator exists, is a body corporate created by statute and that Timothy Michael Hillyard has a current valid delegation to execute documents on behalf of the Caveator.

I also confirm that verification of the identity of Timothy Michael Hillyard of care of Western Australian Planning Commission, 140 William Street Perth was conducted by me at 140 William Street Perth Western Australia on 8 September 2017.

I Gayle Elizabeth Ferguson, Senior Managing Law Clerk, of care of State Solicitor's Office, 28 Barrack Street Perth Western Australia have taken all reasonable steps to verify the identity of my client, the Western Australian Planning Commission and its delegate Timothy Michael Hillyard.

I reasonably believe my client and its delegate Timothy Michael Hillyard has been identified.

I reasonably believe my client and its delegate Timothy Michael Hillyard has the authority to deal with the interest in land the subject of this transaction being a Caveat over the above described land.

I can be contacted on 9264 1176 or by e-mail at g.ferguson@sso.wa.gov.au.

GAYLE FERGUSON
SENIOR MANAGING LAW CLERK
COMMERCIAL AND CONVEYANCING



15 July 2019

EGLINTON ESTATES PTY LTD
UNIT 5 20 ALTONA STREET
WEST PERTH, WA 6005

Dear Sir/Madam

I advise that a caveat has been lodged against the Certificate of Title for your land. Your land ownership details are described in the schedule overleaf.

Some details of the Caveat including a copy of part of the "Estate or interest claimed" section are shown in the schedule overleaf.

A caveat is a statutory notice lodged against the Certificate of Title for the land evidencing a claim to an interest in that land. The claim is made by a person who is not the registered owner of the land. The person claiming the interest in the land is known as the caveator.

The existence of a caveat on the title does not allow the caveator to deal with the land, however the caveat may prevent the registration of any change to the title for the land until notice of that change has been given to the caveator.

The caveat will remain on the title until it is withdrawn by the caveator or action is taken for its removal.

A complete copy of the caveat may be obtained (on payment of the prescribed fee) at www.landgate.wa.gov.au. If you wish to seek further information regarding the caveat, Landgate may be contacted on +61 (0)8 9273 7373 or by email to customerservice@landgate.wa.gov.au. Please be aware that legal advice cannot be provided. Customers requiring any legal advice must seek their own independent legal advice.

Finally, please note that, due to the numbers of caveats lodged daily at the Western Australian Land Information Authority (Landgate), the Registrar of Titles is personally not able to assist you with caveat enquiries.

Sincerely,

A handwritten signature in black ink, appearing to read "J Villani".

JEAN VILLANI
REGISTRAR OF TITLES

Western Australian Land Information Authority ABN 86 574 793 858
1 Midland Square, Midland, Western Australia 6056
Postal Address: PO Box 2222, Midland, Western Australia 6936
Telephone +61 (0)8 9273 7373 TTY +61 (0)8 9273 7571 landgate.wa.gov.au



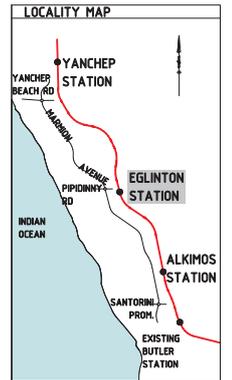
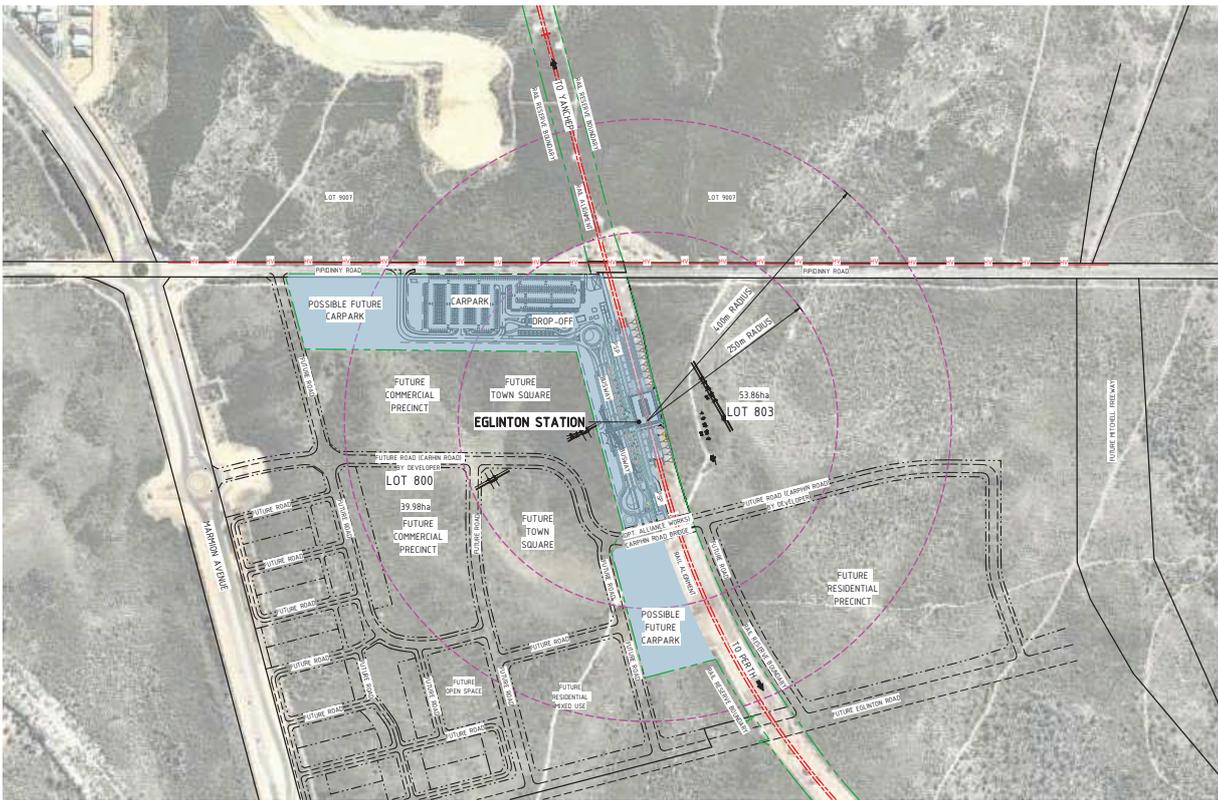
THE SCHEDULE

| | |
|--------------------------|--|
| Caveat No: | O178891 |
| Caveator: | WESTERNAUSTRALIAN PLANNING COMMISSION |
| Nature of Claim: | ABSOLUTELY |
| Affected Titles: | 2917-458 |
| Affected Documents: | |
| Estate/Interest Claimed: | AS AN EQUITABLE ESTATE OR INTEREST AS PURCHASER OF THE FEE SIMPLE. |

Western Australian Land Information Authority ABN 86 574 793 858
1 Midland Square, Midland, Western Australia 6056
Postal Address: PO Box 2222, Midland, Western Australia 6936
Telephone +61 (0)8 9273 7373 TTY +61 (0)8 9273 7571 landgate.wa.gov.au

APPENDIX D

STATION WORKS PLANS



- NOTES**
1. ALL FUTURE ROADS AND BRIDGES ARE SHOWN FOR INFORMATION PURPOSES ONLY.
 2. PROPOSED ROAD RESERVE BOUNDARY IS SUBJECT TO CHANGE BASED ON FURTHER DESIGN AND INVESTIGATION.
- LEGEND**
- EXISTING CADASTRAL BOUNDARIES
 - RAILWAYS RESERVE BOUNDARY
 - BUTLER TO YANCHEP RAIL
 - FUTURE ROADS BY OTHERS
 - FUTURE LOT BOUNDARIES BY OTHERS
 - PROPOSED EGLINTON STATION
- SERVICES**
- EX HV POWER (WESTERN POWER)
- ABBREVIATIONS:**
- PSP PRINCIPAL SHARED PATH

SITE ANALYSIS AND CONTEXT PLAN OVERALL LAYOUT
Scale: 1 : 2500



| | | | | | |
|------------|----------|-------------------------|----|------|-----|
| REV | DATE | DESCRIPTION | BY | CHKD | APP |
| A | 30.07.20 | DEVELOPMENT APPLICATION | BP | SS | AW |
| ORIG. DATE | | AMENDMENT | | | |
| A1 | | | | | |

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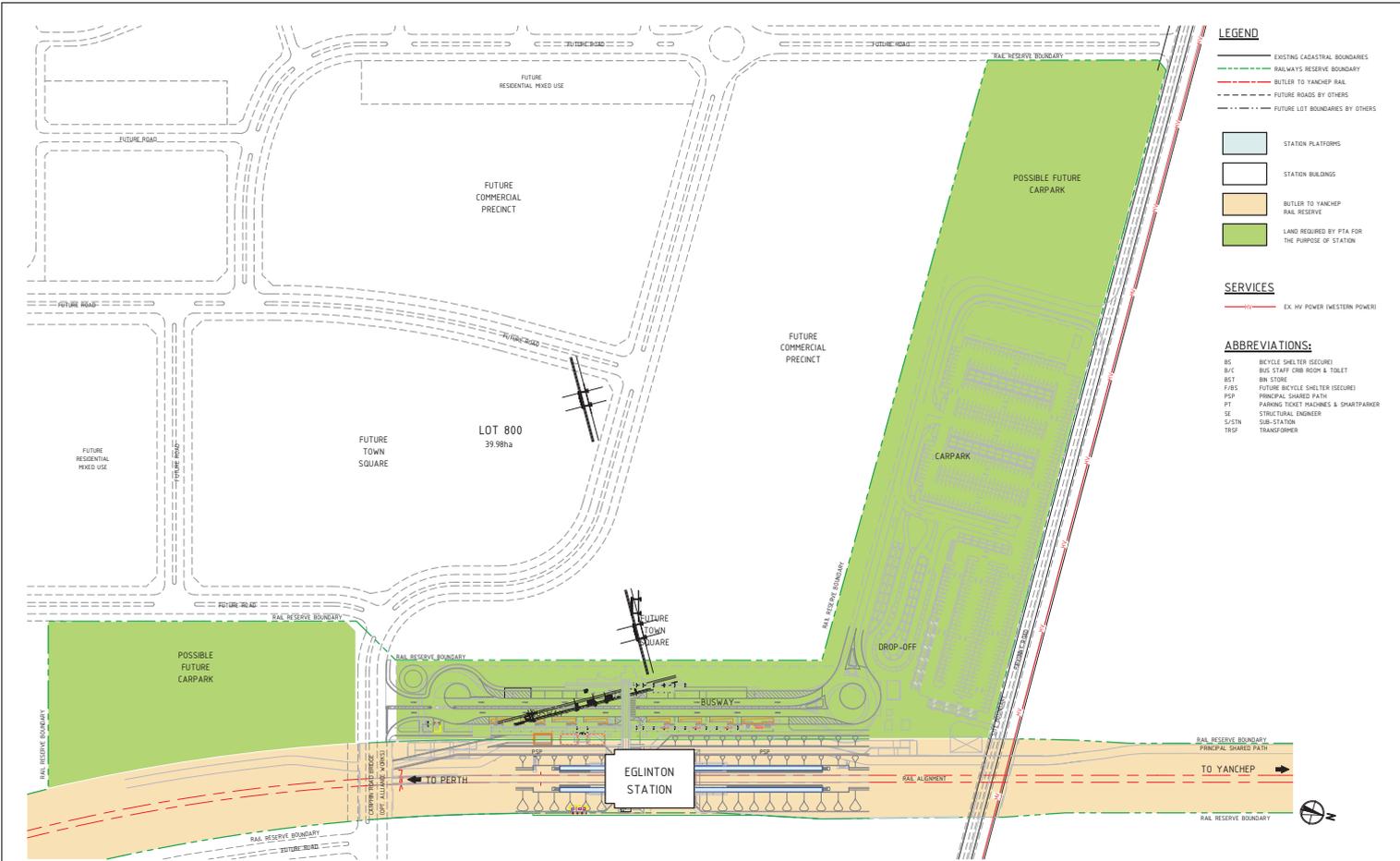
TCY-CAP-YSB-AR-DRG-01

REFERENCES

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| SCALE | As indicated (@ A1) |
| DATUM | PCG20 |
| HORIZONTAL | AND71 |
| VERTICAL | |
| DESIGNED | B.PRIEST |
| DRAWN | S.SERVINA |
| CHECKED | A.WHEELER |
| APPROVED FOR ISSUE | |
| EXECUTIVE DIRECTOR | PTA Director / External Company |
| DATE | |

DEVELOPMENT APPLICATION

| | |
|---|------------------------|
| Government of Western Australia Public Transport Authority | YANCHEP RAIL EXTENSION |
| EGLINTON STATION SITE ANALYSIS AND CONTEXT PLAN OVERALL LAYOUT | |
| PTA Drawing No: | REV: A |



- LEGEND**
- EXISTING CASUALTY BOUNDARIES
 - RAILWAYS RESERVE BOUNDARY
 - BUTLER TO YANCHEP RAIL
 - FUTURE ROADS BY OTHERS
 - FUTURE LOT BOUNDARIES BY OTHERS
- STATION PLATFORMS
 - STATION BUILDINGS
 - BUTLER TO YANCHEP RAIL RESERVE
 - LAND REQUIRED BY PTA FOR THE PURPOSE OF STATION
- SERVICES**
- EX HV POWER (WESTERN POWER)
- ABBREVIATIONS:**
- BS BICYCLE SHELTER (SECURE)
 - B/C BUS STAFF CROW ROOM & TOILET
 - BST BN STORE
 - FBS FUTURE BICYCLE SHELTER (SECURE)
 - FSPS FUTURE PRINCIPAL SHARED PATH
 - PSP PARKING TICKET MACHINES & SMARTPARKER
 - PT STRUCTURAL ENGINEER
 - SS SUB-STATION
 - TSF TRANSFORMER

LAND REQUIREMENTS & SITE INFORMATION PLAN

SCALE 1 : 1000

DEVELOPMENT APPLICATION

| | | | | | |
|-----|----------|-------------------------|----|------|-----|
| REV | DATE | DESCRIPTION | BY | CHKD | APP |
| A | 30.07.20 | DEVELOPMENT APPLICATION | BP | SS | |

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TCY-CAP-YSB-AR-DRG-02

REFERENCES

SCALE
As indicated (@ A1)

DATUM
HORIZONTAL: PCE20
VERTICAL: AMD71

PTA ACCEPTANCE STAMP

DESIGNED B.PRIEST
DRAWN S.SERVINA
CHECKED A.WHEELER
APPROVED FOR ISSUE

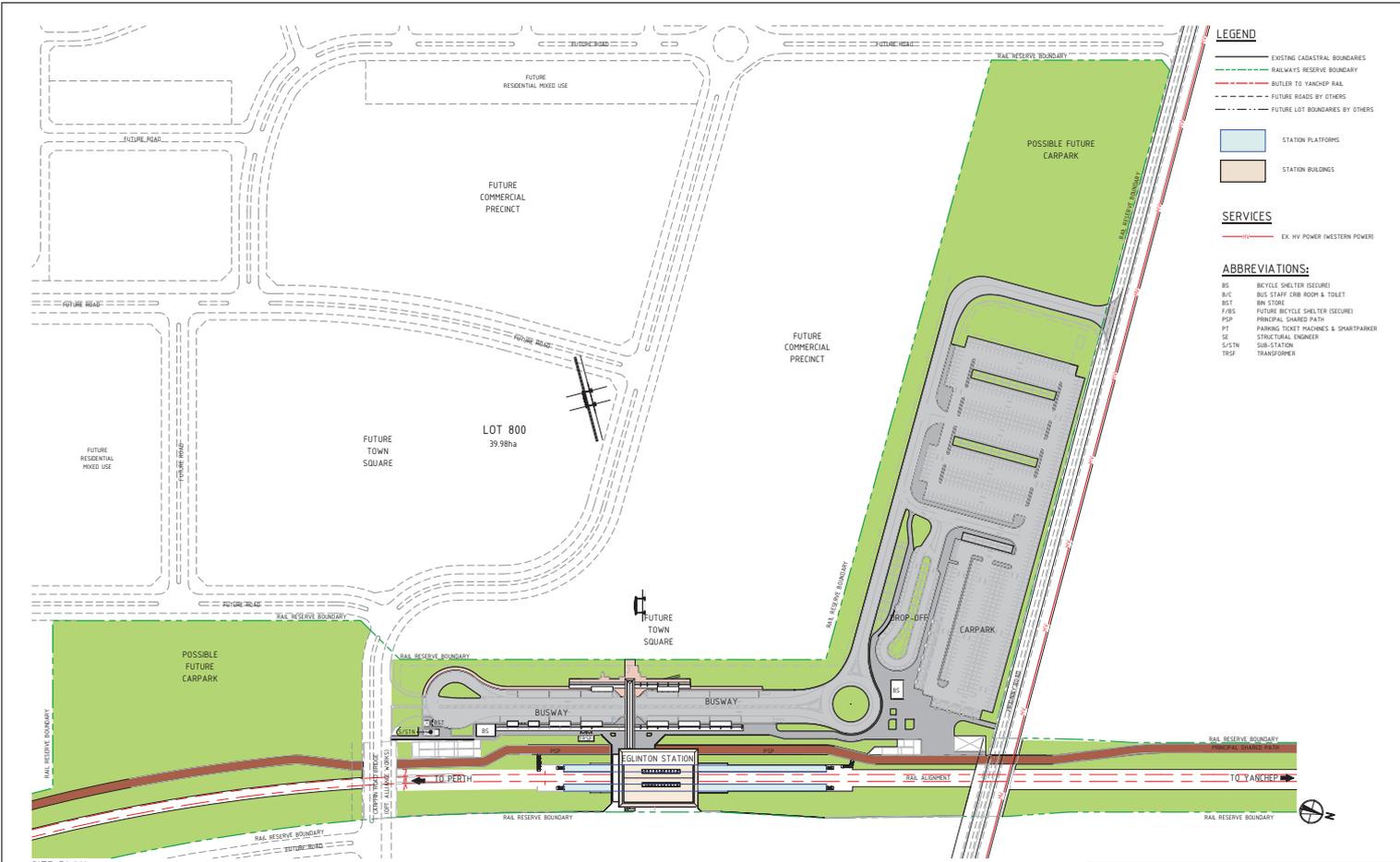
EXECUTIVE DIRECTOR
PTA Division / External Company
DATE

Government of Western Australia
Public Transport Authority

YANCHEP RAIL EXTENSION

EGLINTON STATION
LAND REQUIREMENTS & SITE INFORMATION PLAN

PTA Drawing No: _____ REV: **A**



SITE PLAN
SCALE 1 : 1000

ISSUE FOR DEVELOPMENT APPLICATION

Government of Western Australia
Public Transport Authority

YANCHEP RAIL EXTENSION

EGLINTON STATION
SITE PLAN

PTA Drawing No: _____ REV: **A**

| | | | | | |
|----------------------|--|---|----|------|-----|
| REV | DATE | DESCRIPTION | BY | CHKD | APP |
| A | 30.07.20 | DEVELOPMENT APPLICATION | BP | SS | AW |
| AMENDMENT | | | | | |
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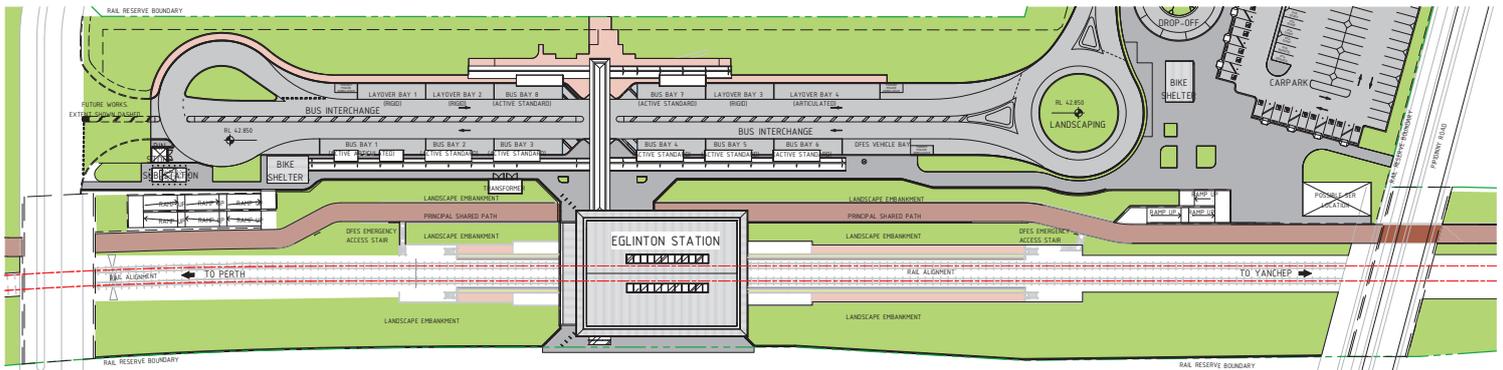
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| REFERENCES | SCALE |
| | As indicated (@ A1) |
| DATUM | HORIZONTAL: PCE20 |
| VERTICAL | AMD71 |
| PTA ACCEPTANCE STAMP | EXECUTIVE DIRECTOR PTA Director / External Company DATE |

| | |
|--------------------|-----------|
| DESIGNED | B.PRIEST |
| DRAWN | S.SERVINA |
| CHECKED | A.WHEELER |
| APPROVED FOR ISSUE | |

- LEGEND**
- EXISTING CADASTRAL BOUNDARIES
 - RAILWAYS RESERVE BOUNDARY
 - BUTLER TO YANCHEP RAIL
 - FUTURE ROADS BY OTHERS
 - FUTURE LOT BOUNDARIES BY OTHERS

- ABBREVIATIONS:**
- BS BICYCLE SHELTER (SECURE)
 - BS/C BUS STAFF (CMB HOOD & TOILET)
 - BST BIN STORE
 - F/BS FUTURE BICYCLE SHELTER (SECURE)
 - FSP PRINCIPAL SHARED PATH
 - PT PARKING TICKET MACHINES & SMARTPARKER
 - SE STRUCTURAL ENGINEER
 - S/STN SUB-STATION
 - TRF TRANSFORMER

FOR CONTINUATION REFER DRAWING
TCY-CAP-YSB-AR-DRG-05



PART SITE PLAN - 1 OF 2
SCALE 1 : 500

| | | | | | |
|------------|----------|-------------------------|----|--|-----|
| REV | DATE | DESCRIPTION | BY | CHKD | APP |
| A | 30.07.20 | DEVELOPMENT APPLICATION | BP | SS | AW |
| ORIG. SIZE | | AMENDMENT | | THIS DOCUMENT MUST NOT BE QUOTED WITHOUT THE WRITTEN PERMISSION, AND THE CONTENTS THEREOF MUST NOT BE REPRODUCED IN ANY MANNER WITHOUT THE WRITTEN PERMISSION OF THE ENGINEER. | |
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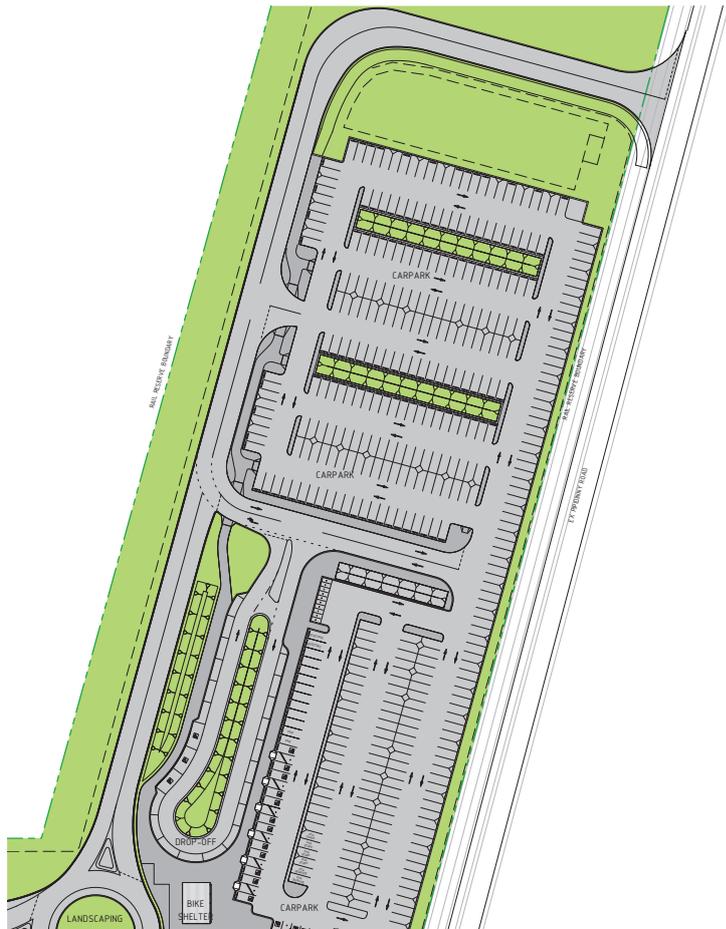
REFERENCES

SCALE : As indicated (@ A1)
 DATUM : PCEG20
 HORIZONTAL : ANZS91
 VERTICAL : ANZS91
 PTA ACCEPTANCE STAMP

DESIGNED B.PRIEST
 DRAWN S.SERVINA
 CHECKED A.WHEELER
 APPROVED FOR ISSUE
 EXECUTIVE DIRECTOR
 DATE PTA Division / External Company

ISSUE FOR DEVELOPMENT APPLICATION

Government of Western Australia
 Public Transport Authority
 YANCHEP RAIL EXTENSION
 EGLINTON STATION
 PART SITE PLAN (PART 1 OF 2)
 PTA Drawing No: REV: A



- LEGEND**
- EXISTING CADASTRAL BOUNDARIES
 - - - RAILWAYS RESERVE BOUNDARY
 - - - BUTLER TO YANCHEP RAIL
 - - - FUTURE ROADS BY OTHERS
 - - - FUTURE LOT BOUNDARIES BY OTHERS
- ABBREVIATIONS:**
- BS BICYCLE SHELTER (SECURE)
 - BAK BIKES STAIRS LMB ROOM & TOILET
 - BST BIN STORE
 - FBS FUTURE BICYCLE SHELTER (SECURE)
 - PSF PRINCIPAL SHOVED PATH
 - PT PARKING TICKET MACHINES & SMARTPARKER
 - SE STRUCTURAL ENGINEER
 - S/STN SUB-STATION
 - TRSF TRANSFORMER

PART SITE PLAN - 2 OF 2
SCALE 1 : 500

FOR CONTINUATION REFER DRAWING
TCY-CAP-YSB-AR-DRG-04



DEVELOPMENT APPLICATION

YANCHEP RAIL EXTENSION
EGLINTON STATION
PART SITE PLAN (PART 2 OF 2)

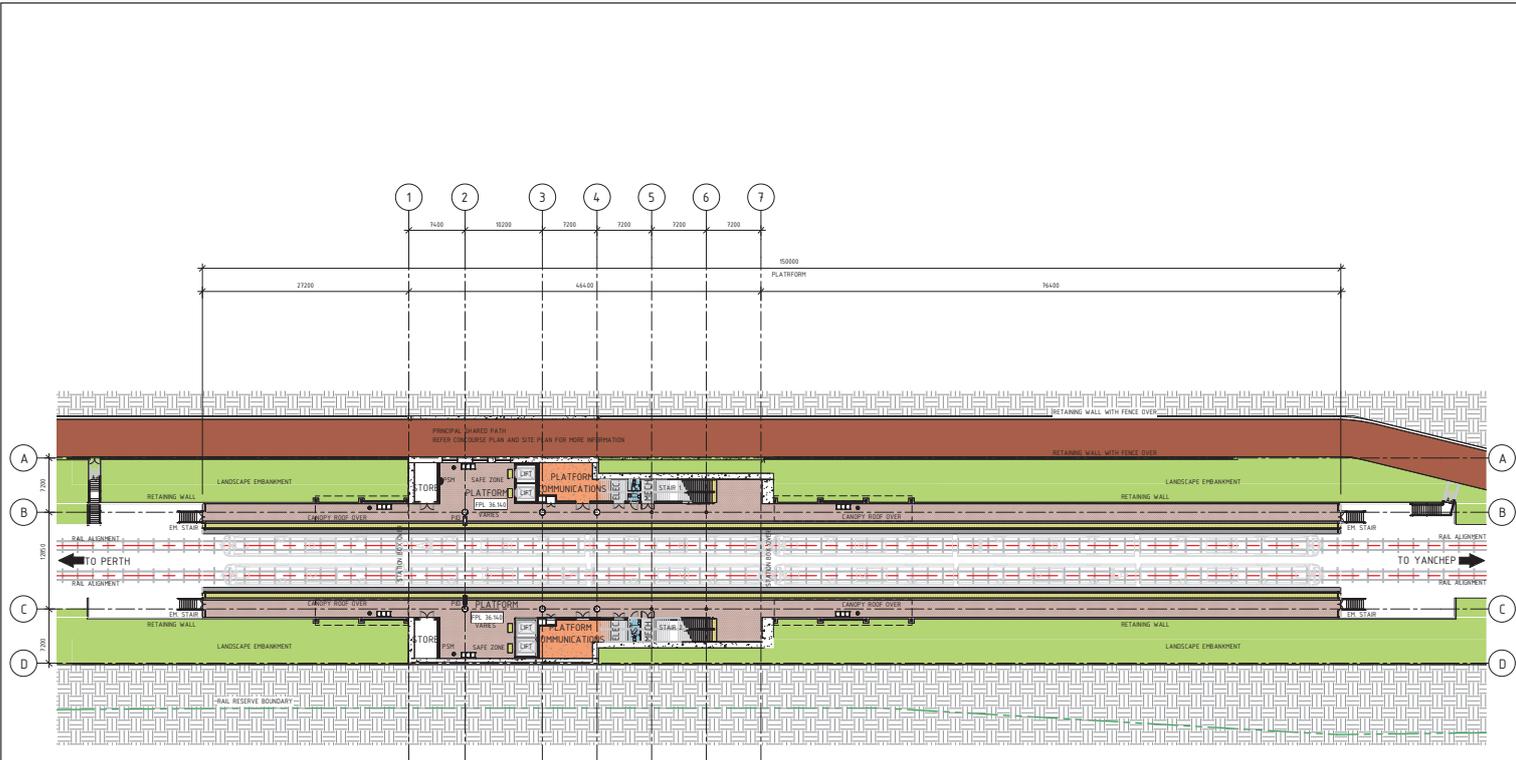
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| ORIG. DATE | | AMENDMENT | DSN | DSN | CHKD |
| A1 | | | | | APP |

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| | | | |
|------------|----------------------|--------------------|---------------------------------|
| REFERENCES | SCALE | DESIGNED | B.PRIEST |
| | As indicated (@ A1) | DRAWN | S.SERVINA |
| | DATUM : PCE20 | CHECKED | A.WHEELER |
| | HORIZONTAL : PCE20 | APPROVED FOR ISSUE | |
| | VERTICAL : AMD21 | EXECUTIVE DIRECTOR | PTA Division / External Company |
| | PTA ACCEPTANCE STAMP | DATE | |



PLATFORM PLAN - OVERALL
SCALE 1 : 250

- FLOOR FINISHES**
- VINYL TYPE 2 - ANTI-STATIC ON SCREED
 - VINYL TYPE 2 ON SCREED
 - CERAMIC TILES TYPE 3 ON SCREED
 - MASONRY PAVERS TO PTA'S STANDARDS
 - TILE - PLATFORM EDGE
 - TACTILE INDICATOR PAVING



ISSUE FOR DEVELOPMENT APPLICATION

| | | | | | |
|---|----------|-------------------------|----|--|-----|
| REV | DATE | DESCRIPTION | BY | CHKD | APP |
| A | 30.07.20 | DEVELOPMENT APPLICATION | BP | SS | AW |
| ORIG. SIZE | | AMENDMENT | | This document must not be taken without written permission, and the contents thereof must not be reported to a third party or be used for any unauthorised purposes. | |
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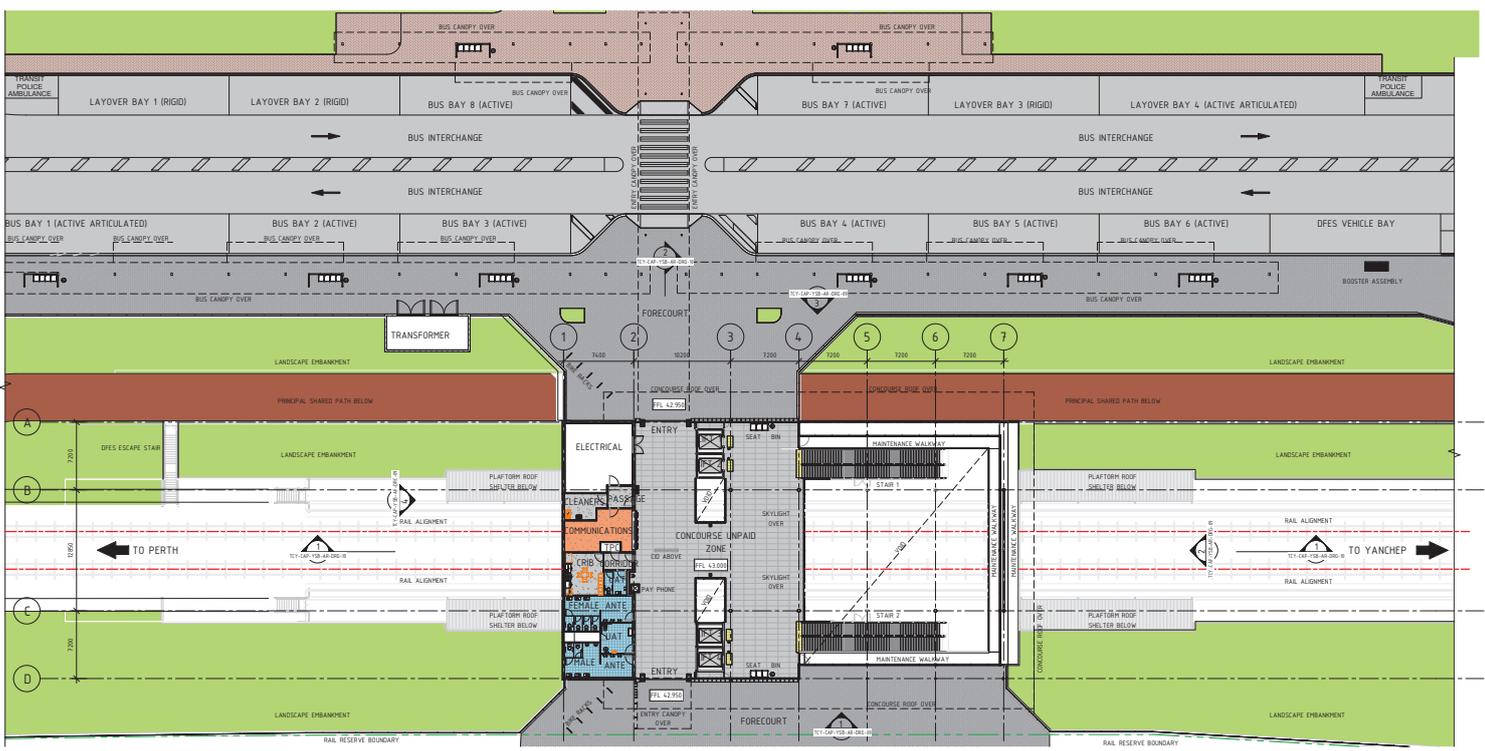
TCY-CAP-YSB-AR-DRG-06

REFERENCES

SCALE : As indicated (@ A1)
 DATUM :
 HORIZONTAL:
 VERTICAL:
 PTA ACCEPTANCE STAMP

DESIGNED B.PRIEST
 DRAWN S.SERVINA
 CHECKED A.WHEELER
 APPROVED FOR ISSUE
 EXECUTIVE DIRECTOR
 PTA Director / External Company
 DATE

| | |
|---|------------------------|
| Government of Western Australia Public Transport Authority | YANCHEP RAIL EXTENSION |
| EGLINTON STATION PLATFORM LEVEL PLAN | |
| PTA Drawing No: | REV: A |



CONCOURSE PLAN - OVERALL
SCALE 1 : 200

- FLOOR FINISHES**
- VINYL TYPE 2 - ANTI-STATIC ON SCREEN
 - VINYL TYPE 2 ON SCREEN
 - CERAMIC TILES TYPE 3 ON SCREEN
 - CERAMIC TILES TYPE 1 ON TOPPING
 - BRICK PAVING REFER TO LANDSCAPE DRAWINGS
 - TACTILE INDICATOR PAVING



| | | | | | |
|------------|----------|-------------------------|-----|-----|------|
| REV | DATE | DESCRIPTION | BY | SS | APP |
| A | 30.07.20 | DEVELOPMENT APPLICATION | BP | SS | AW |
| ORIG. DATE | | AMENDMENT | DSN | DSN | CHKD |
| A1 | | | | | APP |

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TCY-CAP-YSB-AR-DRG-07

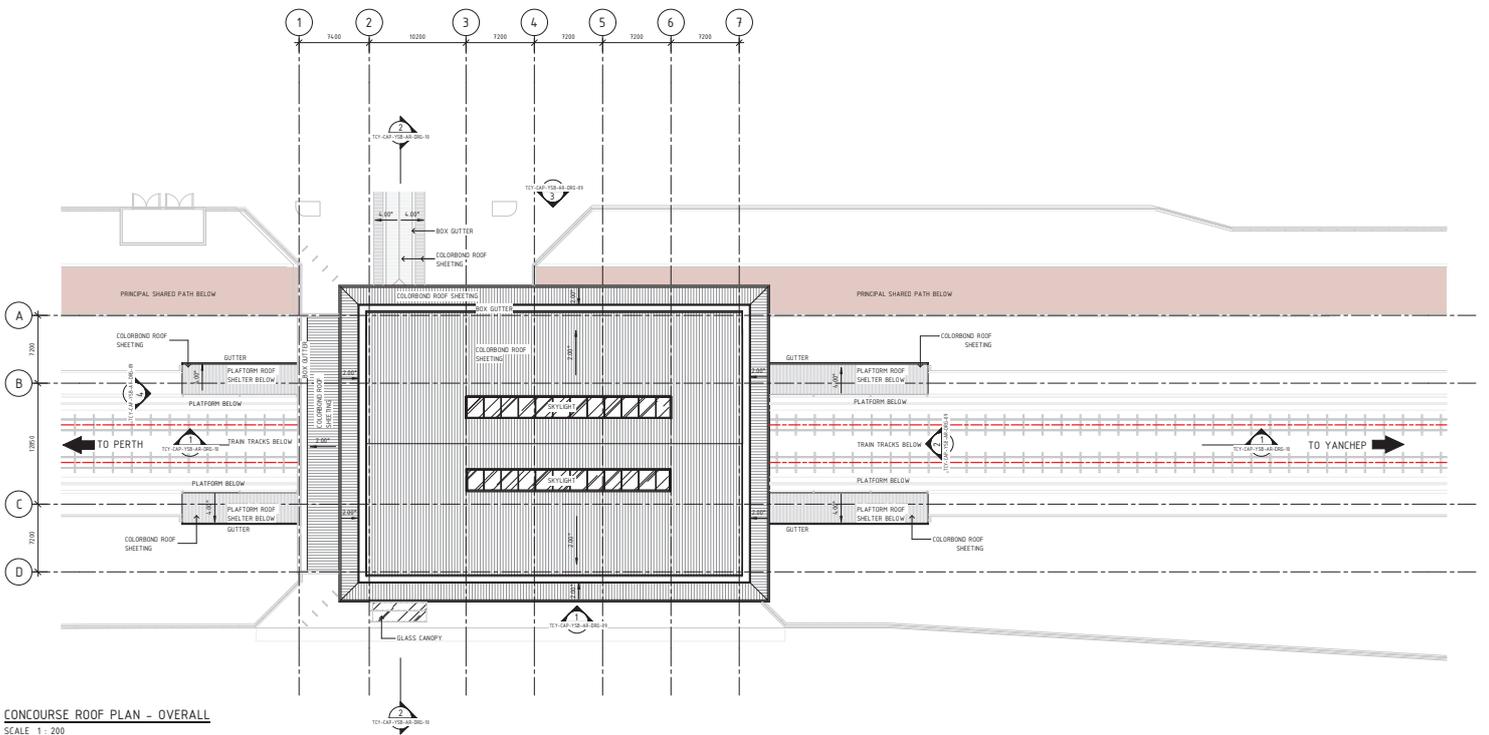
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 VERTICAL : ANZ81
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DESIGNED : B.PRIEST
 DRAWN : S.SERVINA
 CHECKED : A.WHEELER
 APPROVED FOR ISSUE :
 EXECUTIVE DIRECTOR : PTA Division / External Company
 DATE :

DEVELOPMENT APPLICATION

Government of Western Australia
 Public Transport Authority
YANCHEP RAIL EXTENSION
EGLINTON STATION
CONCOURSE LEVEL PLAN
 PTA Drawing No: REV: A



CONCOURSE ROOF PLAN - OVERALL
SCALE 1 : 200

| REV | DATE | DESCRIPTION | BY | CHKD | APP |
|-----|----------|-------------------------|----|------|-----|
| A | 30.07.20 | DEVELOPMENT APPLICATION | BP | SS | ZW |

CAD DRAWING PATHNAME C:\Users\johan\Desktop\TCY-CAP-YSB-AR-001_EGLINTON STATION DEVELOPMENT APPLICATION_johan.txd



TCY-CAP-YSB-AR-DRG-08

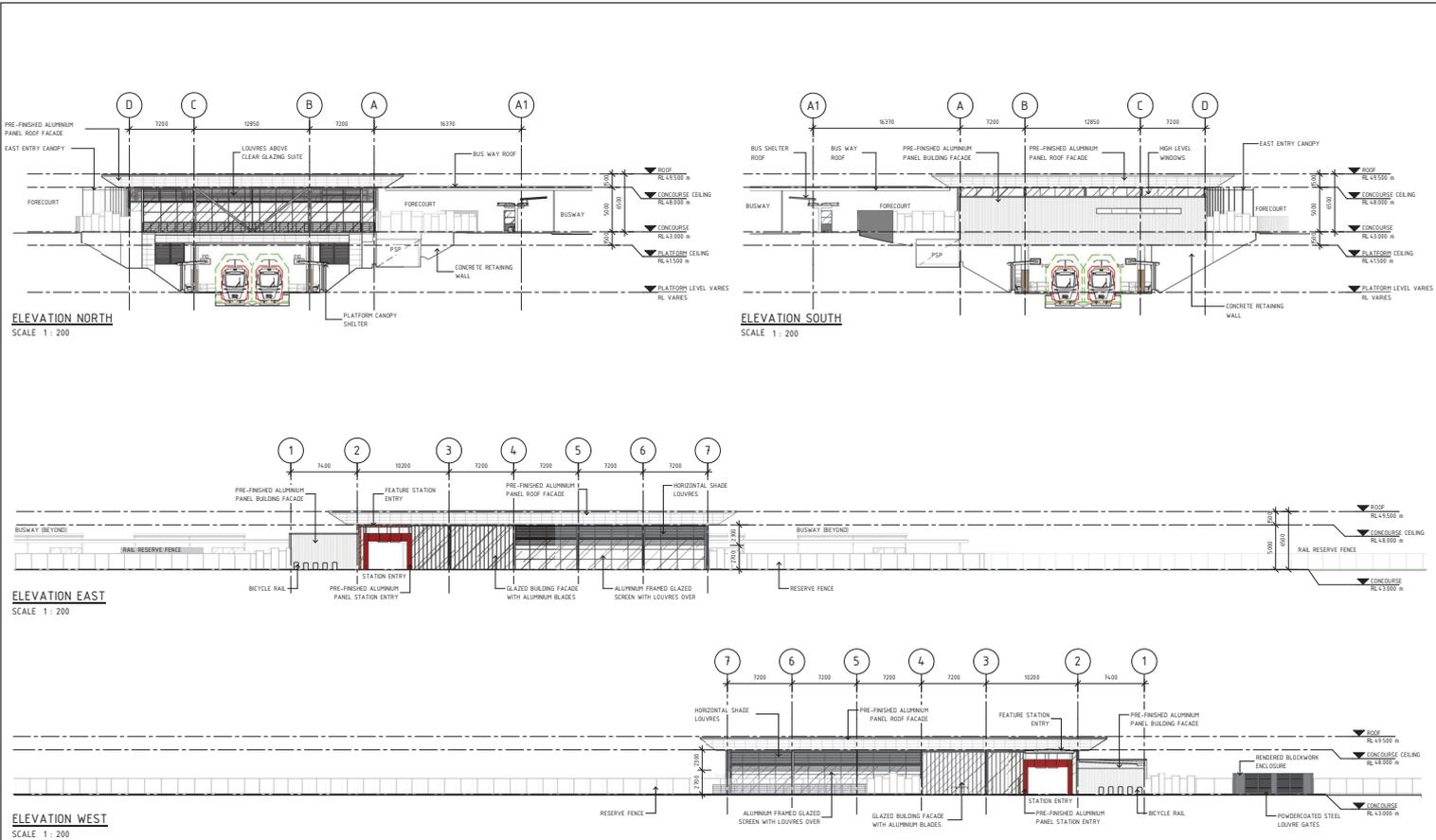
REFERENCES

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 HORIZONTAL : ANZS1
 VERTICAL : ANZS1
 PTA ACCEPTANCE STAMP

DESIGNED : B.PRIEST
 DRAWN : S.SERVINA
 CHECKED : A.WHEELER
 APPROVED FOR ISSUE :
 EXECUTIVE DIRECTOR : PTA Division / External Company
 DATE :

DEVELOPMENT APPLICATION

| | |
|---|------------------------|
| Government of Western Australia Public Transport Authority | YANCHEP RAIL EXTENSION |
| EGLINTON STATION ROOF PLAN | |
| PTA Drawing No: | REV: A |



| | | | | | |
|---|----------|-------------------------|--|------|----------|
| REV | DATE | DESCRIPTION | BY | CHKD | APP |
| A | 30.07.20 | DEVELOPMENT APPLICATION | BP | SS | AW |
| REV DATE | | AMENDMENT | DSN | DSN | CHKD APP |
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TCY-CAP-YSB-AR-DRG-09

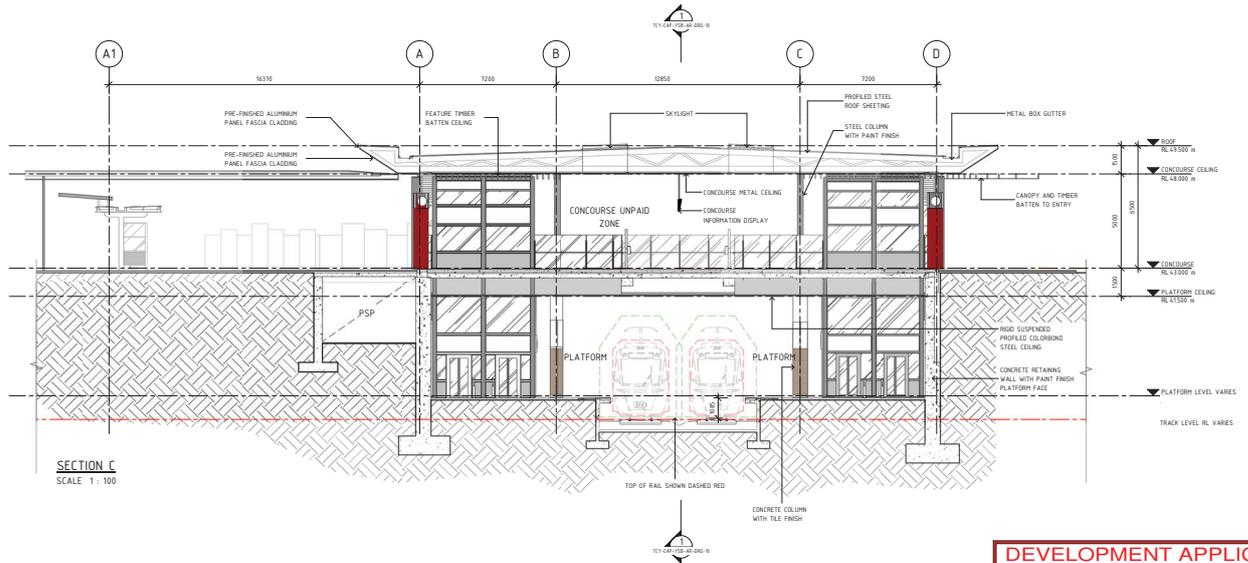
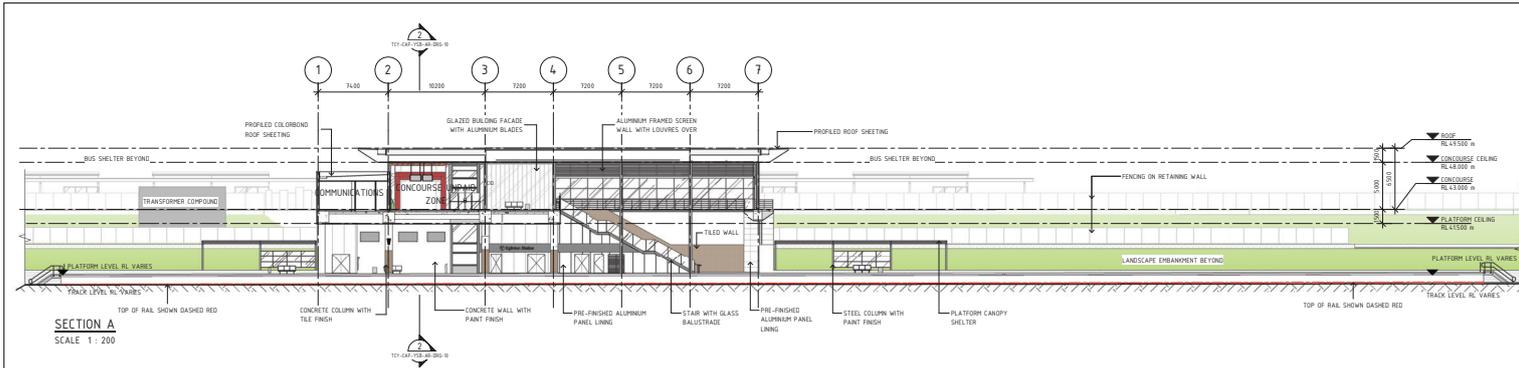
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SCALE : 1 : 200 (@ A1)
 DATUM : PEG20
 HORIZONTAL : AMD71
 VERTICAL : AMD71
 PTA ACCEPTANCE STAMP

DESIGNED : B.PRIEST
 DRAWN : S.SERVINA
 CHECKED : A.WHEELER
 APPROVED FOR ISSUE :
 EXECUTIVE DIRECTOR
 PTA Director / External Company
 DATE

DEVELOPMENT APPLICATION

Government of Western Australia
 Public Transport Authority
YANCHEP RAIL EXTENSION
EGLINTON STATION
ELEVATIONS
 PTA Drawing No: REV: A



| | | | | | |
|------------|----------|-------------------------|----|--|-----|
| REV | DATE | DESCRIPTION | BY | CHKD | APP |
| A | 30.07.20 | DEVELOPMENT APPLICATION | BP | SS | AW |
| ORIG. SIZE | | AMENDMENT | | <small>This document must not be copied, altered, or otherwise used without the written permission, and the contents thereof must not be reported to a third party or be used for any other purpose.</small> | |
| A1 | | A1 ORIGINAL PLOT SIZE | | | |

CAD DRAWING PATHNAME C:\Users\jahan\OneDrive\Documents\TCY-CAP-YSB-AR-MOD-0001_EGLINTON STATION DEVELOPMENT APPLICATION_jahan.dwg



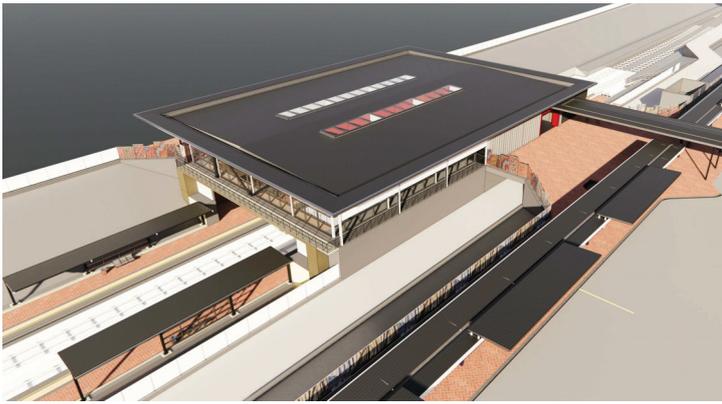
TCY-CAP-YSB-AR-DRG-10

REFERENCES

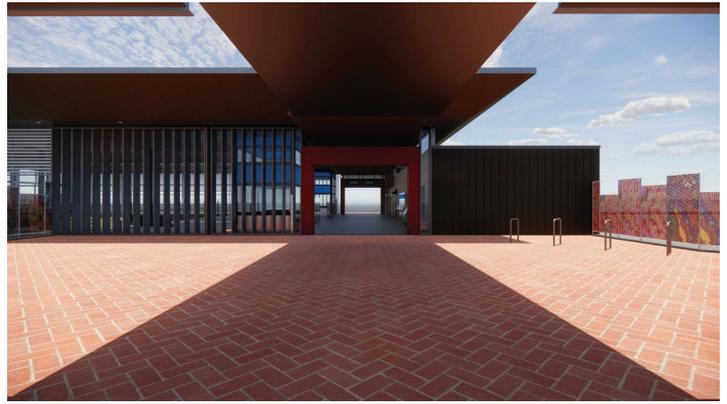
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| DATUM | PCE020 |
| HORIZONTAL | AND/TH |
| VERTICAL | AND/TH |
| PTA ACCEPTANCE STAMP | |

DEVELOPMENT APPLICATION

| | | | |
|--------------------|---------------------------------|---------------------------|------------------------|
| DESIGNED | B.PRIEST | | YANCHEP RAIL EXTENSION |
| DRAWN | S.SERVINA | | |
| CHECKED | A.WHEELER | EGLINTON STATION SECTIONS | |
| EXECUTIVE DIRECTOR | PTA Director / External Company | PTA Drawing No: | REV: A |



EXTERNAL PERSPECTIVE 1 - AERIAL VIEW



EXTERNAL PERSPECTIVE 2 - WEST ENTRY



EXTERNAL PERSPECTIVE 3 - EAST ENTRY

| | | | | | |
|---|----------|-------------------------|----|---|-----|
| REV | DATE | DESCRIPTION | BY | CHKD | APP |
| A | 30.07.20 | DEVELOPMENT APPLICATION | BP | SS | AW |
| ORIG. SIZE | | AMENDMENT | | DSN DSN CHKD APP | |
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TCY-CAP-YSB-AR-DRG-11

REFERENCES

SCALE: NTS (@ A1)
 DATUM: PCE20
 HORIZONTAL: ANZ91
 VERTICAL: ANZ91
 PTA ACCEPTANCE STAMP

DESIGNED: B.PRIEST
 DRAWN: S.SERVINA
 CHECKED: A.WHEELER
 APPROVED FOR ISSUE: [Signature]
 EXECUTIVE DIRECTOR: [Signature]
 DATE: [Blank]

| DEVELOPMENT APPLICATION | |
|------------------------------------|------------------------|
| | YANCHEP RAIL EXTENSION |
| EGLINTON STATION INDICATIVE IMAGES | |
| PTA Drawing No: | REV: A |

APPENDIX E

ROAD BRIDGES DESIGNS

NEWest ALLIANCE YANCHEP RAIL EXTENSION PACKAGE 04 - ROAD OVERBRIDGES ZONE 1 & 2A

| REV No. | DRAWING NUMBER | | DRAWING TITLE |
|--------------------------------------|-------------------------|-----|---|
| | NEWest | PTA | |
| A | TCY-DJV-Y8B-CI-DRG-8882 | | DRAWING INDEX |
| A | TCY-DJV-Y8B-CI-DRG-8910 | | LOCALITY PLAN |
| BRIDGE - SANTORINI PROMENADE | | | |
| A | TCY-DJV-Y8A-CI-DRG-8951 | | SANTORINI PROMENADE - GENERAL ARRANGEMENT |
| A | TCY-DJV-Y8A-CI-DRG-8952 | | SANTORINI PROMENADE - PAVEMENT PLAN |
| A | TCY-DJV-Y8A-CI-DRG-8951 | | SANTORINI PROMENADE - PLAN & PROFILE |
| A | TCY-DJV-Y8A-CI-DRG-8951 | | SANTORINI PROMENADE - TYPICAL SECTION |
| BRIDGE - LWP2 (HOWDEN PARADE) | | | |
| A | TCY-DJV-Y8B-CI-DRG-8951 | | LWP2 HOWDEN PARADE - GENERAL ARRANGEMENT |
| A | TCY-DJV-Y8B-CI-DRG-8952 | | LWP2 HOWDEN PARADE - PAVEMENT PLAN |
| A | TCY-DJV-Y8B-CI-DRG-8951 | | LWP2 HOWDEN PARADE - PLAN & PROFILE |
| A | TCY-DJV-Y8B-CI-DRG-8951 | | LWP2 HOWDEN PARADE - TYPICAL SECTION |
| BRIDGE - ROMEO ROAD | | | |
| A | TCY-DJV-Y8C-CI-DRG-8951 | | ROMEO ROAD - GENERAL ARRANGEMENT |
| A | TCY-DJV-Y8C-CI-DRG-8952 | | ROMEO ROAD - PAVEMENT PLAN |
| A | TCY-DJV-Y8C-CI-DRG-8951 | | ROMEO ROAD - PLAN & PROFILE |
| A | TCY-DJV-Y8C-CI-DRG-8951 | | ROMEO ROAD - TYPICAL SECTION |
| BRIDGE - ALKIMOS DRIVE | | | |
| A | TCY-DJV-Y8D-CI-DRG-8951 | | ALKIMOS DRIVE - GENERAL ARRANGEMENT |
| A | TCY-DJV-Y8D-CI-DRG-8952 | | ALKIMOS DRIVE - PAVEMENT PLAN |
| A | TCY-DJV-Y8D-CI-DRG-8951 | | ALKIMOS DRIVE - PLAN & PROFILE |
| A | TCY-DJV-Y8D-CI-DRG-8951 | | ALKIMOS DRIVE - TYPICAL SECTION |
| BRIDGE - EGLINTON AVENUE | | | |
| A | TCY-DJV-Y8E-CI-DRG-8951 | | EGLINTON AVENUE - GENERAL ARRANGEMENT |
| A | TCY-DJV-Y8E-CI-DRG-8952 | | EGLINTON AVENUE - PAVEMENT PLAN |
| A | TCY-DJV-Y8E-CI-DRG-8951 | | EGLINTON AVENUE - PLAN & PROFILE |
| A | TCY-DJV-Y8E-CI-DRG-8951 | | EGLINTON AVENUE - TYPICAL SECTION |
| BRIDGE - PIPIDINNY ROAD | | | |
| A | TCY-DJV-Y8F-CI-DRG-8951 | | PIPIDINNY ROAD - GENERAL ARRANGEMENT |
| A | TCY-DJV-Y8F-CI-DRG-8952 | | PIPIDINNY ROAD - PAVEMENT PLAN |
| A | TCY-DJV-Y8F-CI-DRG-8951 | | PIPIDINNY ROAD - PLAN & PROFILE |
| A | TCY-DJV-Y8F-CI-DRG-8951 | | PIPIDINNY ROAD - TYPICAL SECTION |
| BRIDGE - YANCHEP BEACH ROAD | | | |
| A | TCY-DJV-Y8G-CI-DRG-8951 | | YANCHEP BEACH ROAD - GENERAL ARRANGEMENT |
| A | TCY-DJV-Y8G-CI-DRG-8952 | | YANCHEP BEACH ROAD - PAVEMENT PLAN |
| A | TCY-DJV-Y8G-CI-DRG-8951 | | YANCHEP BEACH ROAD - PLAN & PROFILE |
| A | TCY-DJV-Y8G-CI-DRG-8951 | | YANCHEP BEACH ROAD - TYPICAL SECTION |

| | | | | | | | |
|------------|----------|--------------------------------|-----------|--|----|----|----|
| REV | DATE | ISSUED FOR 15% DETAILED DESIGN | AMENDMENT | TT | CB | MB | PL |
| A | 28.02.21 | | | | | | |
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TCY-DJV-Y00-CI-DRG-0003

REFERENCES

SCALE : 1:1000

DATUM : PCG20

HORIZONTAL : AHD71

VERTICAL : PTA ACCEPTANCE STAMP

DESIGNED TT

DRAWN CB

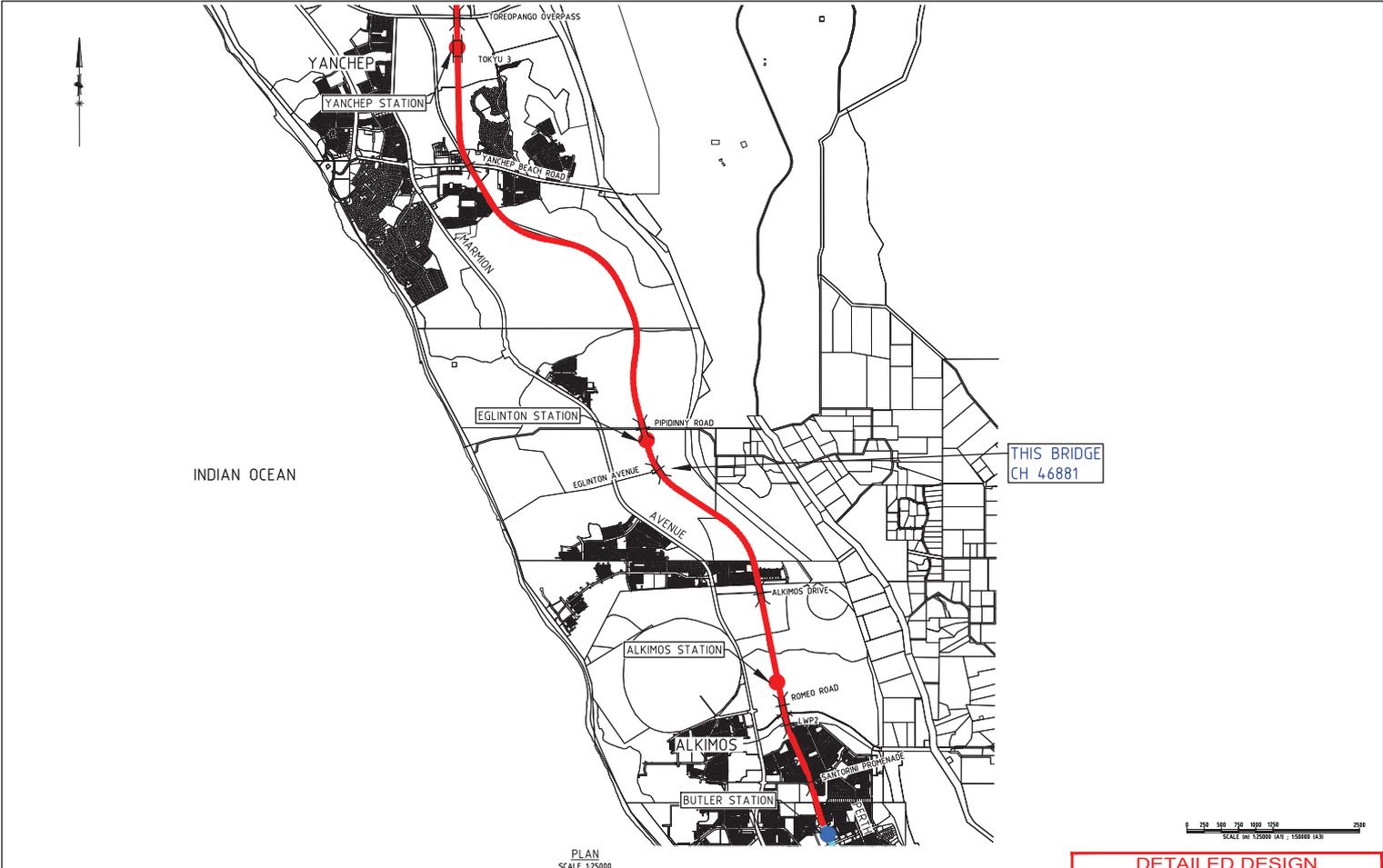
CHECKED MB

APPROVED FOR ISSUE

EXECUTIVE DIRECTOR
PTA Division / External Company
DATE

DETAILED DESIGN

| | |
|---|---------|
| Government of Western Australia Public Transport Authority | METRON |
| YANCHEP RAIL EXTENSION DRAWING INDEX | |
| PTA Drawing No: | REV : A |



PLAN
SCALE 1:25000

| | |
|------------------------|--|
| DETAILED DESIGN | |
| | YANCHEP RAIL EXTENSION ROAD OVERBRIDGES - EGLINTON AVENUE LOCALITY PLAN |
| PTA Drawing No: | REV : A |

| REV | DATE | ISSUED FOR 15% DESIGN | AMENDMENT | CM | GH | AG | PL |
|-----|----------|-----------------------|-----------|----|----|----|----|
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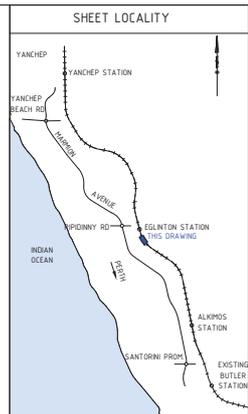
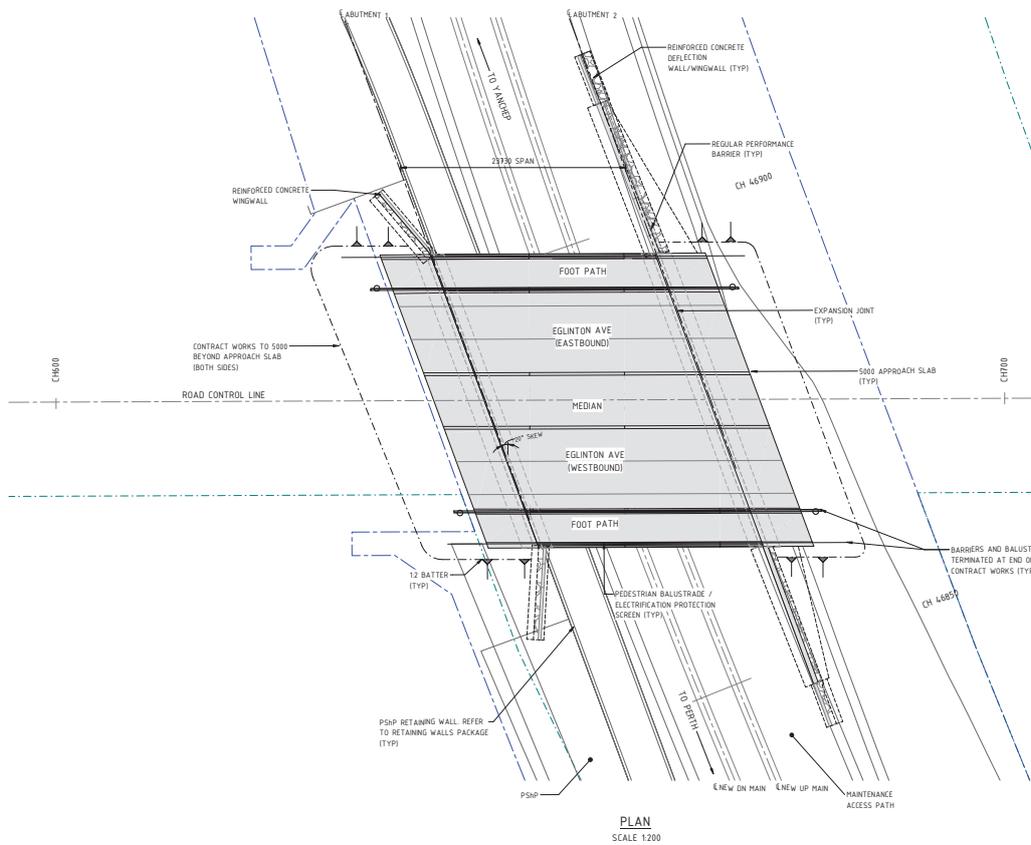
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TCY-DJV-YBE-BR-DRG-0005

| | | |
|--|---|---|
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|--|---|---|



LEGEND

| FEATURES | DESCRIPTION |
|----------|-----------------------|
| | RAIL RESERVE BOUNDARY |
| | DEVELOPMENT ENVELOPE |

NOTES



| REV | DATE | ISSUED FOR | AMENDMENT | D/S | CH | AG | PL |
|-----------|----------|-----------------------|-----------|-----------------------|----|----|----|
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| A1 | | | | | | | |

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NEWest Alliance

TCY-DJV-YBE-BR-DRG-0020

| REFERENCES | SCALE | DESIGNED | CM |
|------------|--------------|----------|----|
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| | | CHECKED | PL |
| | | APPROVED | |
| | DATUM : | PCG20 | |
| | HORIZONTAL : | AHD71 | |
| | VERTICAL : | | |
| | | DATE | |

REFERENCE DESIGN

Government of Western Australia
Public Transport Authority

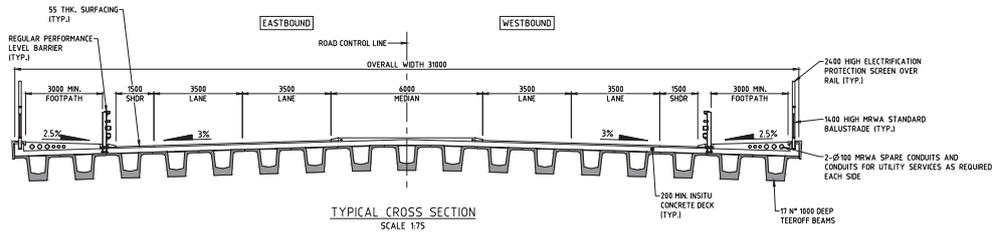
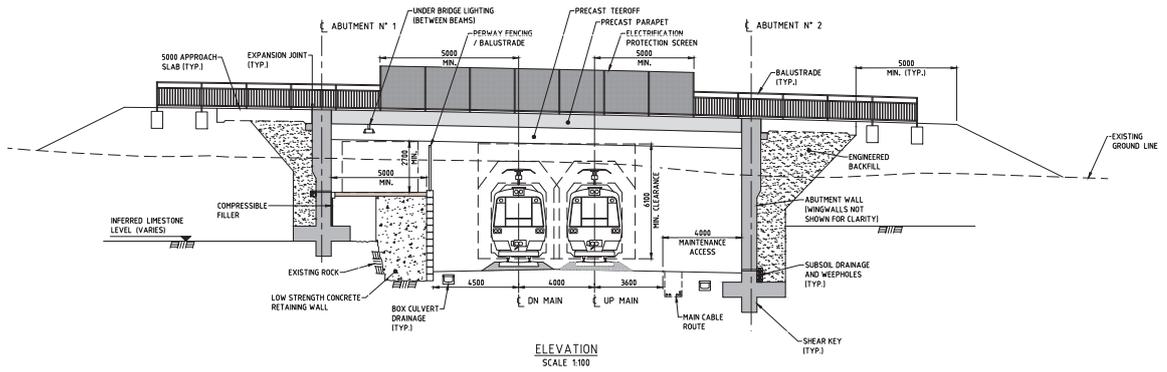
YANCHEP RAIL EXTENSION

ROAD OVERBRIDGES - EGLINTON AVENUE

GENERAL ARRANGEMENT

SHEET 1

PTA Drawing No: _____ REV: **A**



| | | | | | | | |
|-----------------------|----------|-----------------------|-----------|-------|----|----|----|
| REV | DATE | ISSUED FOR 15% DESIGN | AMENDMENT | CM | GH | AG | PL |
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| AT ORIGINAL PLOT SIZE | A1 | | | 100mm | | | |



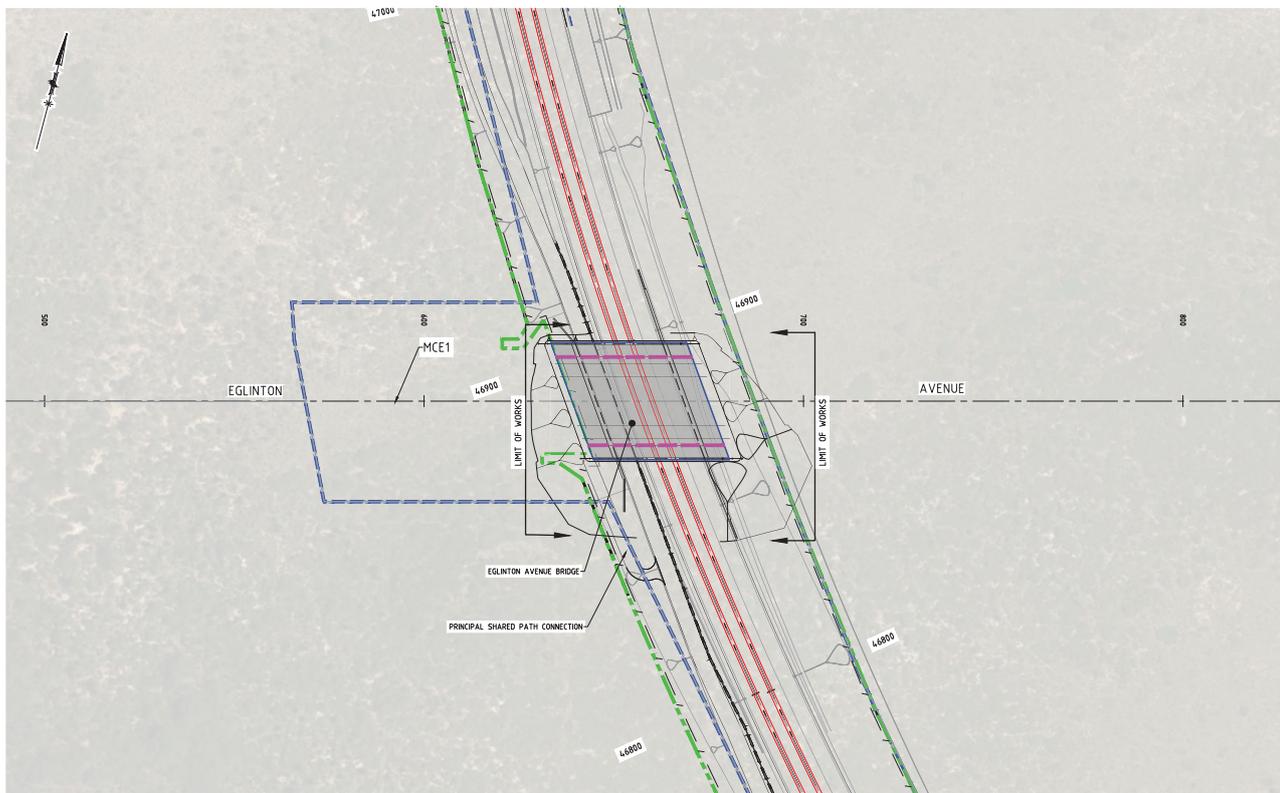
TCY-DJV-YBE-BR-DRG-0021

| |
|--------------------------------|
| REFERENCES |
| TCY-DJV-YBE-BR-REP-BRIDGE-000F |
| TCY-DJV-YBE-BR-REP-BRIDGE-XS |

| | |
|----------------------|--------------|
| SCALE | 1:100 (@ A1) |
| DATUM | PCG20 |
| HORIZONTAL | PCG20 |
| VERTICAL | AHD71 |
| PTA ACCEPTANCE STAMP | |

| | |
|------------------------------------|---------------------------------|
| DETAILED DESIGN | |
| DESIGNED | CM |
| DRAWN | GH |
| CHECKED | AG |
| APPROVED FOR ISSUE | |
| EXECUTIVE DIRECTOR | PTA Director / External Company |
| DATE | |
| | |
| YANCHEP RAIL EXTENSION | |
| ROAD OVERBRIDGES - EGLINTON AVENUE | |
| GENERAL ARRANGEMENT | |
| SHEET 2 | |
| PTA Drawing No: | REV : A |

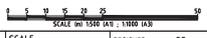
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PLAN
1:500

| NOTES | |
|-------|--|
| 1. | ALL DIMENSIONS IN METRES UNLESS NOTED OTHERWISE. |
| 2. | EXISTING DRAINAGE TO BE SURVEYED AND REVIEWED FOR POTENTIAL MODIFICATIONS. |

| LEGEND | |
|----------|--|
| | NEW RAIL RESERVE BOUNDARY |
| | DEVELOPMENT ENVELOPE |
| | RETAINING WALL |
| | ASPH |
| | PROPOSED RAIL LINE |
| | DRAINAGE PIPE |
| | SKANKWELL |
| | BLENDED AREA |
| BARRIERS | |
| | W-BEAM BARRIER |
| | L-RAIL BRIDGE BARRIER |
| | THREE-BEAM BARRIER |
| | CONCRETE BARRIER |
| | X-TENSION TERMINAL |
| | TRAILING TERMINAL |
| FENCING | |
| | TYPE 1 - 1800mm GALVANIZED CHAINWIRE FENCE WITH THREE BARBED STRANDS (NOT CRANKED) |



| DETAILED DESIGN | |
|--------------------|-------------------------------------|
| DESIGNED | DR |
| DRAWN | GC |
| CHECKED | TB |
| APPROVED FOR ISSUE | |
| EXECUTIVE DIRECTOR | PTA Director / Executive Generalist |
| DATE | |

| | |
|---|----------|
| Government of Western Australia Public Transport Authority | METRONET |
| YANCHEP RAIL EXTENSION | |
| EGLINTON AVENUE | |
| GENERAL ARRANGEMENT PLAN | |
| PTA Drawing No: | REV : A |

| REV | DATE | ISSUED FOR 15% DETAILED DESIGN | AMENDMENT | DR | CB | TB | APP |
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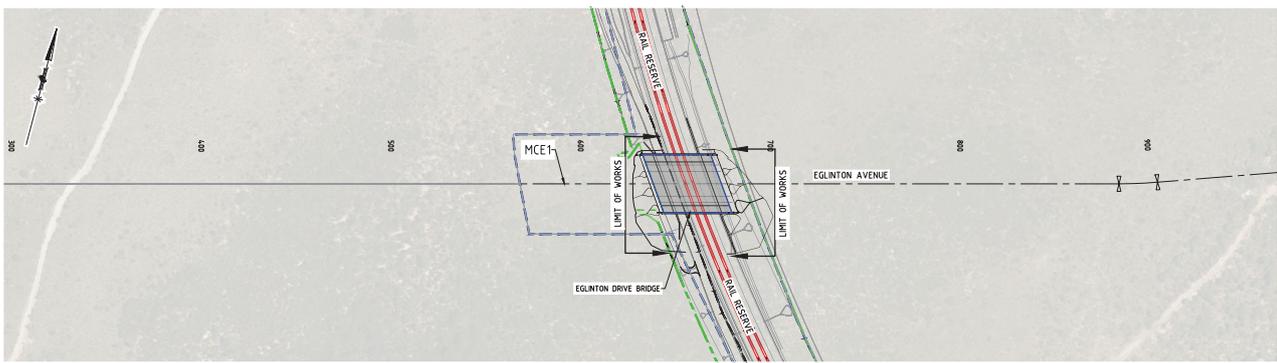
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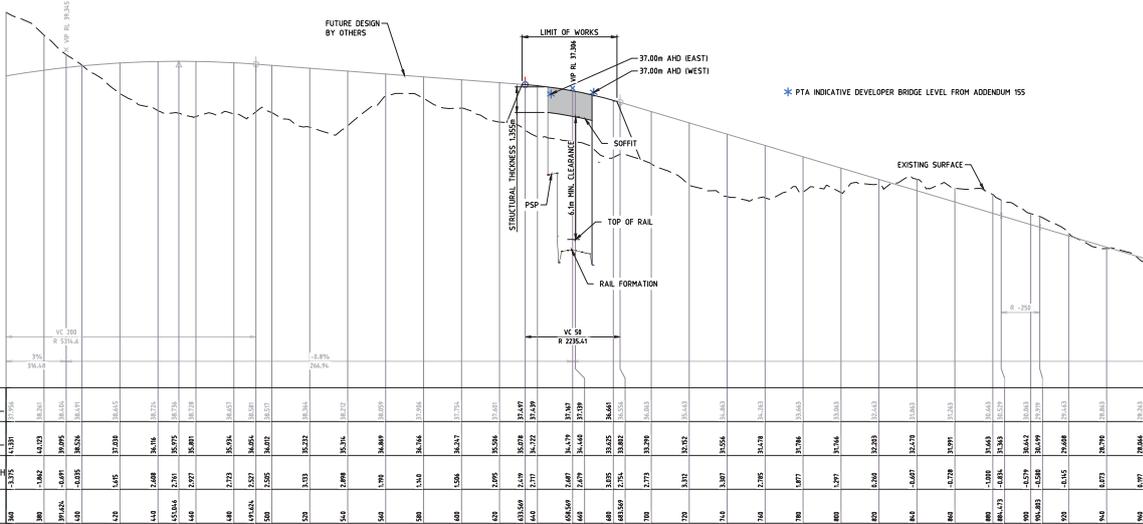
TCY-DJV-YBE-CI-DRG-0051

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| 2. 1:500 (A1) - 13.03.20 |
| 3. 1:500 (A1) - 13.03.20 |
| 4. 1:500 (A1) - 13.03.20 |
| 5. 1:500 (A1) - 13.03.20 |
| 6. 1:500 (A1) - 13.03.20 |
| 7. 1:500 (A1) - 13.03.20 |
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| 49. 1:500 (A1) - 13.03.20 |
| 50. 1:500 (A1) - 13.03.20 |

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PLAN
1:1000



HORIZONTAL CURVE DATA

VERTICAL CURVE LENGTH (m)
VERTICAL CURVE RADIUS (m)
VERTICAL GEOMETRY GRADE (%)
VERTICAL GEOMETRY LENGTH (m)
DATUM RL = 21.400

| STATION | FINISHED SURFACE LEVEL | EXISTING SURFACE LEVEL | CUT (l-vel) / FILL (l-vel) DEPTH | MCE1 CHAINAGE |
|---------|------------------------|------------------------|----------------------------------|---------------|
| 380 | 17.750 | 17.750 | 0.000 | 380 |
| 385 | 18.250 | 18.250 | 0.000 | 385 |
| 390 | 18.750 | 18.750 | 0.000 | 390 |
| 395 | 19.250 | 19.250 | 0.000 | 395 |
| 400 | 19.750 | 19.750 | 0.000 | 400 |
| 405 | 20.250 | 20.250 | 0.000 | 405 |
| 410 | 20.750 | 20.750 | 0.000 | 410 |
| 415 | 21.250 | 21.250 | 0.000 | 415 |
| 420 | 21.750 | 21.750 | 0.000 | 420 |
| 425 | 22.250 | 22.250 | 0.000 | 425 |
| 430 | 22.750 | 22.750 | 0.000 | 430 |
| 435 | 23.250 | 23.250 | 0.000 | 435 |
| 440 | 23.750 | 23.750 | 0.000 | 440 |
| 445 | 24.250 | 24.250 | 0.000 | 445 |
| 450 | 24.750 | 24.750 | 0.000 | 450 |
| 455 | 25.250 | 25.250 | 0.000 | 455 |
| 460 | 25.750 | 25.750 | 0.000 | 460 |
| 465 | 26.250 | 26.250 | 0.000 | 465 |
| 470 | 26.750 | 26.750 | 0.000 | 470 |
| 475 | 27.250 | 27.250 | 0.000 | 475 |
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| 485 | 28.250 | 28.250 | 0.000 | 485 |
| 490 | 28.750 | 28.750 | 0.000 | 490 |
| 495 | 29.250 | 29.250 | 0.000 | 495 |
| 500 | 29.750 | 29.750 | 0.000 | 500 |
| 505 | 30.250 | 30.250 | 0.000 | 505 |
| 510 | 30.750 | 30.750 | 0.000 | 510 |
| 515 | 31.250 | 31.250 | 0.000 | 515 |
| 520 | 31.750 | 31.750 | 0.000 | 520 |
| 525 | 32.250 | 32.250 | 0.000 | 525 |
| 530 | 32.750 | 32.750 | 0.000 | 530 |
| 535 | 33.250 | 33.250 | 0.000 | 535 |
| 540 | 33.750 | 33.750 | 0.000 | 540 |
| 545 | 34.250 | 34.250 | 0.000 | 545 |
| 550 | 34.750 | 34.750 | 0.000 | 550 |
| 555 | 35.250 | 35.250 | 0.000 | 555 |
| 560 | 35.750 | 35.750 | 0.000 | 560 |
| 565 | 36.250 | 36.250 | 0.000 | 565 |
| 570 | 36.750 | 36.750 | 0.000 | 570 |
| 575 | 37.250 | 37.250 | 0.000 | 575 |
| 580 | 37.750 | 37.750 | 0.000 | 580 |
| 585 | 38.250 | 38.250 | 0.000 | 585 |
| 590 | 38.750 | 38.750 | 0.000 | 590 |
| 595 | 39.250 | 39.250 | 0.000 | 595 |
| 600 | 39.750 | 39.750 | 0.000 | 600 |
| 605 | 40.250 | 40.250 | 0.000 | 605 |
| 610 | 40.750 | 40.750 | 0.000 | 610 |
| 615 | 41.250 | 41.250 | 0.000 | 615 |
| 620 | 41.750 | 41.750 | 0.000 | 620 |
| 625 | 42.250 | 42.250 | 0.000 | 625 |
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| 635 | 43.250 | 43.250 | 0.000 | 635 |
| 640 | 43.750 | 43.750 | 0.000 | 640 |
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| 650 | 44.750 | 44.750 | 0.000 | 650 |
| 655 | 45.250 | 45.250 | 0.000 | 655 |
| 660 | 45.750 | 45.750 | 0.000 | 660 |
| 665 | 46.250 | 46.250 | 0.000 | 665 |
| 670 | 46.750 | 46.750 | 0.000 | 670 |
| 675 | 47.250 | 47.250 | 0.000 | 675 |
| 680 | 47.750 | 47.750 | 0.000 | 680 |
| 685 | 48.250 | 48.250 | 0.000 | 685 |
| 690 | 48.750 | 48.750 | 0.000 | 690 |
| 695 | 49.250 | 49.250 | 0.000 | 695 |
| 700 | 49.750 | 49.750 | 0.000 | 700 |
| 705 | 50.250 | 50.250 | 0.000 | 705 |
| 710 | 50.750 | 50.750 | 0.000 | 710 |
| 715 | 51.250 | 51.250 | 0.000 | 715 |
| 720 | 51.750 | 51.750 | 0.000 | 720 |
| 725 | 52.250 | 52.250 | 0.000 | 725 |
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| 740 | 53.750 | 53.750 | 0.000 | 740 |
| 745 | 54.250 | 54.250 | 0.000 | 745 |
| 750 | 54.750 | 54.750 | 0.000 | 750 |
| 755 | 55.250 | 55.250 | 0.000 | 755 |
| 760 | 55.750 | 55.750 | 0.000 | 760 |
| 765 | 56.250 | 56.250 | 0.000 | 765 |
| 770 | 56.750 | 56.750 | 0.000 | 770 |
| 775 | 57.250 | 57.250 | 0.000 | 775 |
| 780 | 57.750 | 57.750 | 0.000 | 780 |
| 785 | 58.250 | 58.250 | 0.000 | 785 |
| 790 | 58.750 | 58.750 | 0.000 | 790 |
| 795 | 59.250 | 59.250 | 0.000 | 795 |
| 800 | 59.750 | 59.750 | 0.000 | 800 |
| 805 | 60.250 | 60.250 | 0.000 | 805 |
| 810 | 60.750 | 60.750 | 0.000 | 810 |
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| 825 | 62.250 | 62.250 | 0.000 | 825 |
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| 840 | 63.750 | 63.750 | 0.000 | 840 |
| 845 | 64.250 | 64.250 | 0.000 | 845 |
| 850 | 64.750 | 64.750 | 0.000 | 850 |
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| 860 | 65.750 | 65.750 | 0.000 | 860 |
| 865 | 66.250 | 66.250 | 0.000 | 865 |
| 870 | 66.750 | 66.750 | 0.000 | 870 |
| 875 | 67.250 | 67.250 | 0.000 | 875 |
| 880 | 67.750 | 67.750 | 0.000 | 880 |
| 885 | 68.250 | 68.250 | 0.000 | 885 |
| 890 | 68.750 | 68.750 | 0.000 | 890 |
| 895 | 69.250 | 69.250 | 0.000 | 895 |
| 900 | 69.750 | 69.750 | 0.000 | 900 |
| 905 | 70.250 | 70.250 | 0.000 | 905 |
| 910 | 70.750 | 70.750 | 0.000 | 910 |
| 915 | 71.250 | 71.250 | 0.000 | 915 |
| 920 | 71.750 | 71.750 | 0.000 | 920 |
| 925 | 72.250 | 72.250 | 0.000 | 925 |
| 930 | 72.750 | 72.750 | 0.000 | 930 |
| 935 | 73.250 | 73.250 | 0.000 | 935 |
| 940 | 73.750 | 73.750 | 0.000 | 940 |
| 945 | 74.250 | 74.250 | 0.000 | 945 |
| 950 | 74.750 | 74.750 | 0.000 | 950 |
| 955 | 75.250 | 75.250 | 0.000 | 955 |
| 960 | 75.750 | 75.750 | 0.000 | 960 |
| 965 | 76.250 | 76.250 | 0.000 | 965 |
| 970 | 76.750 | 76.750 | 0.000 | 970 |
| 975 | 77.250 | 77.250 | 0.000 | 975 |
| 980 | 77.750 | 77.750 | 0.000 | 980 |
| 985 | 78.250 | 78.250 | 0.000 | 985 |
| 990 | 78.750 | 78.750 | 0.000 | 990 |
| 995 | 79.250 | 79.250 | 0.000 | 995 |
| 1000 | 79.750 | 79.750 | 0.000 | 1000 |

| REV | DATE | ISSUED FOR 15% DETAILED DESIGN | AMENDMENT | DR | CB | TB | APP |
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| A | 13.03.20 | | | | | | |

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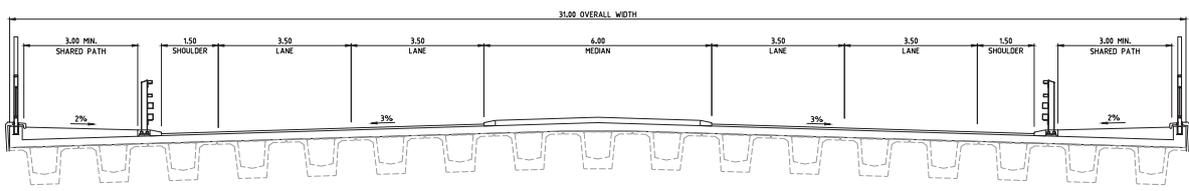
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DETAILED DESIGN
 Government of Western Australia
 Public Transport Authority
METRONET
YANCHEP RAIL EXTENSION
EGLINTON AVENUE
PLAN AND PROFILE
 PTA Drawing No: _____ REV: A

NOTES
 1. ALL DIMENSIONS IN METRES UNLESS NOTED OTHERWISE.
 2. EXISTING DRAINAGE TO BE SURVEYED AND REVIEWED FOR POTENTIAL MODIFICATIONS.

LEGEND
 - - - NEW RAIL RESERVE BOUNDARY
 - - - DEVELOPMENT ENVELOPE
 - - - RETAINING WALL
 - - - KERB
 - - - PROPOSED RAIL LINE
 DRAINAGE PIPE
 SEWER WELL
 BLENDED AREA

NOTES
 1. ALL DIMENSIONS IN METRES UNLESS NOTED OTHERWISE.
 2. REFER TO STRUCTURAL DRAWINGS FOR DETAILS.



TYPICAL SECTION
 EGLINTON AVENUE
 SCALE 1:50



| | | | | | | | |
|----------------------|----------|--|-----------|----|----|----|-----|
| REV | DATE | ISSUED FOR 15% DETAILED DESIGN | AMENDMENT | DR | CB | TB | APP |
| A | 13.03.20 | | | | | | |
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TCY-DJV-YBE-CI-DRG-0151

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| VERTICAL | AHD71 |
| PTA ACCEPTANCE STAMP | |

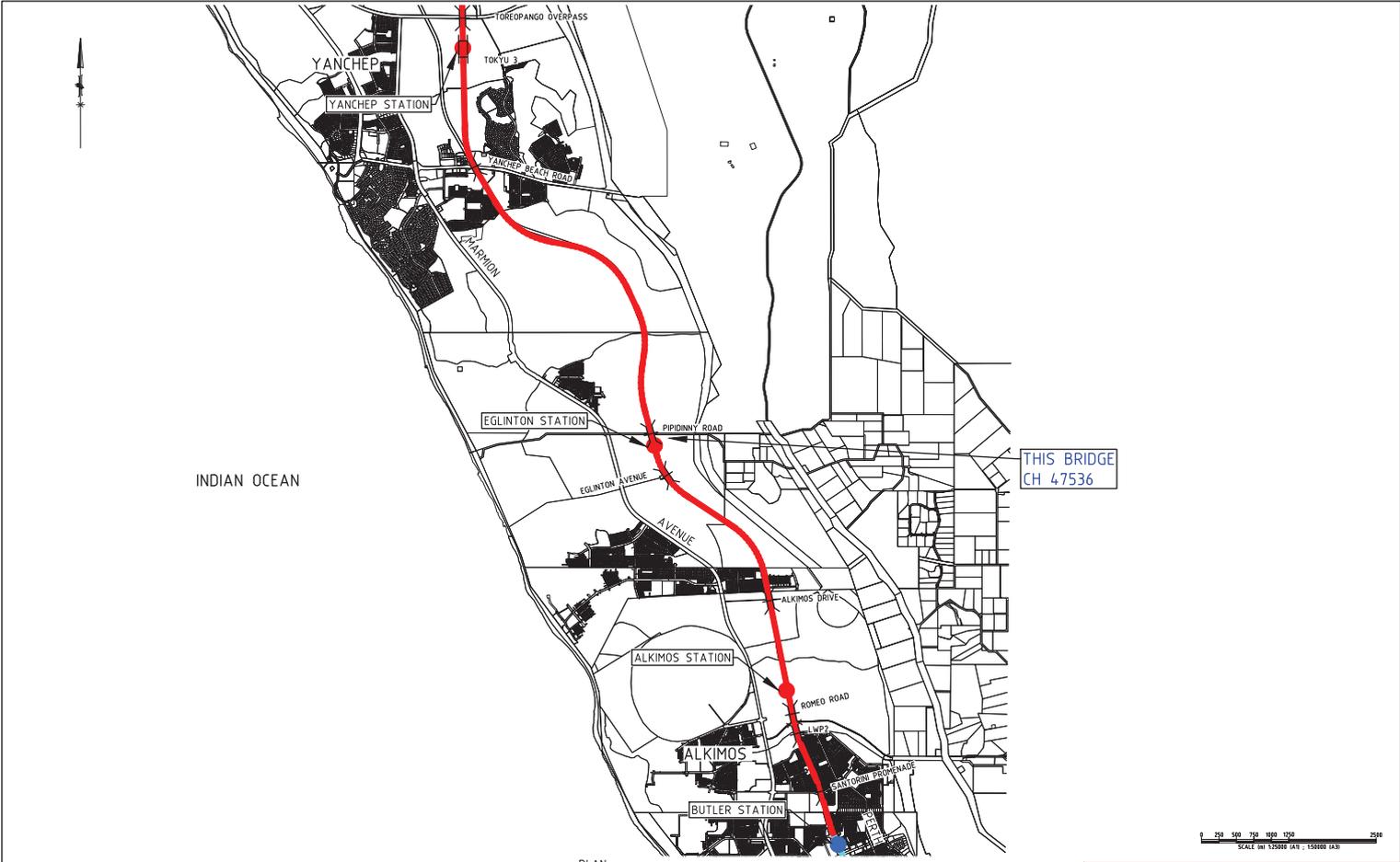
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| DESIGNED | DR |
| DRAWN | GC |
| CHECKED | TB |
| APPROVED FOR ISSUE | |
| EXECUTIVE DIRECTOR | |
| PTA Director / External Company | |
| DATE | |

| | |
|---|----------|
| DETAILED DESIGN | |
| | METRONET |
| YANCHEP RAIL EXTENSION EGLINTON AVENUE TYPICAL CROSS SECTION | |
| PTA Drawing No: | REV : A |

NEWest ALLIANCE YANCHEP RAIL EXTENSION PACKAGE 04 - ROAD OVERBRIDGES PIPIDINNY ROAD (CH 47536)

| REV No. | DRAWING NUMBER | | DRAWING TITLE |
|---------|-------------------------|-----|-------------------------------|
| | NEWest | PTA | |
| A | TCY-DJV-YBF-BR-DRG-0001 | | DRAWING INDEX |
| A | TCY-DJV-YBF-BR-DRG-0005 | | LOCALITY PLAN |
| A | TCY-DJV-YBF-BR-DRG-0029 | | GENERAL ARRANGEMENT - SHEET 1 |
| A | TCY-DJV-YBF-BR-DRG-0021 | | GENERAL ARRANGEMENT - SHEET 2 |

| |  <p>NEWest Alliance</p> | <p>REFERENCES</p> | <p>SCALE : NA (@ A1)</p> <p>DATUM</p> <p>HORIZONTAL: PCG20</p> <p>VERTICAL: AH071</p> <p>PTA ACCEPTANCE STAMP</p> | <p>DESIGNED CM</p> <p>DRAWN GH</p> <p>CHECKED AG</p> <p>APPROVED FOR ISSUE</p> <p>EXECUTIVE DIRECTOR PTA Division / External Company</p> | DETAILED DESIGN | | | | | | | | | | | | | | |
|--|---|-----------------------|---|--|------------------------|----|----|----|---|----------|-----------------------|--|--|--|--|--|--------------------------------|--|--|
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| REV | DATE | ISSUED FOR 15% DESIGN | AMENDMENT | CM | GH | AG | PL | | | | | | | | | | | | |
| A | 13.03.20 | ISSUED FOR 15% DESIGN | | | | | | | | | | | | | | | | | |



PLAN
SCALE 1:25000

| REV | DATE | ISSUED FOR 15% DESIGN | AMENDMENT | CM | GH | AG | PL |
|-----|----------|-----------------------|-----------|----|----|----|----|
| A | 13.03.20 | ISSUED FOR 15% DESIGN | | | | | |

ORIG. SIZE: 0 10 20 30 40 50 100m

A1 AT ORIGINAL PLOT SIZE

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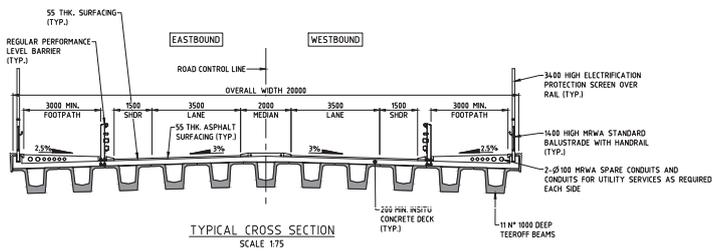
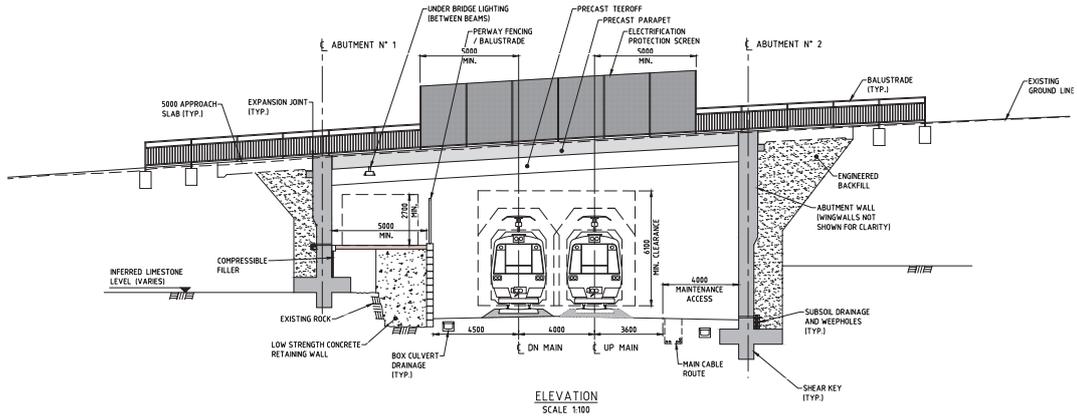
TCY-DJV-YBF-BR-DRG-0005

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| DATUM: | |
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| VERTICAL: | AHD71 |
| PTA ACCEPTANCE STAMP | |

| | |
|---------------------------------|----|
| DESIGNED | CM |
| DRAWN | GH |
| CHECKED | AG |
| APPROVED FOR ISSUE | |
| EXECUTIVE DIRECTOR | |
| PTA Director / External Company | |
| DATE | |

| DETAILED DESIGN | |
|---|------------------------|
| | YANCHEP RAIL EXTENSION |
| ROAD OVERBRIDGES - PIPIDINNY ROAD LOCALITY PLAN | |
| PTA Drawing No: | REV : A |



| | | | | | | | |
|------------|----------|-----------------------|-----------|-----------------------|----|----|----|
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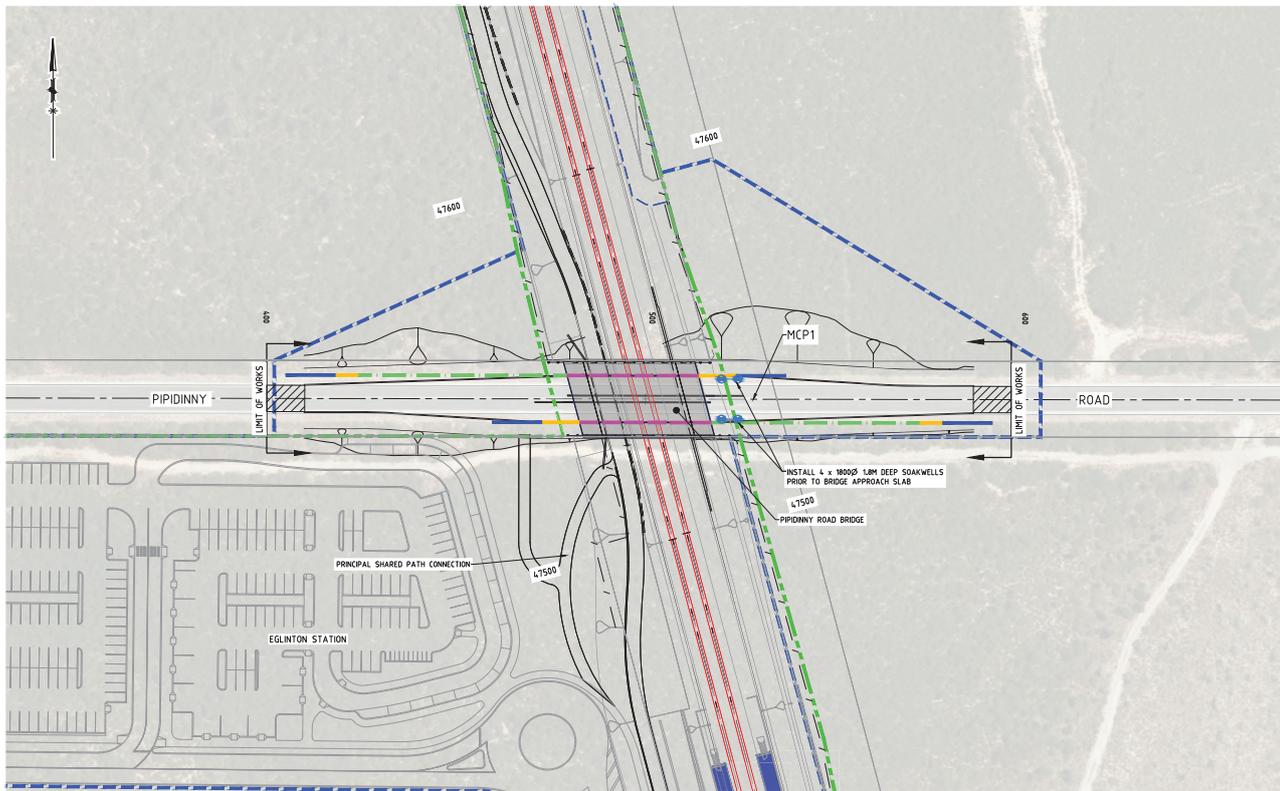


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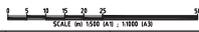
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| DETAILED DESIGN | |
| DESIGNED | CM |
| DRAWN | GH |
| CHECKED | AG |
| APPROVED FOR ISSUE | |
| EXECUTIVE DIRECTOR | PTA Division / External Company |
| DATE | |
| | |
| YANCHEP RAIL EXTENSION | |
| ROAD OVERBRIDGES - PIPIDINNY ROAD | |
| GENERAL ARRANGEMENT | |
| SHEET 2 | |
| PTA Drawing No: | REV : A |



PLAN
1500

- NOTES**
- ALL DIMENSIONS IN METRES UNLESS NOTED OTHERWISE.
 - EXISTING DRAINAGE TO BE SURVEYED AND REVIEWED FOR POTENTIAL MODIFICATIONS.
- LEGEND**
- NEW RAIL RESERVE BOUNDARY
 - DEVELOPMENT ENVELOPE
 - RETAINING WALL
 - ASPH
 - PROPOSED RAIL LINE
 - DRAINAGE PIPE
 - SOAKWELL
 - BLENDED AREA
- BARRIERS**
- W-BEAM BARRIER
 - L-RAIL BRIDGE BARRIER
 - THREE-BEAM BARRIER
 - CONCRETE BARRIER
 - X-TENSION TERMINAL
 - TRAILING TERMINAL
- FENCING**
- TYPE 1 - 1800mm GALVANIZED CHANNEL FENCE WITH THREE BARBED STRANDS (NOT CRANKED)



DETAILED DESIGN

| | | | | | | |
|------------|----------|--------------------------------|-----------|---|----|----|
| REV | DATE | ISSUED FOR 15% DETAILED DESIGN | AMENDMENT | DR | CB | BS |
| A | 13.03.20 | | | | | |
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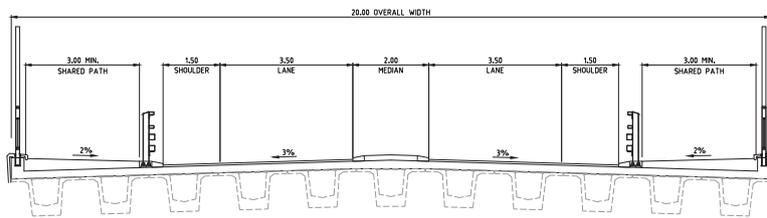


TCY-DJV-YBF-CI-DRG-0051

REFERENCES

- 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NOTES
 1. ALL DIMENSIONS IN METRES UNLESS NOTED OTHERWISE.
 2. REFER TO STRUCTURAL DRAWINGS FOR DETAILS.



TYPICAL SECTION
 PIPIDINNY ROAD
 SCALE 1:50



| | | | | | | | |
|----------------------|----------|---|-----------|-------|----|---|-----|
| REV | DATE | ISSUED FOR 15% DETAILED DESIGN | AMENDMENT | DR | CB | TB | APP |
| A | 13.03.20 | | | | | | |
| ORIG. SIZE | | A1 | | 100mm | | This document must not be copied, altered, printed, reproduced, or otherwise used without the written permission of the author. It is to be used for any other purpose. | |
| CAD DRAWING PATHNAME | | K:\Engineering & Design\EST Draft Documentation\ET_DJV-YBF-CI-DRG-0151_DRG\ET-DJV-YBF-CI-DRG-0151.dwg | | | | | |

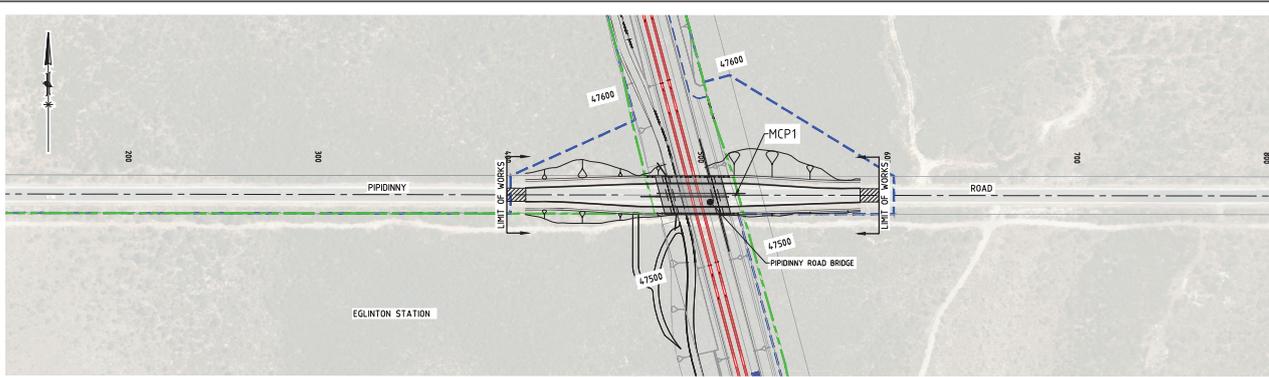


TCY-DJV-YBF-CI-DRG-0151

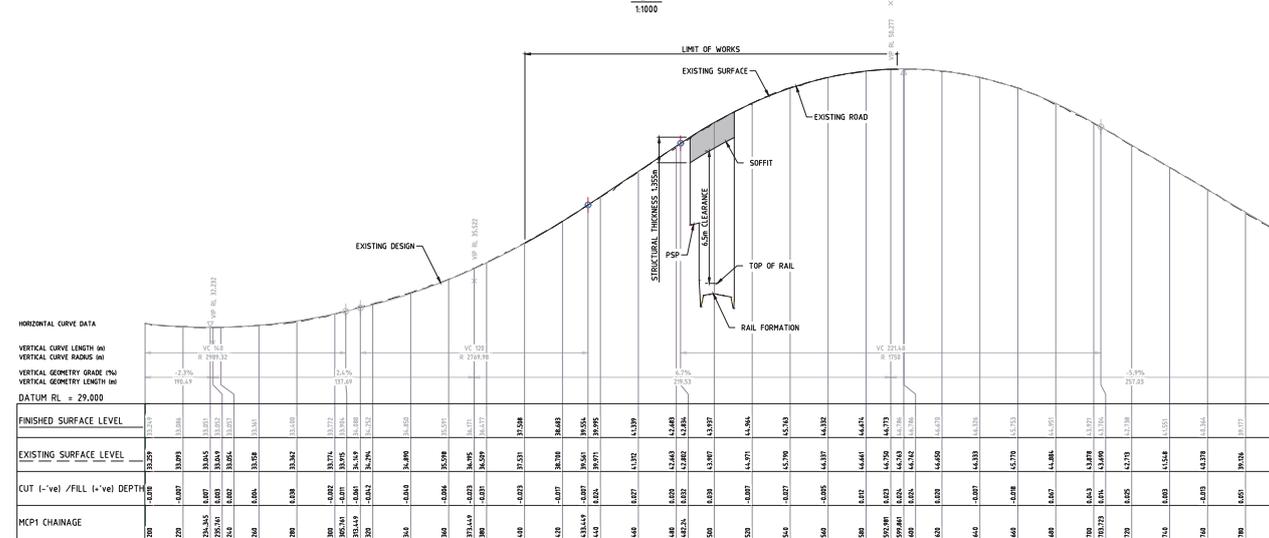
| | |
|------------|----------------------|
| REFERENCES | SCALE : 1:50 (@ A1) |
| | DATUM |
| | HORIZONTAL: PCG20 |
| | VERTICAL: AH071 |
| | PTA ACCEPTANCE STAMP |

| | |
|--------------------|----|
| DESIGNED | DR |
| DRAWN | GC |
| CHECKED | TB |
| APPROVED FOR ISSUE | |
| EXECUTIVE DIRECTOR | |
| DATE | |

| | |
|---|----------|
| DETAILED DESIGN | |
| | METRONET |
| YANCHEP RAIL EXTENSION PIPIDINNY ROAD TYPICAL CROSS SECTION | |
| PTA Drawing No: | REV : A |



PLAN
1:1000



HORIZONTAL CURVE DATA
 VERTICAL CURVE LENGTH (m)
 VERTICAL CURVE RADIUS (m)
 VERTICAL GEOMETRY GRADE (%)
 VERTICAL GEOMETRY LENGTH (m)
 DATUM RL = 29,000

| Stationing | Finished Surface Level | Existing Surface Level | Cut / Fill (m) | MCP1 Chainage |
|------------|------------------------|------------------------|----------------|---------------|
| 550 | 38.250 | 38.250 | 0.000 | |
| 570 | 38.071 | 38.071 | 0.000 | |
| 590 | 38.000 | 38.000 | 0.000 | |
| 610 | 37.929 | 37.929 | 0.000 | |
| 630 | 37.858 | 37.858 | 0.000 | |
| 650 | 37.787 | 37.787 | 0.000 | |
| 670 | 37.716 | 37.716 | 0.000 | |
| 690 | 37.645 | 37.645 | 0.000 | |
| 710 | 37.574 | 37.574 | 0.000 | |
| 730 | 37.503 | 37.503 | 0.000 | |
| 750 | 37.432 | 37.432 | 0.000 | |
| 770 | 37.361 | 37.361 | 0.000 | |
| 790 | 37.290 | 37.290 | 0.000 | |
| 810 | 37.219 | 37.219 | 0.000 | |
| 830 | 37.148 | 37.148 | 0.000 | |
| 850 | 37.077 | 37.077 | 0.000 | |
| 870 | 37.006 | 37.006 | 0.000 | |
| 890 | 36.935 | 36.935 | 0.000 | |
| 910 | 36.864 | 36.864 | 0.000 | |
| 930 | 36.793 | 36.793 | 0.000 | |
| 950 | 36.722 | 36.722 | 0.000 | |
| 970 | 36.651 | 36.651 | 0.000 | |
| 990 | 36.580 | 36.580 | 0.000 | |
| 1010 | 36.509 | 36.509 | 0.000 | |
| 1030 | 36.438 | 36.438 | 0.000 | |
| 1050 | 36.367 | 36.367 | 0.000 | |
| 1070 | 36.296 | 36.296 | 0.000 | |
| 1090 | 36.225 | 36.225 | 0.000 | |
| 1110 | 36.154 | 36.154 | 0.000 | |
| 1130 | 36.083 | 36.083 | 0.000 | |
| 1150 | 36.012 | 36.012 | 0.000 | |
| 1170 | 35.941 | 35.941 | 0.000 | |
| 1190 | 35.870 | 35.870 | 0.000 | |
| 1210 | 35.799 | 35.799 | 0.000 | |
| 1230 | 35.728 | 35.728 | 0.000 | |
| 1250 | 35.657 | 35.657 | 0.000 | |
| 1270 | 35.586 | 35.586 | 0.000 | |
| 1290 | 35.515 | 35.515 | 0.000 | |
| 1310 | 35.444 | 35.444 | 0.000 | |
| 1330 | 35.373 | 35.373 | 0.000 | |
| 1350 | 35.302 | 35.302 | 0.000 | |
| 1370 | 35.231 | 35.231 | 0.000 | |
| 1390 | 35.160 | 35.160 | 0.000 | |
| 1410 | 35.089 | 35.089 | 0.000 | |
| 1430 | 35.018 | 35.018 | 0.000 | |
| 1450 | 34.947 | 34.947 | 0.000 | |
| 1470 | 34.876 | 34.876 | 0.000 | |
| 1490 | 34.805 | 34.805 | 0.000 | |
| 1510 | 34.734 | 34.734 | 0.000 | |
| 1530 | 34.663 | 34.663 | 0.000 | |
| 1550 | 34.592 | 34.592 | 0.000 | |
| 1570 | 34.521 | 34.521 | 0.000 | |
| 1590 | 34.450 | 34.450 | 0.000 | |
| 1610 | 34.379 | 34.379 | 0.000 | |
| 1630 | 34.308 | 34.308 | 0.000 | |
| 1650 | 34.237 | 34.237 | 0.000 | |
| 1670 | 34.166 | 34.166 | 0.000 | |
| 1690 | 34.095 | 34.095 | 0.000 | |
| 1710 | 34.024 | 34.024 | 0.000 | |
| 1730 | 33.953 | 33.953 | 0.000 | |
| 1750 | 33.882 | 33.882 | 0.000 | |
| 1770 | 33.811 | 33.811 | 0.000 | |
| 1790 | 33.740 | 33.740 | 0.000 | |
| 1810 | 33.669 | 33.669 | 0.000 | |
| 1830 | 33.598 | 33.598 | 0.000 | |
| 1850 | 33.527 | 33.527 | 0.000 | |
| 1870 | 33.456 | 33.456 | 0.000 | |
| 1890 | 33.385 | 33.385 | 0.000 | |
| 1910 | 33.314 | 33.314 | 0.000 | |
| 1930 | 33.243 | 33.243 | 0.000 | |
| 1950 | 33.172 | 33.172 | 0.000 | |
| 1970 | 33.101 | 33.101 | 0.000 | |
| 1990 | 33.030 | 33.030 | 0.000 | |
| 2010 | 32.959 | 32.959 | 0.000 | |
| 2030 | 32.888 | 32.888 | 0.000 | |
| 2050 | 32.817 | 32.817 | 0.000 | |
| 2070 | 32.746 | 32.746 | 0.000 | |
| 2090 | 32.675 | 32.675 | 0.000 | |
| 2110 | 32.604 | 32.604 | 0.000 | |
| 2130 | 32.533 | 32.533 | 0.000 | |
| 2150 | 32.462 | 32.462 | 0.000 | |
| 2170 | 32.391 | 32.391 | 0.000 | |
| 2190 | 32.320 | 32.320 | 0.000 | |
| 2210 | 32.249 | 32.249 | 0.000 | |
| 2230 | 32.178 | 32.178 | 0.000 | |
| 2250 | 32.107 | 32.107 | 0.000 | |
| 2270 | 32.036 | 32.036 | 0.000 | |
| 2290 | 31.965 | 31.965 | 0.000 | |
| 2310 | 31.894 | 31.894 | 0.000 | |
| 2330 | 31.823 | 31.823 | 0.000 | |
| 2350 | 31.752 | 31.752 | 0.000 | |
| 2370 | 31.681 | 31.681 | 0.000 | |
| 2390 | 31.610 | 31.610 | 0.000 | |
| 2410 | 31.539 | 31.539 | 0.000 | |
| 2430 | 31.468 | 31.468 | 0.000 | |
| 2450 | 31.397 | 31.397 | 0.000 | |
| 2470 | 31.326 | 31.326 | 0.000 | |
| 2490 | 31.255 | 31.255 | 0.000 | |
| 2510 | 31.184 | 31.184 | 0.000 | |
| 2530 | 31.113 | 31.113 | 0.000 | |
| 2550 | 31.042 | 31.042 | 0.000 | |
| 2570 | 30.971 | 30.971 | 0.000 | |
| 2590 | 30.900 | 30.900 | 0.000 | |
| 2610 | 30.829 | 30.829 | 0.000 | |
| 2630 | 30.758 | 30.758 | 0.000 | |
| 2650 | 30.687 | 30.687 | 0.000 | |
| 2670 | 30.616 | 30.616 | 0.000 | |
| 2690 | 30.545 | 30.545 | 0.000 | |
| 2710 | 30.474 | 30.474 | 0.000 | |
| 2730 | 30.403 | 30.403 | 0.000 | |
| 2750 | 30.332 | 30.332 | 0.000 | |
| 2770 | 30.261 | 30.261 | 0.000 | |
| 2790 | 30.190 | 30.190 | 0.000 | |
| 2810 | 30.119 | 30.119 | 0.000 | |
| 2830 | 30.048 | 30.048 | 0.000 | |
| 2850 | 29.977 | 29.977 | 0.000 | |
| 2870 | 29.906 | 29.906 | 0.000 | |
| 2890 | 29.835 | 29.835 | 0.000 | |
| 2910 | 29.764 | 29.764 | 0.000 | |
| 2930 | 29.693 | 29.693 | 0.000 | |
| 2950 | 29.622 | 29.622 | 0.000 | |
| 2970 | 29.551 | 29.551 | 0.000 | |
| 2990 | 29.480 | 29.480 | 0.000 | |
| 3010 | 29.409 | 29.409 | 0.000 | |
| 3030 | 29.338 | 29.338 | 0.000 | |
| 3050 | 29.267 | 29.267 | 0.000 | |
| 3070 | 29.196 | 29.196 | 0.000 | |
| 3090 | 29.125 | 29.125 | 0.000 | |
| 3110 | 29.054 | 29.054 | 0.000 | |
| 3130 | 28.983 | 28.983 | 0.000 | |
| 3150 | 28.912 | 28.912 | 0.000 | |
| 3170 | 28.841 | 28.841 | 0.000 | |
| 3190 | 28.770 | 28.770 | 0.000 | |
| 3210 | 28.699 | 28.699 | 0.000 | |
| 3230 | 28.628 | 28.628 | 0.000 | |
| 3250 | 28.557 | 28.557 | 0.000 | |
| 3270 | 28.486 | 28.486 | 0.000 | |
| 3290 | 28.415 | 28.415 | 0.000 | |
| 3310 | 28.344 | 28.344 | 0.000 | |
| 3330 | 28.273 | 28.273 | 0.000 | |
| 3350 | 28.202 | 28.202 | 0.000 | |
| 3370 | 28.131 | 28.131 | 0.000 | |
| 3390 | 28.060 | 28.060 | 0.000 | |
| 3410 | 27.989 | 27.989 | 0.000 | |
| 3430 | 27.918 | 27.918 | 0.000 | |
| 3450 | 27.847 | 27.847 | 0.000 | |
| 3470 | 27.776 | 27.776 | 0.000 | |
| 3490 | 27.705 | 27.705 | 0.000 | |
| 3510 | 27.634 | 27.634 | 0.000 | |
| 3530 | 27.563 | 27.563 | 0.000 | |
| 3550 | 27.492 | 27.492 | 0.000 | |
| 3570 | 27.421 | 27.421 | 0.000 | |
| 3590 | 27.350 | 27.350 | 0.000 | |
| 3610 | 27.279 | 27.279 | 0.000 | |
| 3630 | 27.208 | 27.208 | 0.000 | |
| 3650 | 27.137 | 27.137 | 0.000 | |
| 3670 | 27.066 | 27.066 | 0.000 | |
| 3690 | 26.995 | 26.995 | 0.000 | |
| 3710 | 26.924 | 26.924 | 0.000 | |
| 3730 | 26.853 | 26.853 | 0.000 | |
| 3750 | 26.782 | 26.782 | 0.000 | |
| 3770 | 26.711 | 26.711 | 0.000 | |
| 3790 | 26.640 | 26.640 | 0.000 | |
| 3810 | 26.569 | 26.569 | 0.000 | |
| 3830 | 26.498 | 26.498 | 0.000 | |
| 3850 | 26.427 | 26.427 | 0.000 | |
| 3870 | 26.356 | 26.356 | 0.000 | |
| 3890 | 26.285 | 26.285 | 0.000 | |
| 3910 | 26.214 | 26.214 | 0.000 | |
| 3930 | 26.143 | 26.143 | 0.000 | |
| 3950 | 26.072 | 26.072 | 0.000 | |
| 3970 | 26.001 | 26.001 | 0.000 | |
| 3990 | 25.930 | 25.930 | 0.000 | |
| 4010 | 25.859 | 25.859 | 0.000 | |
| 4030 | 25.788 | 25.788 | 0.000 | |
| 4050 | 25.717 | 25.717 | 0.000 | |
| 4070 | 25.646 | 25.646 | 0.000 | |
| 4090 | 25.575 | 25.575 | 0.000 | |
| 4110 | 25.504 | 25.504 | 0.000 | |
| 4130 | 25.433 | 25.433 | 0.000 | |
| 4150 | 25.362 | 25.362 | 0.000 | |
| 4170 | 25.291 | 25.291 | 0.000 | |
| 4190 | 25.220 | 25.220 | 0.000 | |
| 4210 | 25.149 | 25.149 | 0.000 | |
| 4230 | 25.078 | 25.078 | 0.000 | |
| 4250 | 25.007 | 25.007 | 0.000 | |
| 4270 | 24.936 | 24.936 | 0.000 | |
| 4290 | 24.865 | 24.865 | 0.000 | |
| 4310 | 24.794 | 24.794 | 0.000 | |
| 4330 | 24.723 | 24.723 | 0.000 | |
| 4350 | 24.652 | 24.652 | 0.000 | |
| 4370 | 24.581 | 24.581 | 0.000 | |
| 4390 | 24.510 | 24.510 | 0.000 | |
| 4410 | 24.439 | 24.439 | 0.000 | |
| 4430 | 24.368 | 24.368 | 0.000 | |
| 4450 | 24.297 | 24.297 | 0.000 | |
| 4470 | 24.226 | 24.226 | 0.000 | |
| 4490 | 24.155 | 24.155 | 0.000 | |
| 4510 | 24.084 | 24.084 | 0.000 | |
| 4530 | 24.013 | 24.013 | 0.000 | |
| 4550 | 23.942 | 23.942 | 0.000 | |
| 4570 | 23.871 | 23.871 | 0.000 | |
| 4590 | 23.800 | 23.800 | 0.000 | |
| 4610 | 23.729 | 23.729 | 0.000 | |
| 4630 | 23.658 | 23.658 | 0.000 | |
| 4650 | 23.587 | 23.587 | 0.000 | |
| 4670 | 23.516 | 23.516 | 0.000 | |
| 4690 | 23.445 | 23.445 | 0.000 | |
| 4710 | 23.374 | 23.374 | 0.000 | |
| 4730 | 23.303 | 23.303 | 0.000 | |
| 4750 | 23.232 | 23.232 | 0.000 | |
| 4770 | 23.161 | 23.161 | 0.000 | |
| 4790 | 23.090 | 23.090 | 0.000 | |
| 4810 | 23.019 | 23.019 | 0.000 | |
| 4830 | 22.948 | 22.948 | 0.000 | |
| 4850 | 22.877 | 22.877 | 0.000 | |
| 4870 | 22.806 | 22.806 | 0.000 | |
| 4890 | 22.735 | 22.735 | 0.000 | |
| 4910 | 22.664 | 22.664 | 0.000 | |
| 4930 | 22.593 | 22.593 | 0.000 | |
| 4950 | 22.522 | 22.522 | 0.000 | |
| 4970 | 22.451 | 22.451 | 0.000 | |
| 4990 | 22.380 | 22.380 | 0.000 | |
| 5010 | 22.309 | 22.309 | 0.000 | |
| 5030 | 22.238 | 22.238 | 0.000 | |
| 5050 | 22.167 | 22.167 | 0.000 | |
| 5070 | 22.096 | 22.096 | 0.000 | |
| 5090 | 22.025 | 22.025 | 0.000 | |
| 5110 | 21.954 | 21.954 | 0.000 | |
| 5130 | 21.883 | 21.883 | 0.000 | |
| 5150 | 21.812 | 21.812 | 0.000 | |
| 5170 | 21.741 | 21.741 | 0.000 | |
| 5190 | 21.670 | 21.670 | 0.000 | |
| 5210 | 21.599 | 21.599 | 0.000 | |
| 5230 | 21.528 | 21.528 | 0.000 | |
| 5250 | 21.457 | 21.457 | 0.000 | |
| 5270 | 21.386 | 21.386 | 0.000 | |
| 5290 | 21.315 | 21.315 | 0.000 | |
| 5310 | 21.244 | 21.244 | 0.000 | |
| 5330 | 21.173 | 21.173 | 0.000 | |

APPENDIX F

LANDSCAPE PLAN

NEWest ALLIANCE

YANCHEP RAIL EXTENSION

EGLINTON STATION - LANDSCAPE PACKAGE

YSB LANDSCAPE - DETAILED DESIGN

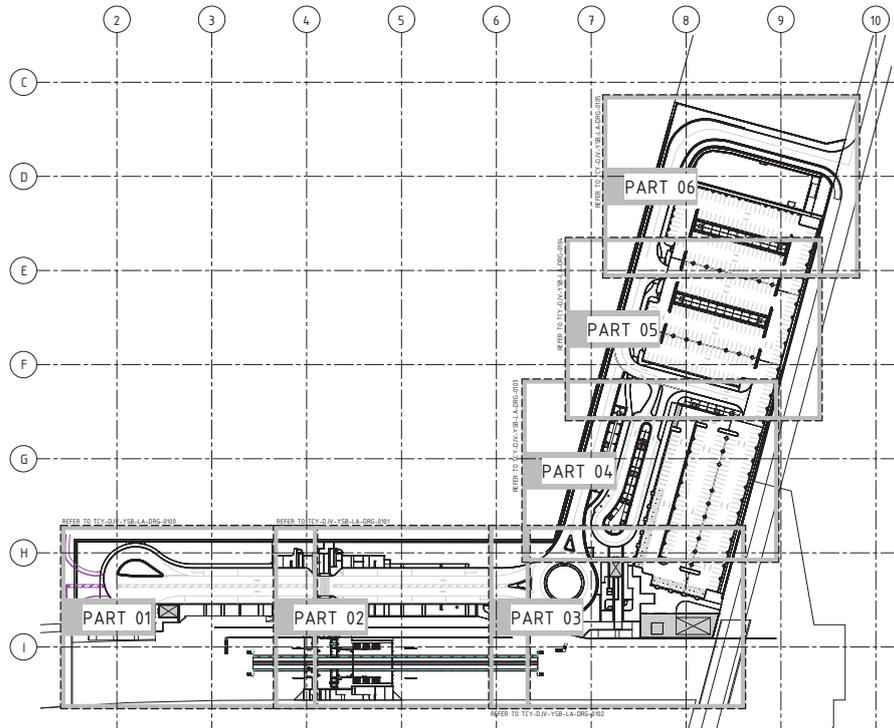
| DRG No | TITLE | Scale | Current Revision |
|-------------|---|-------|------------------|
| LA-DWG-0001 | COVER SHEET | N/A | A |
| LA-DWG-0002 | PLANTING LIST / CONCEPT MATERIALS | N/A | A |
| LA-DWG-0011 | LANDSCAPE MASTERPLAN | N/A | A |
| LA-DWG-0050 | TYPICAL LANDSCAPE DETAILS 1 of 3 | AS | A |
| LA-DWG-0051 | TYPICAL LANDSCAPE DETAILS 2 of 3 | AS | A |
| LA-DWG-0052 | TYPICAL LANDSCAPE DETAILS 3 of 3 | AS | A |
| LA-DWG-0054 | LANDSCAPE DETAILS - TESTING SEATING ELEMENT | N/A | A |
| LA-DWG-0100 | LA Surface Finishes 1 of 6 | 200 | A |
| LA-DWG-0101 | LA Surface Finishes 2 of 6 | 200 | A |
| LA-DWG-0102 | LA Surface Finishes 3 of 6 | 200 | A |
| LA-DWG-0103 | LA Surface Finishes 4 of 6 | 200 | A |
| LA-DWG-0104 | LA Surface Finishes 5 of 6 | 200 | A |
| LA-DWG-0105 | LA Surface Finishes 6 of 6 | 200 | A |

| CODE | LANDSCAPE FINISHES DESCRIPTION | AREA |
|-------|--|------------------------|
| CP | DJV - Concrete Finish 200 - 32MPa | 886.02 m ² |
| GB | DJV - LA Garden Beds | 5222.30 m ² |
| GV | DJV - LA Grass Only Areas | 868.83 m ² |
| RE | DJV - LA Power's Edge Mix-Lite Concrete | 33.29 m ² |
| PO | DJV - LA Paved Only Areas | 833.05 m ² |
| PVT | DJV - LA PAVES UrbanStone Brick 230x75 - 3 Colours + Red | 352.84 m ² |
| PV2 | DJV - LA PAVES UrbanStone Brick 230x75 - 3 Colours | 622.56 m ² |
| PV3 | DJV - LA PAVES UrbanStone Brick 230x75 - 2 Colours | 1865.30 m ² |
| PV4 | DJV - LA PAVES UrbanStone Brick 230x75 - Single Colour | 100.63 m ² |
| PV5 | DJV - LA PAVES UrbanStone Feature Paver 400x200 Grey | 102.40 m ² |
| PV6 | DJV - LA PAVES UrbanStone Feature Paver 400x200 Grey | 138.13 m ² |
| DN | DJV - LA Swale Mix - Garden Beds | 2238.30 m ² |
| TOTAL | | 8492.26 m ² |

| CODE | OVERALL COMMENTS | QTY |
|-----------|---|------|
| EX REQ 01 | LA 100 x 2 1000 Freestone Boulders (approx. 10mm to 150mm) 1000 | 1000 |
| TOTAL | | 1000 |

| CODE | Botanical Name | Common Name | Minimum For Size | No. Required |
|-------|-------------------------------|-------------------------------|------------------|--------------|
| AAA | OVERALL TREE PLANTING HOLDERS | OVERALL TREE PLANTING HOLDERS | 100.00 | 252 |
| TOTAL | | | | 252 |

NOTE: TREE SCHEDULE CURRENTLY ONLY SHOWING TOTAL NUMBER OF TREES. TREE SPECIES TO BE DEFINED AT A LATER STAGE ONCE PLANTING PLANS ARE COMPLETED.



LA_Eglinton_LA COVER SHEET
SCALE 1:1000

0 10000 20000 30000 40000 50000
SCALE (MM) 1:1000 (A1), 1:2000 (A2)



DETAILED DESIGN

| REV | DATE | BY | CHKD | APP | DESCRIPTION |
|-----|----------|-----|--------|------|-------------|
| A | 30/06/21 | SEN | DESIGN | ESSE | AMENDMENT |

CAD DRAWING PATHNAME: B:\360\7\Project\1 - TCY\TCY-DJ-V-YSB-LA-MSD-001_EGLINTON STATION.rvt

TCY-DJ-V-YSB-LA-DRG-0001

| REFERENCES |
|------------|
| |

| | | |
|----------------------|--------------------------------|----|
| SCALE : | DESIGNED | PF |
| 1 : 1000 | DRAWN | PF |
| (@ A1) | CHECKED | FM |
| DATUM : | APPROVED FOR ISSUE | |
| HORIZONTAL: PGG0 | EXECUTIVE DIRECTOR | |
| VERTICAL: ANDP | PTA Director / External Agency | |
| PTA ACCEPTANCE STAMP | DATE | |

Government of Western Australia
Public Transport Authority

YANCHEP RAIL EXTENSION

EGLINTON STATION
LANDSCAPE MASTERPLAN
COVER SHEET

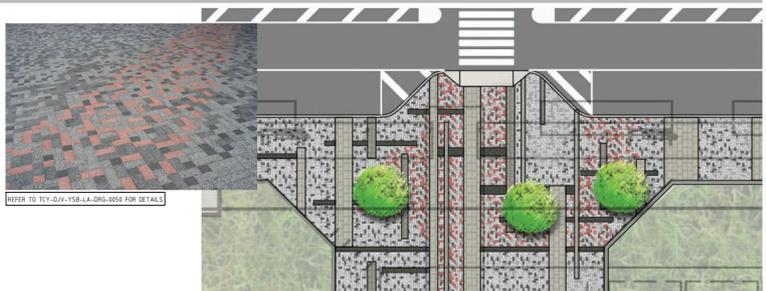
PTA Drawing No: _____ REV: A

EGLINTON STATION

Landscape Concept (Gnarla Biddi "Our Pathways" - Forest) FEATURE COLOUR FOR LANDSCAPE - RED

| | | | | | |
|-----------------------------------|--|--|---|---|--|
| Ground Covers | Atriplex chinensis Coastal Saltbush Type: Ground cover Full Sun / Part Shade Flower: Spring Soil Type: All soils including coastal Size: 25cm (H) x 2m (W) (Available Luffitz Nursery) | Grevillea obtusifolia Gin Gin Gem Type: Ground cover Part Shade / Full Sun Flower: Winter / Summer Soil Type: All soils including coastal Size: 25cm (H) x 2-3m (W) (Available Benara Nursery) | Grevillea preissii Prostrate Mini Marvel Type: Ground cover Part Shade / Full Sun Flower: Winter / Spring Soil Type: All soils including coastal Size: 30cm (H) x 1m (W) (Available Luffitz Nursery) | Thymophanes baicaiensis Pink cascade (low form) Myrtle Type: Ground cover Part Shade / Full Sun Flower: Autumn / Winter Soil Type: All soils including coastal Size: 50cm (H) x 50cm (W) (Available Luffitz Nursery) | Weddingia frutescens Low Horizon WES05 Type: Ground cover Light Shade / Full Sun Flower: Summer Soil Type: All soils including coastal Size: 30 cm (H) x 70cm (W) (Available Osmel / Benara Nursery) |
| Grasses | Antigazanthos hybrid Archer Silver F88 Kangaroo Paw Type: Strappy Leaf Full Sun / Part Shade Flower: Spring / Summer Soil Type: All soils including coastal Size: 70cm (H) x 1 m (W) (Available Luffitz Nursery) | Dianella caerulea 'DANC'D' Breeze Blue Flag Lily Type: Grass Full Sun / Part Shade / Shade Flower: Spring Soil Type: All soils including coastal Size: 60cm (H) x 60cm (W) (Available Benara Nursery) | Lepidosperma longistylis Paddy Sward Sedge Type: Sedge / Stripy Leaf Full Sun Flower: Winter Soil Type: All soils Size: 1m (H) x 50 cm (W) (Available Benara Nursery) | Lomandra confertifolia 'SIRS' Wiggins Type: Grass Full Sun / Part Shade Flower: Spring / Summer Soil Type: All soils including coastal Size: 30cm (H) x 30cm (W) (Available Benara Nursery) | Pterostemma occidentale Inua Ina Type: Grass Full Sun / Part Shade Flower: Spring / Summer Soil Type: All soils including coastal Size: 80cm (H) x 40cm (W) (Available Luffitz Nursery) |
| Shrubs | Boronia crenulata 'Pink' Antiseed Boronia Type: Medium Shrub Full Sun / Part Shade Flower: Spring / Winter Soil Type: All soils including coastal Size: 1m (H) x 1m (W) (Available Benara Nursery) | Grevillea crithmifolia Grevillea Type: Medium Shrub Full Sun Flower: Spring / Winter Soil Type: All soils including coastal Size: 1 m (H) x 1.5m (W) (Available Benara Nursery) | Grevillea rosmarinifolia 'W16' Grevillea RosH16: Crimson Wiles Type: Medium Shrub Full Sun Flower: Autumn to Spring Soil Type: All soils including coastal Size: 80cm (H) x 80cm (W) (Available Benara Nursery) | Leucophaea brownii 'Canal Rocks' Silver Cushion Bush Type: Medium Shrub Full Sun Flower: Spring / Winter Soil Type: All soils including coastal Size: 1m (H) x 1.5m (W) (Available Benara Nursery) | Templetonia retusa Cockles Tongues Type: Large Shrub Full Sun Flower: Spring / Winter Soil Type: All soils including coastal Size: 1.5m (H) x 1m (W) (Available Luffitz Nursery) |
| Feature / Hedgers / Swales | Xanthorrhoea preissii Grass Tree Type: Large Shrub (Feature) Light Shade / Full Sun Flower: Summer to Winter Soil Type: All soils (well drained) Size: 2-4 m (H) x 2-4 m (W) (Transplanted) | Melaleuca nesophila Little Heasler Honey Myrtle Type: Medium Shrub (Hedge) Full Sun / Light Shade Flower: Summer Soil Type: All soils Size: 2 m (H) x 1-2 m (W) (Available Luffitz Nursery) | Panicum nodosum Inverted Club Rush Type: Rush / Sedge Light Shade / Full Sun Flower: Summer to Winter Soil Type: All soils including coastal Size: 1m (H) x 1m (W) (Available Luffitz Nursery) | Juncus kraussii Sea Rush Type: Rush / Sedge Light Shade / Full Sun Flower: Spring / Summer Soil Type: All soils including Coastal Size: 1m (H) x 50cm (W) (Available Luffitz Nursery) | Baumea juncea Rush Type: Rush / Sedge Light Shade / Full Sun Flower: Spring / Summer Soil Type: All soils including Coastal Size: 1m (H) x 1m (W) (Available Luffitz Nursery) |
| Trees | Grevillea robusta Spiky Oak Type: Large Tree Full Sun / Light Shade Flower: Spring All soils including Coastal Size: 10 m (H) x 8-9m (W) Root ball size: (Confirm availability in Perth) | Eucalyptus rudis Flooded Gum Type: Large Tree Full Sun Flower: Winter / Spring All soils including coastal Size: 10 m (H) x 8 m (W) Root ball size: (Available Eberly Tree Farm) | Eucalyptus ficifolia Red Flowering Gum Type: Medium Tree Full Sun Flower: Summer All soils Size: 6 m (H) x 4 m (W) Root ball size: (Available Benara Nursery) | Eucalyptus decipiens Limestone Manicooti Type: Medium Tree Full Sun Flower: Summer All soils (well drained) Size: 9 m (H) x 4 m (W) Root ball size: (Available Benara Nursery) | Pistacia chinensis Limestone Manicooti Type: Medium Tree Full Sun Flower: Summer All soils Size: 6 m (H) x 4 m (W) Root ball size: (Available Eberly Tree Farm) |

Architectural Concept (Grevillea - Grevillea preissii - RED) Selection of Grevilleas for Eglinton Station Landscape



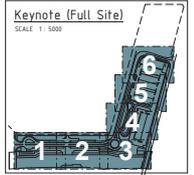
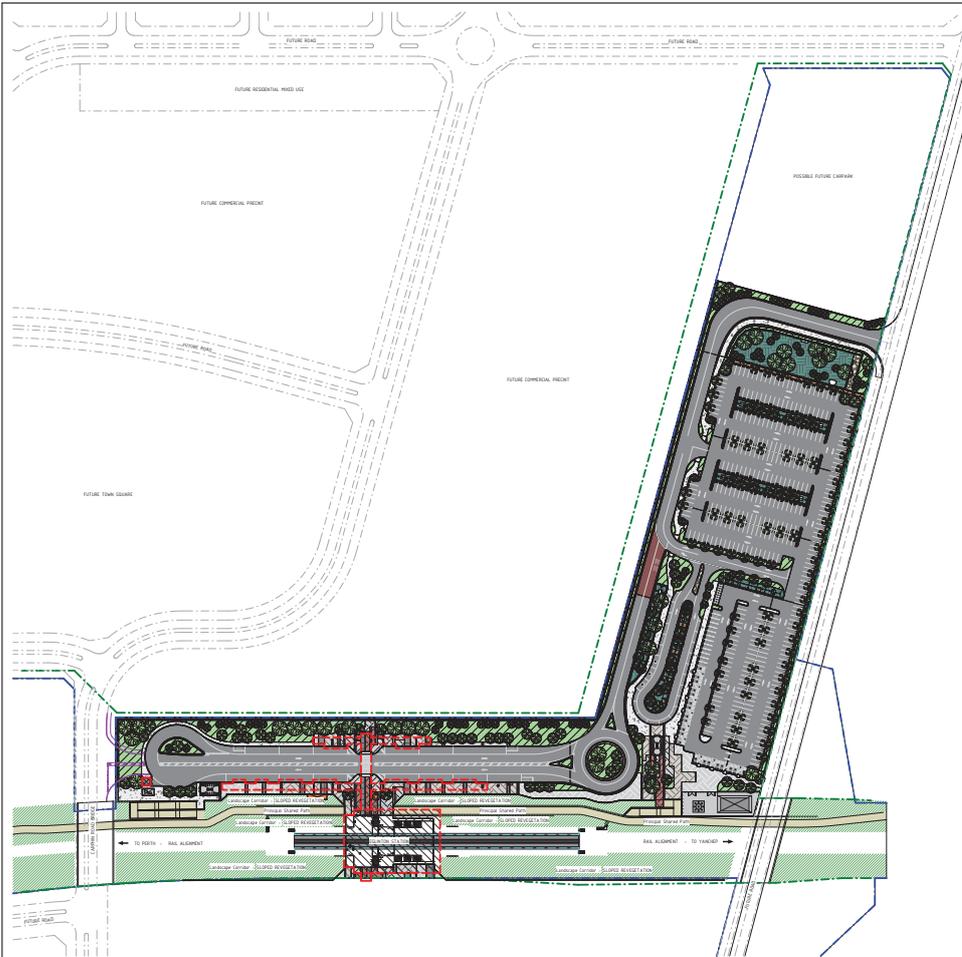
CONCEPTUAL PAVING MIX WAYFINDING THROUGH THE USE OF COLOUR MIXES THAT TRAVEL TOWARDS THE MAIN ENTRANCES OF THE STATION

LANDSCAPE FEATURE SEATING ELEMENT
SEATING ELEMENTS SCATTERED THROUGH THE LANDSCAPE. RAISED PLANTER BOXES IN CONCRETE OR BRICK WORK TO MATCH ARCHITECTURAL WALLS IN RED COLOUR (GREVILLEA THEMED COLOUR) AND CORTEN STEEL. EACH SEATING ELEMENT TO HAVE A SHADE TREE AND 3 UNITS OF XANTHORRHOEA PREISSII.



REFER TO TCY-DJV-YSB-LA-DRG-0000 FOR DETAILS

| | | | | | |
|---|--|--|--------------------------------|--|---|
| | | <p>REFERENCES</p> | <p>SCALE : 1 : NTS (@ A1)</p> | <p>DESIGNED PF</p> | <p>Government of Western Australia Public Transport Authority</p> <p>YANCHEP RAIL EXTENSION</p> |
| <p>TCY-DJV-YSB-LA-DRG-0002</p> | | <p>DATUM : HORIZONTAL: PGG0 VERTICAL: ANDP</p> | <p>DRAWN PF</p> | <p>CHECKED FM</p> | |
| <p>REV DATE AMENDMENT</p> | | <p>DATE</p> | | <p>APPROVED FOR ISSUE</p> | <p>EGLINTON STATION LANDSCAPE MASTERPLAN PLANTING LIST / CONCEPT MATERIALS</p> |
| <p>ORIG SIZE A1</p> | | <p>DATE</p> | | <p>EXECUTIVE DIRECTOR PTA Director / External Agency</p> | <p>PTA Drawing No: _____</p> |
| <p>CAD DRAWING PATHNAME: B:\3607\Project\1 - Eglinton Station\1 - Eglinton Station\1 - Eglinton Station.dwg</p> | | <p>DATE</p> | | <p>DATE</p> | <p>REV: A</p> |



LANDSCAPE LEGEND

- P-V1 - Urbanstone Engineered Stone Custom made 230mm x 114mm x60mm 4 COLOUR MIX
- P-V2 - Urbanstone Engineered Stone Custom made 230mm x 114mm x60mm 3 COLOUR MIX
- P-V3 - Urbanstone Engineered Stone Custom made 230mm x 114mm x60mm 2 COLOUR MIX
- P-V4 - Urbanstone Engineered Stone Custom made 230mm x 114mm x60mm Single Colour
- P-V5 - Urbanstone Engineered Stone Silver Gray Shotblast 400 Series 400mm x 200mm x 60mm
- P-V6 - Urbanstone Engineered Stone Silver Gray Shotblast 400 Series 600mm x 400mm x 60mm
- HE - Hoppers Edge under Fence In Situ Standard Gray Concrete
- MU - Matched Areas Only
- GV - Gravel Areas Only
- GB - Overall Garden Bed Areas
- SM - Basin /Swale Plant Mix
- RW - Limestone Paving Walls
- Eglinton Station
- YRE Landscape Corridor
- Architectural Shade Structures
- Other Structural Elements
- Principal Shared Path
- EPA Boundary Wall
- RAIL Boundary Wall

NOTES:
 - ALL DIMENSIONS IN MILLIMETRES UNLESS NOTED OTHERWISE.
 - PLANTING AREAS INDICATIVE ONLY.
 - THE LANDSCAPE CORRIDOR HOUSING EGLINTON STATION BOUNDARIES TO BE REVIEWED AS DESIGN PROGRESSES.

DISCLAIMER:
 THESE DESIGNS AND PLANS ARE OWNED BY NEWWEST ALLIANCE AND CANNOT BE REPRODUCED WITHOUT WRITTEN PERMISSION.
 - DO NOT SCALE OFF THESE DRAWINGS.

LA Eglinton Masterplan 1/1000
 SCALE 1: 1000



| | | | | |
|--|----------|-----|--------|-------|
| REV | DATE | BY | CHKD | APP |
| A | 30/06/21 | SEN | DESIGN | ISSUE |
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| AT ORIGINAL PLOT SIZE | | FF | FF | 7TH |
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TCY-DJV-YSB-LA-DRG-0011

REFERENCES

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| VERTICAL: ANDPA | EXECUTIVE DIRECTOR | |
| PTA ACCEPTANCE STAMP | DATE | |

DETAILED DESIGN

Government of Western Australia
 Public Transport Authority

YANCHEP RAIL EXTENSION

EGLINTON STATION
 LANDSCAPE MASTERPLAN
 OVERALL PLAN

PTA Drawing No: _____ REV: A

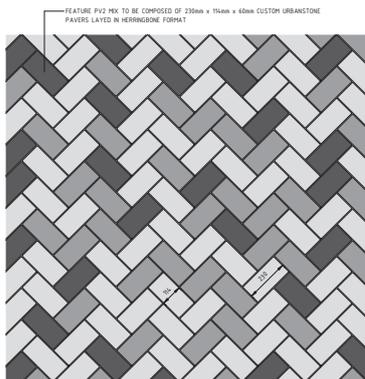
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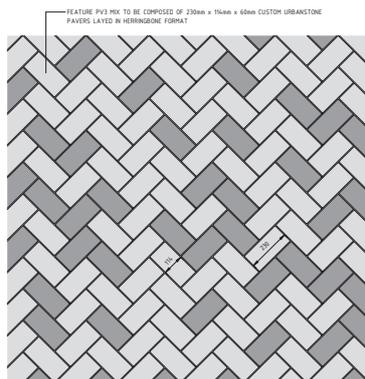
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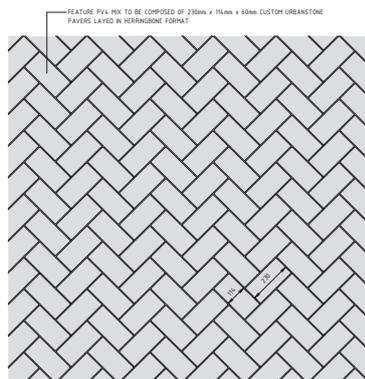
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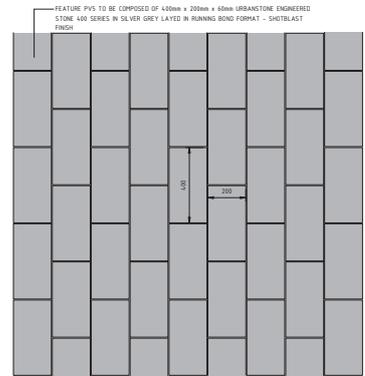
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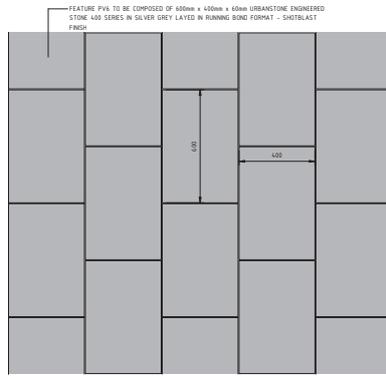
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5 YRE PAVING DETAIL 5 - PV5 FEATURE MIX
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6 YRE PAVING DETAIL 6 - PV6 FEATURE MIX
SCALE 1:10



SCALE (mm 1:10 (A1) : 1:20 (A2))

| REV | DATE | DESCRIPTION | BY | CHKD | APP |
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TCY-DJV-YSB-LA-DRG-0050

REFERENCES

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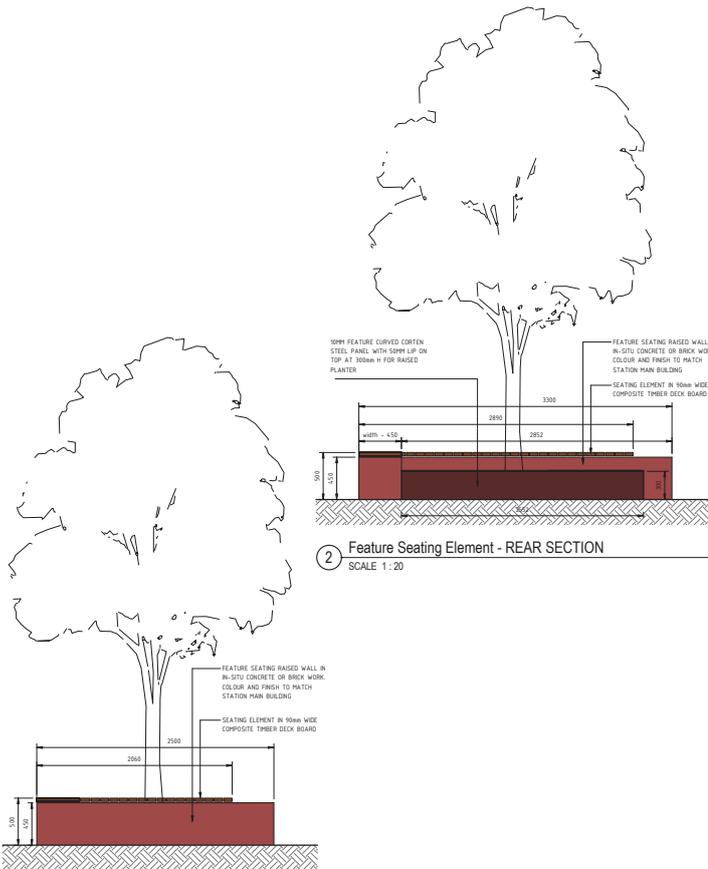
DETAILED DESIGN

Government of Western Australia
Public Transport Authority

YANCHEP RAIL EXTENSION

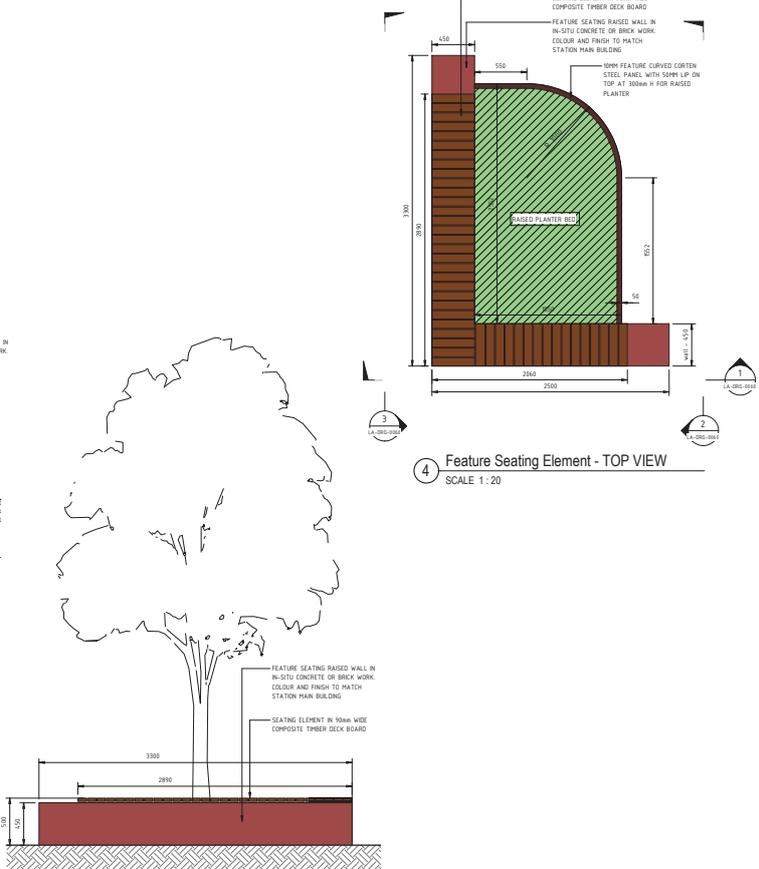
EGLINTON STATION
LANDSCAPE MASTERPLAN
TYPICAL LANDSCAPE DETAILS - SHEET 1 OF 3

PTA Drawing No: _____ REV: A



② Feature Seating Element - REAR SECTION
SCALE 1 : 20

① Feature Seating Element - SIDE SECTION
SCALE 1 : 20



④ Feature Seating Element - TOP VIEW
SCALE 1 : 20

③ Feature Seating Element - FRONT SECTION
SCALE 1 : 20



| REV | DATE | BY | CHKD | APP | DESCRIPTION |
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| A | 30/06/21 | SKZ | DESIGN | ISSUE | |

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TCY-DJV-YSB-LA-DRG-0060

| REFERENCES |
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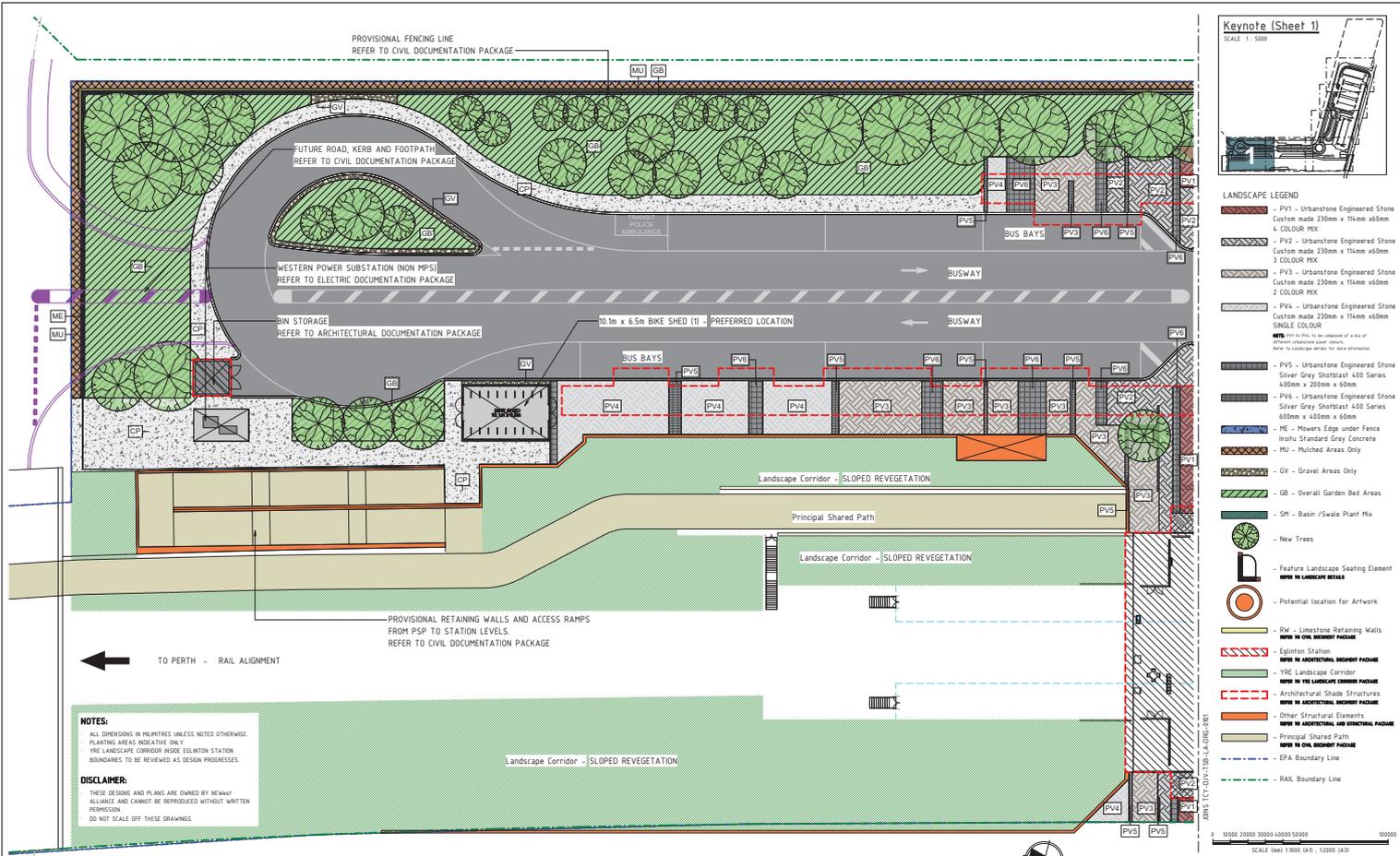
DETAILED DESIGN

Government of Western Australia
Public Transport Authority

YANCHEP RAIL EXTENSION

EGLINTON STATION
LANDSCAPE MASTERPLAN
LANDSCAPE DETAILS - FEATURE SEATING ELEMENT

PTA Drawing No: _____ REV: A



NOTES:
 ALL DIMENSIONS IN MILLIMETRES UNLESS NOTED OTHERWISE.
 PLANTING AREAS INDICATIVE ONLY.
 THE LANDSCAPE CORRIDOR INSIDE EGLINTON STATION BOUNDARIES TO BE REVIEWED AS DESIGN PROGRESSES.

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LA Surface Finishes 1/200 - Part 1
 SCALE 1 : 200

| REV | DATE | BY | CHKD | APP | DESCRIPTION |
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| A1 | 15/04/20 | REN | REFERENCE | DESIGN | REFERENCE DESIGN ISSUE |



TCY-DJV-YSB-LA-DRG-0100

REFERENCES

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| HORIZONTAL | AND/PA |
| VERTICAL | AND/PA |
| PTA ACCEPTANCE STAMP | |

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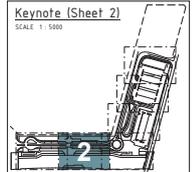
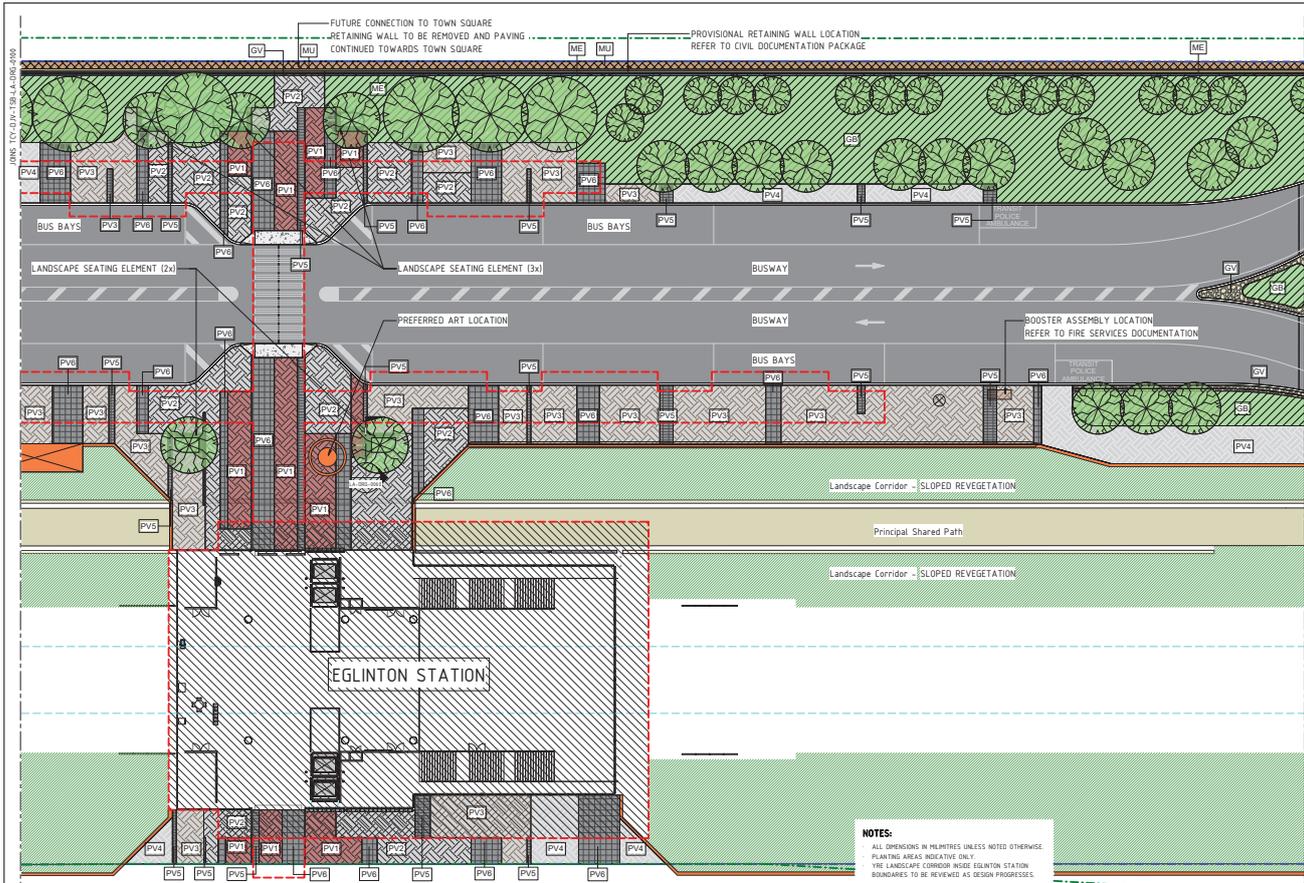
DETAILED DESIGN

Government of Western Australia
 Public Transport Authority

**EGLINTON STATION
 LANDSCAPE MASTERPLAN
 SURFACE FINISHES - SHEET 1 OF 6**

PTA Drawing No: _____

REV: **A**



- Keynote (Sheet 2)**
SCALE: 1:5000
- LANDSCAPE LEGEND**
- P.V1 - Urbanstone Engineered Stone Custom made 230mm x 114mm x60mm 4 COLOUR MIX
 - P.V2 - Urbanstone Engineered Stone Custom made 230mm x 114mm x60mm 3 COLOUR MIX
 - P.V3 - Urbanstone Engineered Stone Custom made 230mm x 114mm x60mm 2 COLOUR MIX
 - P.V4 - Urbanstone Engineered Stone Custom made 230mm x 114mm x60mm SINGLE COLOUR
 - P.V5 - Urbanstone Engineered Stone Silver Grey Sheenback 400 Series 400mm x 200mm x 60mm
 - P.V6 - Urbanstone Engineered Stone Silver Grey Sheenback 400 Series 400mm x 400mm x 60mm
 - ME - Mowers Edge under Fence Install Standard Grey Concrete
 - MU - Mashed Areas Only
 - GV - Gravel Areas Only
 - GB - Overall Garden Bed Areas
 - SH - Basin /Swale Plant Mix
 - New Trees
 - Feature Landscape Seating Element **REF TO LANDSCAPE DETAILS**
 - Potential location for Artwork
 - PW - Limestone Retaining Walls **REF TO CIVIL DOCUMENT PACKAGE**
 - Eglinton Station **REF TO ARCHITECTURAL DOCUMENT PACKAGE**
 - Landscape Corridor **REF TO THE LANDSCAPE CORRIDOR PACKAGE**
 - Architectural Shade Structures **REF TO ARCHITECTURAL DOCUMENT PACKAGE**
 - Other Structural Elements **REF TO ARCHITECTURAL AND STRUCTURAL PACKAGE**
 - Principal Shared Path **REF TO CIVIL DOCUMENT PACKAGE**
 - EPA Boundary Line
 - RAIL Boundary Line

NOTES:
ALL DIMENSIONS IN MILLIMETRES UNLESS NOTED OTHERWISE.
PLANTING AREAS INDICATIVE ONLY.
THE LANDSCAPE CORRIDOR INSIDE EGLINTON STATION BOUNDARIES TO BE REVIEWED AS DESIGN PROGRESSES.

DISCLAIMER:
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LA Surface Finishes 1/200 - Part 2
SCALE 1:200



| REV | DATE | BY | CHKD | APP | DESCRIPTION |
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TCY-DJV-YSB-LA-DRG-0101

REFERENCES

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DATUM: PCG20

HORIZONTAL: ANDR

VERTICAL: ANDR

PTA ACCEPTANCE STAMP

DESIGNED: PF

DRAWN: PF

CHECKED: FM

APPROVED FOR ISSUE

EXECUTIVE DIRECTOR
PTA Division / External Agency

DATE:

Government of Western Australia
Public Transport Authority

YANCHEP RAIL EXTENSION

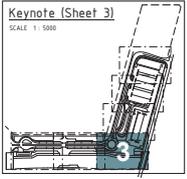
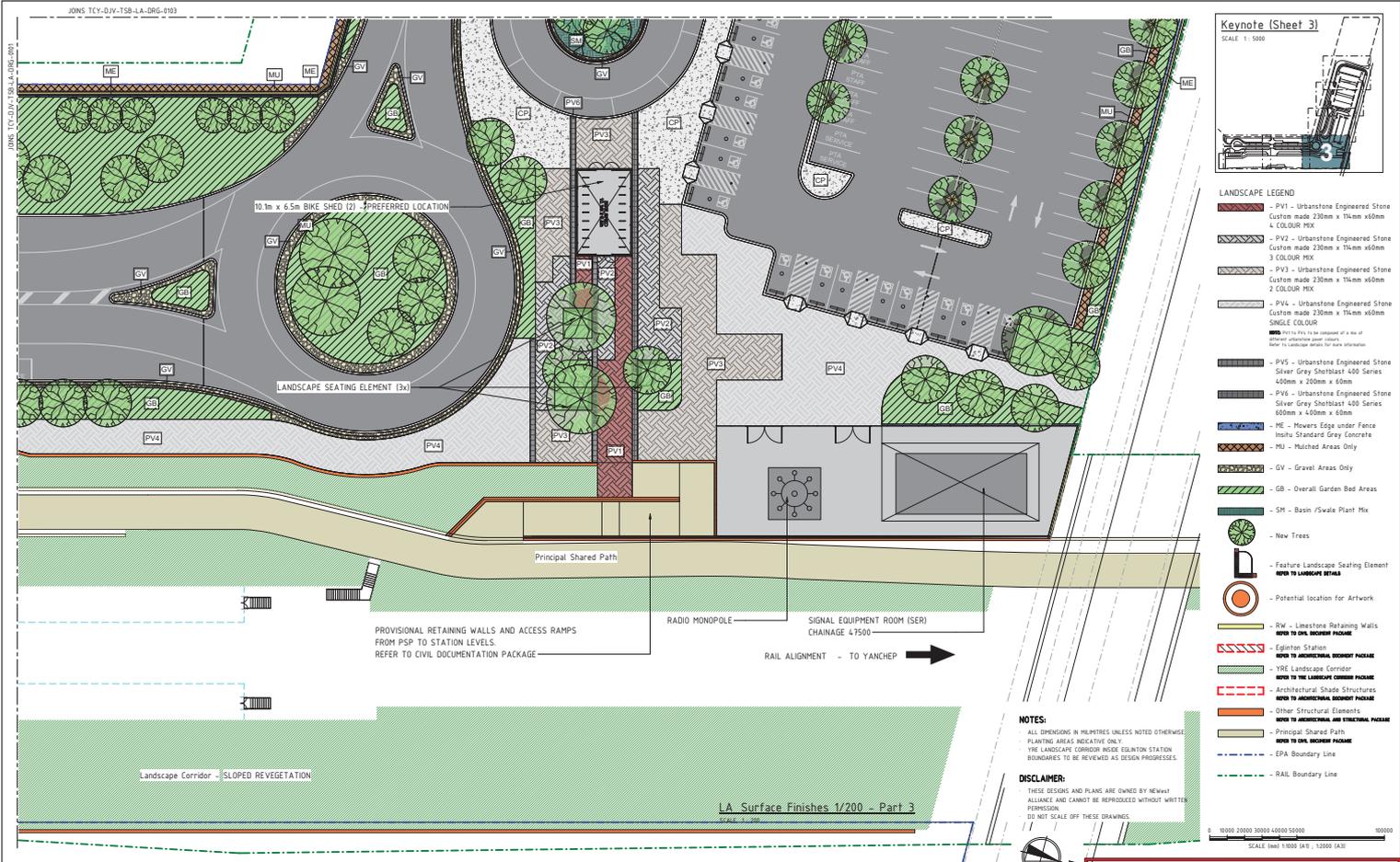
EGLINTON STATION

LANDSCAPE MASTERPLAN

SURFACE FINISHES - SHEET 2 OF 6

PTA Drawing No: _____

REV: A



- LANDSCAPE LEGEND**
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 - P-V2 - Urbanstone Engineered Stone Custom made 230mm x 114mm x60mm 3 COLOUR MIX
 - P-V3 - Urbanstone Engineered Stone Custom made 230mm x 114mm x60mm 2 COLOUR MIX
 - P-V4 - Urbanstone Engineered Stone Custom made 230mm x 114mm x60mm SINGLE COLOUR
 - P-V5 - Urbanstone Engineered Stone Silver Grey Sleekback 400 Series 400mm x 200mm x 60mm
 - P-V6 - Urbanstone Engineered Stone Silver Grey Sleekback 400 Series 600mm x 400mm x 60mm
 - ME - Mowers Edge under Fence Install Standard Grey Concrete
 - MU - Paved Areas Only
 - GV - Gravel Areas Only
 - GB - Overall Garden Bed Areas
 - SH - Basin /Swale Plant Mix
 - New Trees
 - Feature Landscape Seating Element **REF TO LANDSCAPE DETAILS**
 - Potential location for Artwork
 - DW - Landscape Retaining Walls **REF TO DRN, STRUCTURAL PACKAGE**
 - Eglinton Station **REF TO ARCHITECTURAL, STRUCTURAL PACKAGE**
 - YVE - Landscape Corridor **REF TO ARCHITECTURAL, STRUCTURAL PACKAGE**
 - Architectural Shade Structures **REF TO ARCHITECTURAL, STRUCTURAL PACKAGE**
 - Other Structural Elements **REF TO ARCHITECTURAL, AND STRUCTURAL PACKAGE**
 - Principal Shared Path **REF TO DRN, STRUCTURAL PACKAGE**
 - EPA Boundary Line
 - RAIL Boundary Line

NOTES:

- ALL DIMENSIONS IN MILLIMETRES UNLESS NOTED OTHERWISE
- PLANTING AREAS INDICATIVE ONLY
- THE LANDSCAPE CORRIDOR INSIDE EGLINTON STATION BOUNDARIES TO BE REVIEWED AS DESIGN PROGRESSES.

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AMENDMENT

| NO | DESCRIPTION |
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ORIG SIZE A1

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TCY-DJV-YSB-LA-DRG-0102

REFERENCES

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DESIGNED: PF
DRAWN: PF
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APPROVED FOR ISSUE: [Signature]
EXECUTIVE DIRECTOR: PTA Division / External Company
DATE:

DETAILED DESIGN

Government of Western Australia
Public Transport Authority

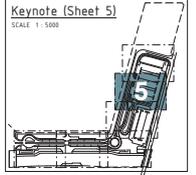
**EGLINTON STATION
LANDSCAPE MASTERPLAN
SURFACE FINISHES - SHEET 3 OF 6**

PTA Drawing No: [Blank] REV: A

LA Surface Finishes 1/200 - Part 5
SCALE: 1 : 200

PROVISIONAL FENCING LINE
REFER TO CIVIL
DOCUMENTATION PACKAGE

DRAINAGE ELEMENTS
REFER TO CIVIL
DOCUMENTATION PACKAGE



- LANDSCAPE LEGEND**
- P-V1 - Urbanstone Engineered Stone Custom made 230mm x 114mm x60mm 4 COLOUR MIX
 - P-V2 - Urbanstone Engineered Stone Custom made 230mm x 114mm x60mm 2 COLOUR MIX
 - P-V3 - Urbanstone Engineered Stone Custom made 230mm x 114mm x60mm SINGLE COLOUR
 - P-V4 - Urbanstone Engineered Stone Custom made 230mm x 114mm x60mm SINGLE COLOUR
 - P-V5 - Urbanstone Engineered Stone Silver Grey Shotblast 400 Series 400mm x 200mm x 60mm
 - P-V6 - Urbanstone Engineered Stone Silver Grey Shotblast 400 Series 600mm x 400mm x 60mm
 - ME - Mowers Edge under Fence In situ Standard Grey Concrete
 - MU - Mulched Areas Only
 - GV - Gravel Areas Only
 - GB - Overall Garden Bed Areas
 - SM - Basin /Swale Plant Mix
 - New Trees
 - Feature Landscape Seating Element
 - Potential location for Artwork
 - RW - Limestone Retaining Walls
 - Eglington Station
 - YRS Landscape Corridor
 - Architectural Shade Structures
 - Other Structural Elements
 - Principal Shared Path
 - EPA Boundary Line
 - RAIL Boundary Line

NOTES:
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- PLANTING AREAS INDICATIVE ONLY.
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TCY-DJV-YSB-LA-DRG-0104

REFERENCES

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 DATUM : PCG20
 HORIZONTAL : ANDPA
 VERTICAL : ANDPA
 PTA ACCEPTANCE STAMP

DESIGNED PF
 DRAWN PF
 CHECKED FM
 APPROVED FOR ISSUE
 EXECUTIVE DIRECTOR
 DATE

DETAILED DESIGN

Government of Western Australia
Public Transport Authority

YANCHEP RAIL EXTENSION

EGLINTON STATION
LANDSCAPE MASTERPLAN
SURFACE FINISHES - SHEET 5 OF 6

PTA Drawing No: _____ REV: A

NOTES:
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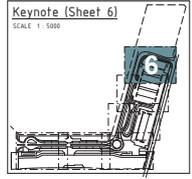
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PROVISIONAL RETAINING WALL LOCATION
 REFER TO CIVIL DOCUMENTATION PACKAGE

PROVISIONAL RETAINING WALL LOCATION
 REFER TO CIVIL DOCUMENTATION PACKAGE

DRAINAGE ELEMENTS
 REFER TO CIVIL DOCUMENTATION PACKAGE

PROVISIONAL FENCING LINE
 REFER TO CIVIL DOCUMENTATION PACKAGE



- LANDSCAPE LEGEND**
- P-V1 - Urbanstone Engineered Stone Custom made 230mm x 114mm x60mm 4 COLOUR MIX
 - P-V2 - Urbanstone Engineered Stone Custom made 230mm x 114mm x60mm 3 COLOUR MIX
 - P-V3 - Urbanstone Engineered Stone Custom made 230mm x 114mm x60mm 2 COLOUR MIX
 - P-V4 - Urbanstone Engineered Stone Custom made 230mm x 114mm x60mm SINGLE COLOUR
 - P-V5 - Urbanstone Engineered Stone Silver Grey Shotblast 400 Series 400mm x 200mm x 60mm
 - P-V6 - Urbanstone Engineered Stone Silver Grey Shotblast 400 Series 400mm x 400mm x 60mm
 - ME - Mowers Edge under Fence Insitu Standard Grey Concrete
 - MU - Mulched Areas Only
 - GV - Gravel Areas Only
 - OB - Overall Garden Bed Areas
 - SH - Basin /Swale Plant Mix
 - New Trees
 - Feature Landscape Seating Element REFER TO LANDSCAPE DETAILS
 - Potential location for Artwork
 - SW - Limestone Retaining Walls REFER TO CIVIL DOCUMENT PACKAGE
 - Eglinton Station REFER TO ARCHITECTURAL DOCUMENT PACKAGE
 - LSC - Landscape Corridor REFER TO THE LANDSCAPE CORRIDOR PACKAGE
 - Architectural Shade Structures REFER TO ARCHITECTURAL DOCUMENT PACKAGE
 - Other Structural Elements REFER TO ARCHITECTURAL AND STRUCTURAL PACKAGE
 - Principal Shared Path REFER TO CIVIL DOCUMENT PACKAGE
 - EPA Boundary Line
 - RAIL Boundary Line



LA Surface Finishes 1/200 - Part 6

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| REV | DATE | BY | CHKD | APP | DESCRIPTION |
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SCALE 1:200

ORIG SIZE A1

CAD DRAWING PATHNAME: BPT\3607\mha\mha - TCY\TCY-DJV-TSB-LA-DRG-0104_EGLINTON STATION.rvt



TCY-DJV-TSB-LA-DRG-0105

REFERENCES

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| CHECKED | FM |
| APPROVED FOR ISSUE | |
| EXECUTIVE DIRECTOR | PTA Division / External Company |
| DATE | |

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YANCHEP RAIL EXTENSION

EGLINTON STATION
 LANDSCAPE MASTERPLAN
 SURFACE FINISHES - SHEET 6 OF 6

PTA Drawing No: _____

REV: A

APPENDIX G

PUBLIC ART SUMMARY

TCY Public Art Summary Statement for DA Planning Reports

DRAFT 1.3, 24 Aug 20

For inclusion into the following applicants:

- Thornlie Station
- Yanchep Station
- Eglinton Station
- Alkimos Station
- Nicholson Road Station
- Ranford Road Station.

Public Art in new Stations

Scope of Work for Public Art

The State Government's Percent for Art Scheme encourages art in the built environment by using a percentage of a development's overall budget to commission art on new public buildings such as schools, hospitals and railway stations. As such, the Percent for Art Scheme requires up to 1% of the construction budget for new works over \$2 million to be spent on artwork.¹

METRONET Stage 1 program of works is supported by an endorsed Yanchep Rail Extension & Thornlie-Cockburn Link Projects Public Art Guide (April 2020), which is itself informed by the overarching METRONET Public Art Strategy (October 2019). These strategies draw inspiration from and respond to Perth's rich Aboriginal and local culture, history, landscape and place, with a thematic framework built around the Gnarla Biddi story of 'Our Pathways'.

Inclusion of public art in the design phase is essential for successful integration into infrastructure design and for optimal value for money. The purpose of the Public Art Guide for METRONET Stage 1 is to provide the NEWest Alliance with direction regarding the relevant themes to be explored through public art, opportunities for application of public art in the stations' architectural design, procurement, management and funding of public art installations for the Yanchep Rail Extension (YRE) and Thornlie-Cockburn Link (TCL) projects.

Public art plays a key role in enhancing the physical public realm of the new stations and expressing the local community's identity and 'sense of place' by responding to its specific cultural, historical, and environmental narratives.

In approaching the designing and development of the new railway stations, as both important public buildings and major transport hubs, it is acknowledged that public art that responds to the uniqueness of its site and is creatively integrated within the public realm has the ability to celebrate and connect with its local people, as well as attract, inform and educate commuters from the wider community.

The principles and objectives of METRONET'S Public Art Principles and Strategy Framework that will be applied to the public art developed in each new station are as follows:

¹ Actual budgetary allowance will be reassessed by the PTA upon the engagement of, and with input from, the Public Art Coordinator and pending responses from the artists' concept proposal submissions.

METRONET Public Art Principles

- Place making: public art is integral to creating vibrant, usable areas, it encourages community use of place, aids understanding of place, history, cultural heritage – Noongar and non-Noongar – and provides new interpretations.
- Site specific: public art created for a specific location celebrates, commemorates and connects what is unique or special about a place, instils a sense of local pride/ collective identity and drives visitation. Site specific artworks encourage exploration through thought, action, a different perspective on the stories of our place and people.
- Scale and fit: the scale of artwork needs to be consistent with the artwork brief/intent - i.e. it could be a landmark piece, a series or pieces, or a small element of surprise. Artwork scale also needs to be responsive to the site context - such as the surrounding landscape and buildings and pedestrian circulation.
- Universal accessibility: public art should be made accessible to all members of the community, irrespective of their age, abilities or cultural background. Consider works that engage multiple senses – sight, sound, touch, smell and/or taste.
- • Attractor: public art can be used as an ‘attractor’ for visitors and tourists – particularly places with landmark artworks or seasonal art programmes. Such cultural tourism can provide a significant economic return to places/ cities with visitor-attracting iconic artworks.
- Sustainable: art is designed considering key environmental, social and economic opportunities for both procurement/delivery and ongoing function and use.
- Well considered and managed: artworks must be designed and constructed with best practice risk and asset management, being mindful of public safety, straightforward and low cost maintenance, resistance to vandalism, and constructed with robustness appropriate for the lifespan of the artwork.

METRONET Public Art Strategy Objectives

- Drive the delivery of a diverse program of high quality progressive, bold, meaningful and inspiring public art that is valued by the community.
- Support the appeal and legibility of public spaces connected to stations and other transport infrastructure by creating points of interest, supporting walkability and building a sense of adventure.
- Showcase local culture, build place identity and animate public spaces to make them a more enjoyable.
- Celebrate, respect and acknowledge Australia’s First People by promoting, engaging and responding to local Aboriginal culture, community, heritage and history.
- Encourage creativity and innovation and support the development of creative capital and sustainability of the local arts sector.
- Leave a positive project legacy to acknowledge the significance of METRONET.

In addition, the Gnarla Bidji METRONET Aboriginal Engagement Strategy also critically informs landscaping and architectural design elements including the creation of public art at each new station, as guided by the following interrelated context setting documents:

- METRONET Noongar Cultural Context – Wadjup Thornlie-Cockburn Link Project; and
- METRONET Noongar Cultural Context – Yanchep (Mooroo) Rail Extension Project.

Public art for Placemaking

The brief for the development of public art in any station is that it must be integral to vibrant, usable and activated spaces, that aids understanding of place, history, cultural heritage (Noongar and non-Noongar) and provides new interpretations. As such, the design of public artworks is to fulfil the following objectives and guiding principles of:

- To promote community engagement
- To enable community capacity building
- To ensure safety
- To support wayfinding.



METRONET public art guiding principles

Delivery Program for Public Art

The Public Art Plan for TCL and YRE is to guide the engagement of the Public Art Coordinator, who will have responsibility for implementing the strategy and Public Art Guide into the development of each new station project. The scope of the Public Art Coordinator's role in implementing the strategy includes:

- Coordination and management of all aspects of the artist procurement, design, development, installation and commissioning of all station artwork projects.
- Producing a Public Art Plan each for the YRE and TCL that are in line with the METRONET Public Art Strategy and Gnarla Biddi METRONET Aboriginal Engagement Strategy and approved by the strategys' respective coordinators.

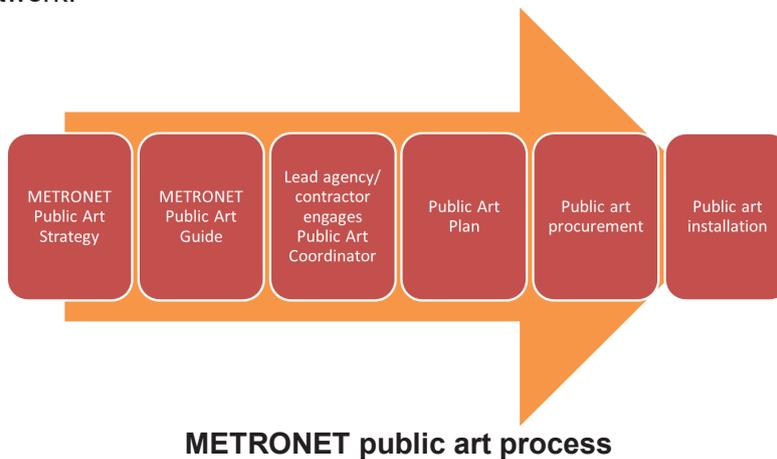
Public Art Plans are to include a Sense of Place Statement (n.b. may be a separate document) for each station that draws on the different cultural, geographical, sociological, environmental and historical narratives from the surrounding local area. The Sense of Place Statement sets the curatorial vision for each station's artwork, parameters for its integration, a delivery guide, fabrication details and budget for the artwork at each station.

- Preparation of a procurement plan and relevant documentation, which will include Artwork Brief requesting demonstrated adherence to the objectives of the METRONET Public Art Strategy and Request for Quotation (RfQ) documents; and coordination of artists during the design and development process, to ensure that the public art produced for the project satisfies the requirements as described in the RfQ and briefing documents.
- Collaboration and liaison with relevant internal and external stakeholders, the design and construction project teams, and public consultation if required. Key stakeholders that have been identified include, but are not limited to, the following:
 - PTA,
 - METRONET Office,
 - METRONET Noongar Reference Group, and
 - the Local Government specific to each station's locality.

- Assisting the artist with preparing any documentation for building certification and permits, if required.

For artwork to be successfully integrated within the station’s landscaping, infrastructure and building design - the Public Art Coordinator will liaise closely with METRONET’s Program Strategy Coordinator and artist(s) during the project’s detailed design phase. The proposed timeframe for delivery is as follows:

- engagement of Public Art Coordinator
- production and approval of Public Art Plans, EOI and Artwork Brief documents
- advertising of EOI and shortlisting of artist’s concept proposal submissions for selection
- commissioning of artists
- 50% design assessment
- fabrication completion
- installation of artwork.



Timing of Implementation for Planning and Building Development Approvals

Given the robustness and timeframe of the public art delivery program, it is recommended that the public art component of the project be delivered prior to the commissioning and opening of the new station, as this enables synchronisation with other nontangible community development actions associated with leading up to and on Day One Operations.

As such, details of the ultimate public art installations proposed will be documented for the purposes of satisfying the condition in plan and elevation drawings, along with an associated artist design report. Together, the drawings and report materials will need to demonstrate that the proposed public art installations can be properly integrated with the approved architecture and landscaping of the station precinct.

Consequently, the following draft condition is provided for consideration in any resulting development approval:

Public art is to be provided in accordance with the State Government’s Percent for Art Scheme, details of which are to be submitted prior to occupation, to the satisfaction of the WAPC in consultation with the Local Government.

APPENDIX H

YRE CONSULTATION SUMMARY

YRE Community and Stakeholder Consultation Summary Statement for DA Planning Reports

DRAFT 1.2, 21 Aug 20

Overview

The NEWest Alliance strategic approach to engagement is based on the International Association of Public Participation (IAP2) Consultation Spectrum. Stakeholders are profiled and the engagement methodology tailored to provide the appropriate level of involvement in the project's designing and decision-making processes.

Since the 2017-18 State Budget announcement confirming funding for the Thornlie-Cockburn Link (TCL) and Yanchep Rail Extension (YRE), engagement with stakeholders has been undertaken by the Public Transport Authority (PTA) and the METRONET Office of the Department of Planning, Lands and Heritage (DPLH).

Since the awarding of the contract in November 2019, NEWest Alliance has further developed the reference designs for each station in consultation with the community and key stakeholders through a series of briefings, technical workshops, reference groups and responses to enquiries.

Key Statistics

Between 1 November 2019 to 31 July 2020, the NEWest Alliance had 174 interactions with 171 distinct stakeholders.

The greatest proportion of stakeholders consulted were community members (25%), local government (19%), community interest groups (12%), community reference group (9%) and general public (9%).

The main mechanisms for engagement were meetings with key stakeholders (22%), email enquiries (21%), email responses (16%), targeted mail (9%) and briefings and presentations (8%).

Consultation Program Summary

| Level | Engagement | Stakeholders | Topic/Discussion | Timing |
|-----------|---|---|---|---------------------------|
| Strategic | METRONET Local Government Reference Group – executive level | City of Wanneroo, METRONET Office, NEWest Alliance | Introduction to the NEWest Alliance Environment and Construction, Stations and Precincts, Interface and Engagement | Quarterly |
| | METRONET Noongar Reference Group | Whadjuk Noongar community representatives, METRONET Office, NEWest Alliance | Introduction to the NEWest Alliance Yanchep Rail Extension design workshop | Quarterly and as required |
| | METRONET Access and Inclusion | METRONET Office, Department of | Introduction to the NEWest Alliance | Quarterly and as required |

| Level | Engagement | Stakeholders | Topic/Discussion | Timing |
|-------------|--|---|--|-------------------------------------|
| | Reference Group | Communities, Housing Advisory Unit, PTA, AIRG representatives | Lifts, respite seating, accessibility of car bays, drop off areas | |
| Operational | City of Wanneroo Briefings – officer level | City of Wanneroo, NEWest Alliance | Construction, Design, Environment, Community, Approvals | Quarterly |
| | Technical / targeted workshops | Water Corporation Telstra Western Power ATCO Gas Environmental Protection Agency DevelopmentWA Transperth DFES | Design, Construction Staging, Approvals | Fortnightly, Monthly or as required |
| Tactical | Yanchep Rail Extension Community Reference Group | City of Wanneroo, local residents, environmental groups | Construction, Design, Communications | Quarterly |
| | Yanchep Rail Extension Communications Coordination Meeting | City of Wanneroo, Main Roads WA, Development WA, Water Corporation, METRONET Office | Communications / cross promotional opportunities | Quarterly |
| | Trinity at Alkimos Residents Association | City of Wanneroo (mayor and elected member), local residents, NEWest Alliance | Project scope, stations, forward works, introduction to NEWest Alliance. | March 2020 |

Face to face engagement has been supported by communication campaigns and response to enquiries. Approximately 380 notifications have been distributed to local residents and business to inform them of early works, geotechnical investigation, and temporary traffic changes with a further 80 properties directly engaged via doorknocks.

Pre-Lodgement Meetings for Station Planning and Development Approval

| Station | Responsible Authority | Date |
|-----------|----------------------------------|--------------|
| Alkimos* | City of Wanneroo / DPLH for WAPC | 17 August 20 |
| Eglinton* | City of Wanneroo / DPLH for WAPC | 14 July 20 |

| Station | Responsible Authority | Date |
|----------|----------------------------------|------------|
| Yanchep* | City of Wanneroo / DPLH for WAPC | 14 July 20 |

Note: * Project development site is located within a Planning Control Area (PCA).

Upcoming Communication and Engagement

- Community Drop-In sessions planned to be held locally over two Saturdays, 5 September 2020 (venue Butler Community Centre, Butler) and 12 September 2020 (venue Oldham Park Clubrooms, Yanchep)

The drop-in sessions will give the community an opportunity to find out more about the project's progress and plans, ask specific questions and raise concerns as well as understand how the project will help enhance Perth's growing northern suburbs.

- Business readiness workshops – partnership with Small Business Development Corporation
- Fact sheets/construction updates (by zone) / release of renders and Augmented reality
- Property precondition surveys to 50 metres
- Site mobilisation engagement including doorknocks
- Quarterly briefings October 2020
- Postcode wide distribution of Project Updates planned for September 2020, to the following suburbs: Eglinton, Yanchep, Butler, Alkimos, Jindalee.

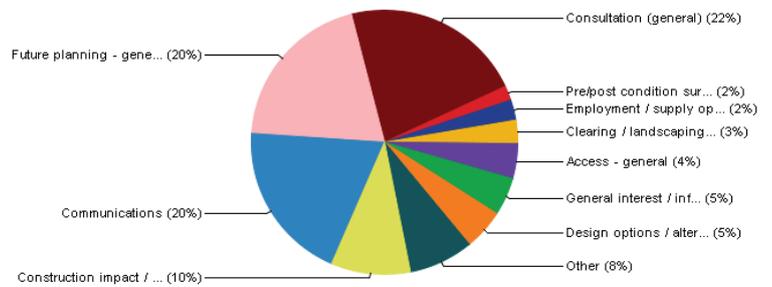
Yanchep Rail Extension (YRE) Consultation Outcomes Statistics

Date Range 1 November 2019 to 31 July 2020

Key Issues Raised

| Issues | Events | Stakeholders | |
|---------------------------------------|------------|--------------|------------|
| | | Distinct | Total |
| Consultation (general) | 62 | 104 | 224 |
| Future planning - general | 56 | 50 | 67 |
| Communications | 55 | 55 | 165 |
| Construction impact / notices | 27 | 46 | 51 |
| Design options / alternatives | 14 | 13 | 13 |
| General interest / information | 13 | 47 | 50 |
| Access - general | 12 | 12 | 12 |
| Clearing / landscaping / revegetation | 8 | 54 | 54 |
| Employment / supply opportunities | 7 | 6 | 7 |
| Pre/post condition survey | 5 | 4 | 5 |
| Other | 22 | 97 | 98 |
| [No Issues] | 4 | 13 | 13 |
| Total Events | 174 | 171 | 358 |

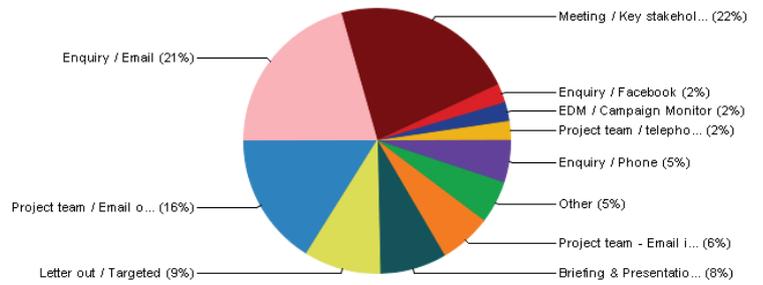
Issues Raised - Total Events



Event Types

| Event Types | Events | Stakeholders | |
|------------------------------|------------|--------------|------------|
| | | Distinct | Total |
| Meeting / key stakeholder | 39 | 27 | 44 |
| Enquiry / email | 36 | 36 | 43 |
| Project team / email out | 28 | 28 | 128 |
| Letter out / targeted | 16 | 1 | 1 |
| Briefing / presentation | 14 | 36 | 59 |
| Project team - email in | 11 | 10 | 10 |
| Enquiry / phone | 9 | 8 | 9 |
| Enquiry / Facebook | 4 | 3 | 3 |
| Project team / telephone out | 4 | 4 | 4 |
| EDM / Campaign Monitor | 4 | 0 | 0 |
| Other | 9 | 57 | 57 |
| Total Events | 174 | 171 | 358 |

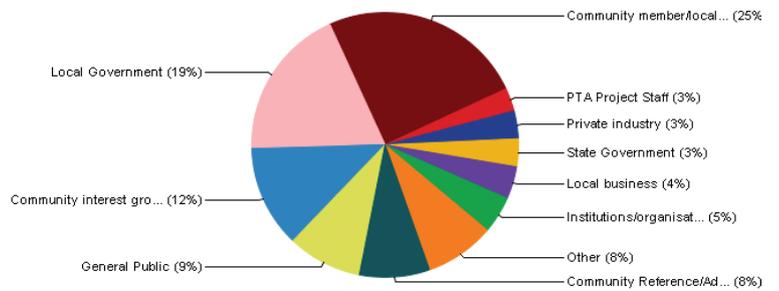
Event Types - Total Events



Stakeholders Consulted

| Stakeholder Groups | Events | Stakeholders | |
|---|------------|--------------|------------|
| | | Distinct | Total |
| Community member / local resident | 44 | 32 | 147 |
| Local Government | 33 | 27 | 69 |
| Community interest group | 22 | 7 | 23 |
| General public | 16 | 17 | 20 |
| Community Reference / Advisory Group member | 15 | 7 | 80 |
| Institutions / organisations | 8 | 6 | 9 |
| Local business | 7 | 5 | 9 |
| Private industry | 6 | 5 | 6 |
| State Government | 6 | 7 | 9 |
| PTA project staff | 5 | 3 | 5 |
| Other | 15 | 13 | 15 |
| [No Stakeholder Groups] | 66 | 90 | 211 |
| Total Events | 174 | 171 | 358 |

Stakeholders Consulted - Total Events



APPENDIX I

CATCHMENT ANALYSIS MEMO

Memorandum

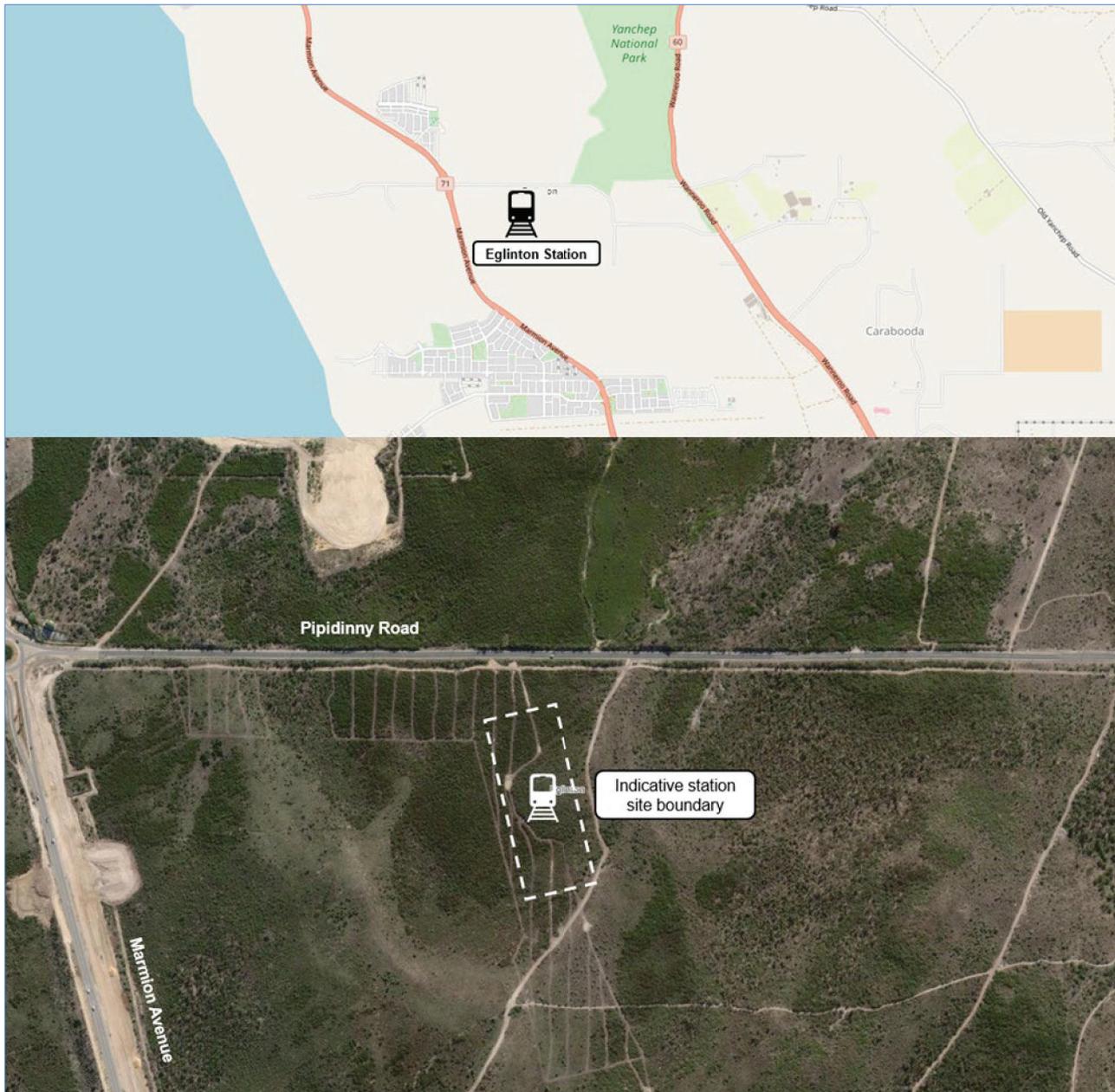
| | |
|----------------------|--|
| Doc No | TCY-DJV-YSB-TM-MMO-0001 |
| Date | 26-Jun-2020 |
| To | Public Transport Authority WA |
| From | Hugo Nilsson, Teresa Matassa |
| CC | |
| Subject | EGLINTON STATION PEDESTRIAN CATCHMENT ANALYSIS |
| File /Ref No. | 60603874 |
| Revision | A |

This memo outlines the methodology and findings for the pedestrian catchment analysis for Eglinton Station on the planned Yanchep Rail Extension (YRE).

Eglinton Station is proposed to be located adjacent to Pipidinny Road and Marmion Avenue as indicated in

Figure 1. The site currently consists of greenfield, undeveloped land but extensive future development is planned around the Station and forms the basis of the assumed future transport connections and activities.

Figure 1. Eglinton Station Location



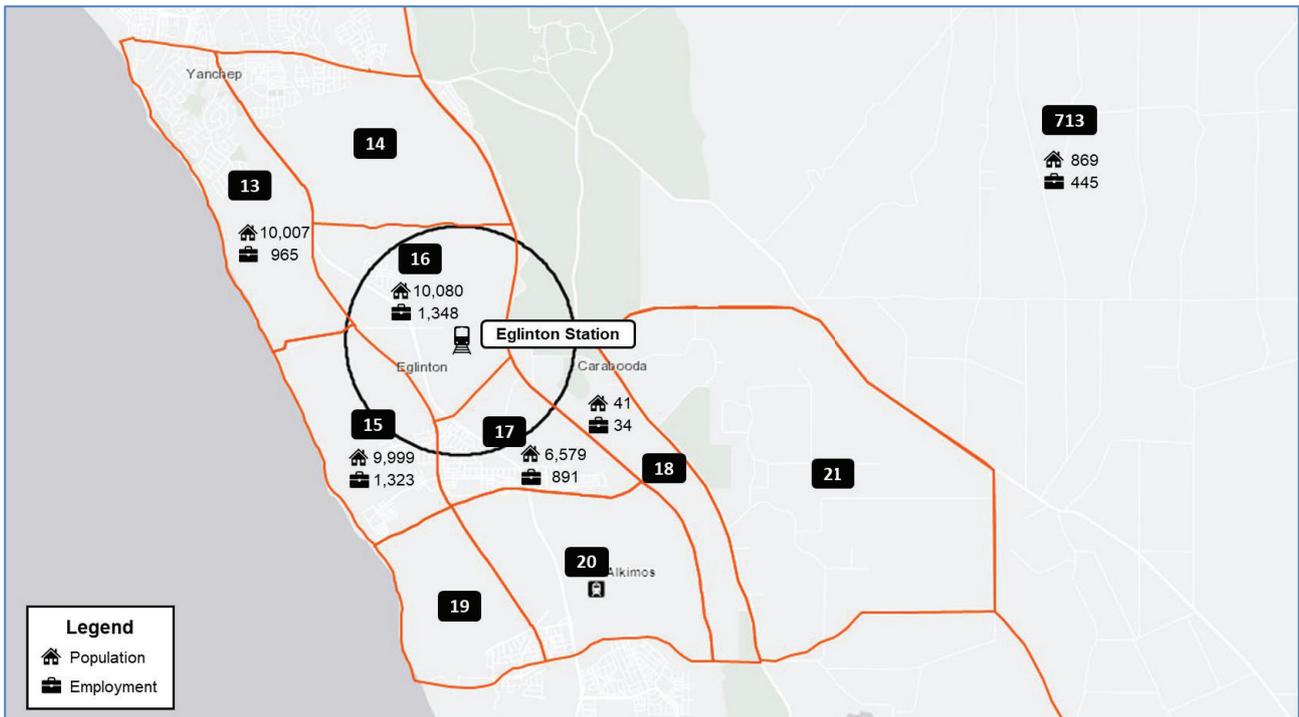
1.0 Pedestrian Catchment Analysis

The pedestrian patronage and catchment analysis has aimed to identify the main potential sources of patronage demand accessing the station on foot and the likely resulting pedestrian desire lines. After identifying the extent of the potential pedestrian network catchment area, data related to the surrounding future population, employment and land use was used to determine the main pedestrian access directions to and from the station.

1.1 Land Use and Patronage Origin

Future (2031) population and employment data were gathered from the 1.6.1 version of the Metropolitan Land Use Forecasting System (MLUFS). Data was gathered for zones within a 1.6-kilometre¹ catchment from the station as shown in Figure 2.

Figure 2. MLUFS Zones and Population Data relevant to the Eglinton Station Pedestrian Catchment



A desktop analysis was carried out to determine the overlap of each MLUFS zone falling within the potential 1.6-kilometre station catchment. The overlaps were used to estimate the forecast 2031 residential population and employment numbers within the catchment, which subsequently served as an indication for the relative contribution of each MLUFS zone to the future station patronage. A summary of the analysis is provided in Table 1.

Table 1. MLUFS Zone Patronage Analysis – 2031 Data

| MLUFS Zone | Residential Population | Employment | Total | Overlap | Total within Catchment | Relative Patronage Origin |
|------------|------------------------|------------|--------|---------|------------------------|---------------------------|
| 13 | 10,007 | 965 | 10,972 | 1% | 110 | 1% |
| 15 | 9,999 | 1,323 | 11,322 | 30% | 3,397 | 20% |
| 16 | 10,080 | 1,348 | 11,428 | 85% | 9,714 | 58% |
| 17 | 6,579 | 891 | 7,470 | 45% | 3,362 | 20% |
| 18 | 41 | 34 | 75 | 15% | 11 | 0% |
| 713 | 869 | 445 | 1,314 | 3% | 39 | 0% |

¹ 1.6 kilometres represents the maximum extent of a 20-minute walking catchment (the actual 20-minute catchment will be less than this due to indirect walking routes or crossing barriers)

The patronage origin proportions were then revised to consider the extent of existing land use and any proposed developments which would result in sections of a zone with higher density population or employment, or non-urban areas with little or no population. Currently, the area surrounding Eglinton Station is mostly greenfield, with current residential development only occupying smaller sections of Zone 16 to the north-west and Zones 15 and 17 to the south-west. Significant development is planned for the remaining surrounding area.

The patronage proportions for areas east of Mitchell Freeway (Zones 713 and 18) where the land is primarily occupied by Yanchep National Park, an area with negligible pedestrian demand, were set to zero. Patronage proportions for Zone 15 were reduced due the significant proportion of open public spaces and parks and recreational areas west of Marmion Avenue. However, for the Station opening (2021/22) connectivity to Zone 15 will be very important as (along with north-west corner of Zone 16), as this is one of the few existing development areas which could generate walking trips to the Station as soon as it opens. Patronage proportions were also decreased for Zone 17 in favour of Zone 16, due to its location being slightly further from the station. However, similar to Zone 15, it is noted that this zone could be crucial at the opening stage as it contains a large part of the existing residential land use.

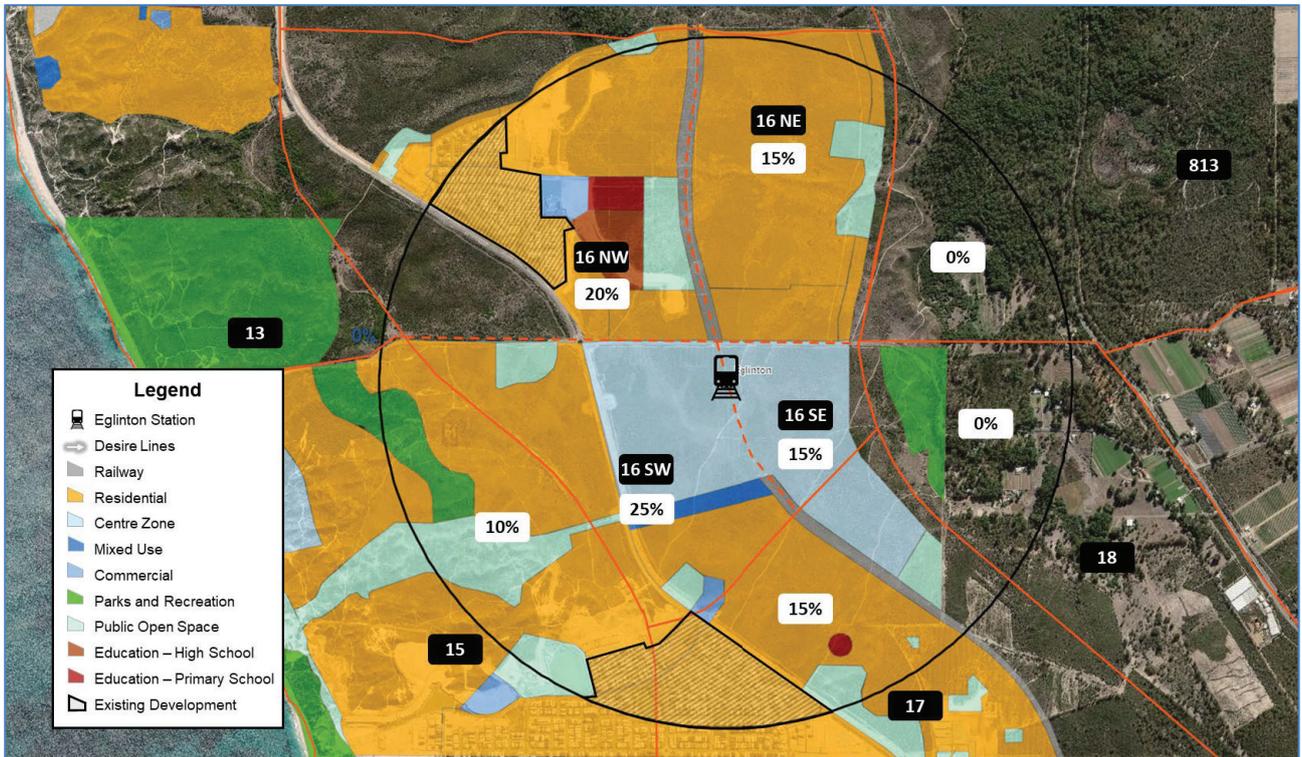
The station catchment is located predominately within Zone 16, which due to its proximity to the station and mixture of high pedestrian activity land-uses, is expected to be the main source of future patronage for Eglinton Station. Future land-use in this zone will comprise of the Town Centre, commercial, mixed use, primary and high school education, residential and open public spaces. For this analysis the zone is split into quadrants divided by the railway line and Eglinton Drive.

Overall, the percentage patronage of this Zone 16 was increased, with the southwest and northwest quadrant expected to generate the highest and second highest patronage within the zone respectively. The northwest area is already developed and will be an important pedestrian catchment area for the Station opening (2021/22) as one of the few existing residential developments which could be within walking distance of the Station if the appropriate connections are provided. The southwest quadrant will in the future contain additional high demand activities including a large portion of the Town Centre and mixed-use areas, while the northwest quadrant will contain similarly high demand regions including two schools and commercial areas.

The northeast quadrant will be primarily residential with a school, open public spaces and a small mixed-use area and is expected to generate moderate patronage. The southeast quadrant, although comprising entirely of the high demand centre zone, covers a small area and is also expected to generate moderate demand in comparison to the other quadrants, in the future.

The revised future patronage origins, along with an overview of the surrounding land use and proposed developments are shown in Figure 3. As these proportions are derived from a high-level desktop analysis, they are subject to a degree of uncertainty. For instance, they do not consider factors such as the potential differing commute habits between incoming workers and local residents travelling outbound and therefore, their potential to use the station.

Figure 3. Surrounding Land Use and Proposed Future Patronage Origin Split

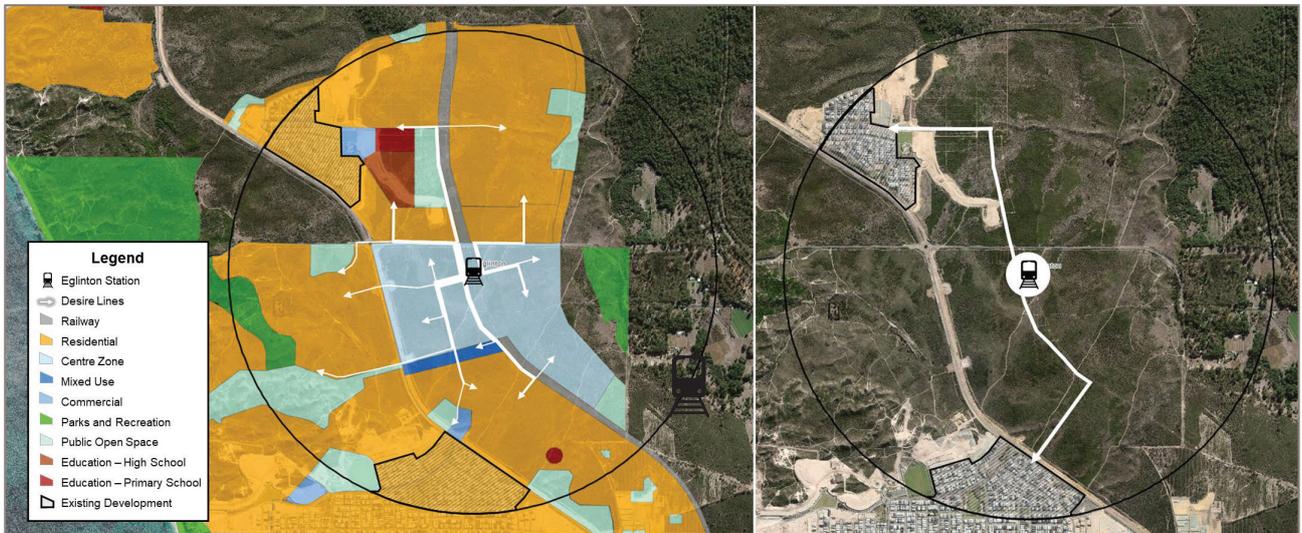


1.2 Desire Lines

The patronage origin proportions derived in Section 1.1 were used to estimate the future main pedestrian desire lines to and from the station. As shown in Figure 4 the future main desire lines are estimated to radiate in all direction from the station and are likely to be mostly contained within the immediate surrounding Town Centre Zone. Some desire lines are also expected to reach north into the residential and commercial areas as well as schools located north of Pipidiny Road.

The interim pedestrian desire lines based on the existing development are also illustrated in Figure 4 and are expected to follow the PSP along the railway and branch off to the existing residential areas. This illustrates the key pedestrian catchment area for Elginton Station at the time of opening, until the new development is delivered as anticipated in the STEM 2031 land use forecast.

Figure 4. Future (left) and Interim (right) Pedestrian Desire Lines



2.0 Surrounding Transport Network

An analysis on the surrounding transport network has been carried out to assess the current and proposed pedestrian network along with any barrier effects caused by the road network in order to determine whether the network can provide sufficient opportunities for pedestrians to access the planned station.

2.1 Road Network

An assessment was carried out to determine the barrier effects caused to pedestrians by the future surrounding road network. The following City of Wanneroo adopted structure plans were used to determine the future road network:

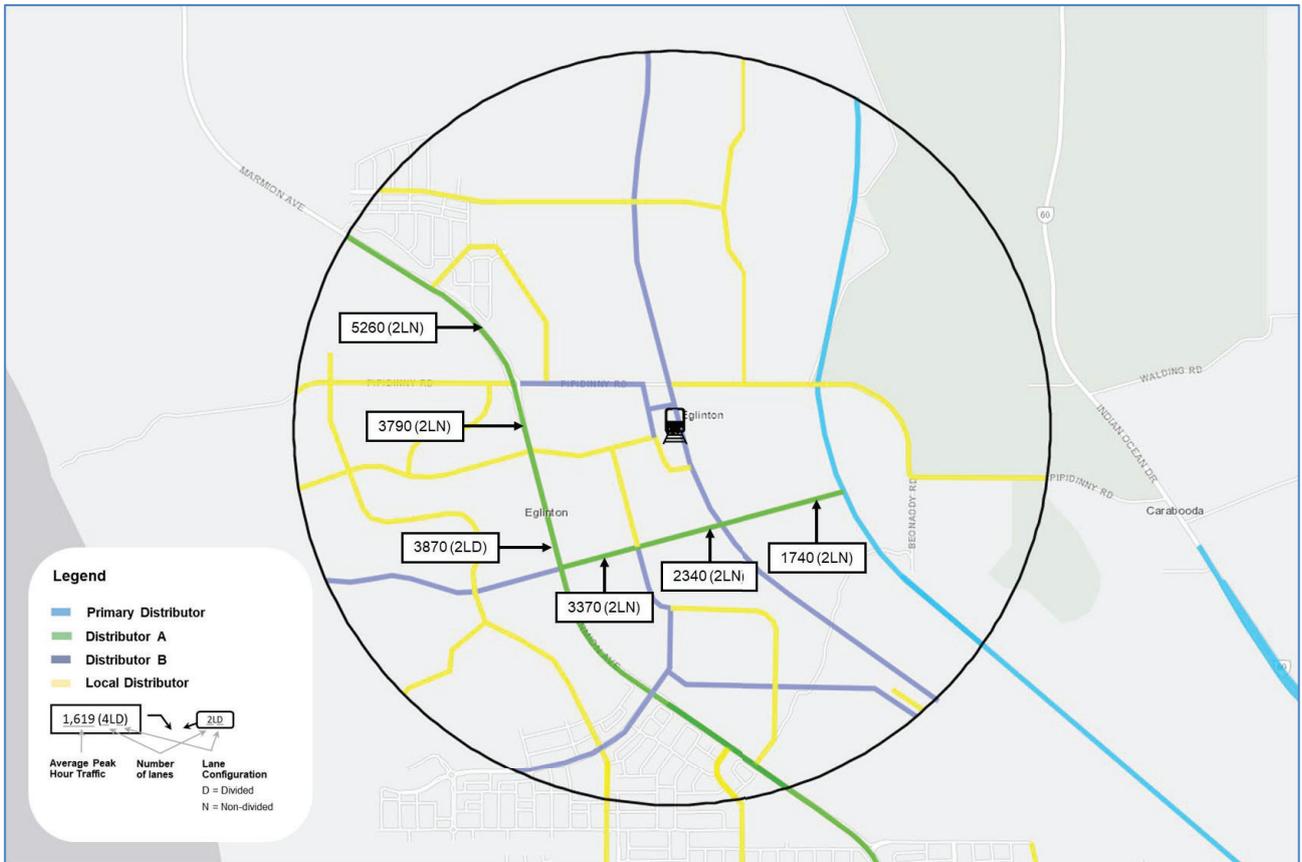
- *Eglinton Structure Plan (2012)*
- *North Eglinton Structure Plan (2020)*

Overviews of the structure plans are provided in Figure 5 and Figure 6.

Figure 5: Eglinton Structure Plan



Figure 7. Surrounding Future Road Network



Thresholds for traffic flows and lane configuration set out in the Public Transport Authority (PTA) Station Catchment Mapping Specifications were used to determine which sections of the road network that would likely cause barrier effects for pedestrian users and hinder easy crossing opportunities. A road was deemed to be a significant barrier and in need of formal crossing facilities if the traffic flow is more than:

- 1,100 vehicles per hour (VPH) with two lanes without division;
- 2,800 VPH with two lanes with division;
- 700 VPH with four lanes without division; and
- 1,600 VPH with four lanes with division.

The assessment further assumes that all primary distributors requires formal crossing opportunities. Where neither traffic survey or model data was available, Distributor A roads were classified as pedestrian barriers and roads further down the hierarchy was not classified as barriers. The resulting road barriers are highlighted in Figure 8, with Mitchell Freeway, Marmion Avenue and Eglinton Drive acting as the main barriers to pedestrians.

Figure 8. Pedestrian Road Barriers - Future Network



2.2 Pedestrian Network

Figure 10 outlines the current and planned pedestrian provision within the catchment area. Currently, the station catchment is located on a predominately greenfield site. For this analysis, it is assumed that construction may be undertaken in a set of stages. A staging sequence consisting of four interim stages has been suggested as a likely progression of the surrounding development works before as fully built out scenario is reached.

The first interim stage assumes existing path provision along roads within the catchment area, with no additional upgrades being assumed other than the works included in the construction of the METRONET Eglinton Station. The second interim stage includes providing pedestrian facilities along Pipidinny Road and construction of Eglinton Drive along with a connection to the station, whereas the following third interim stage assumes further completions of roads within the nearby station area. The suggested staging, along with a representation of the fully built out network, is summarized in Figure 9.

The full build-out scenario assumes completion of all proposed roads and shared paths as outlined in the structure plans (Figure 6 and Figure 7) and the draft City of Wanneroo Local Cycle Network. It is further assumed that all new roads will include footpaths or shared paths on at least one side of the road.

Figure 9: Future Road Network and Interim Stages

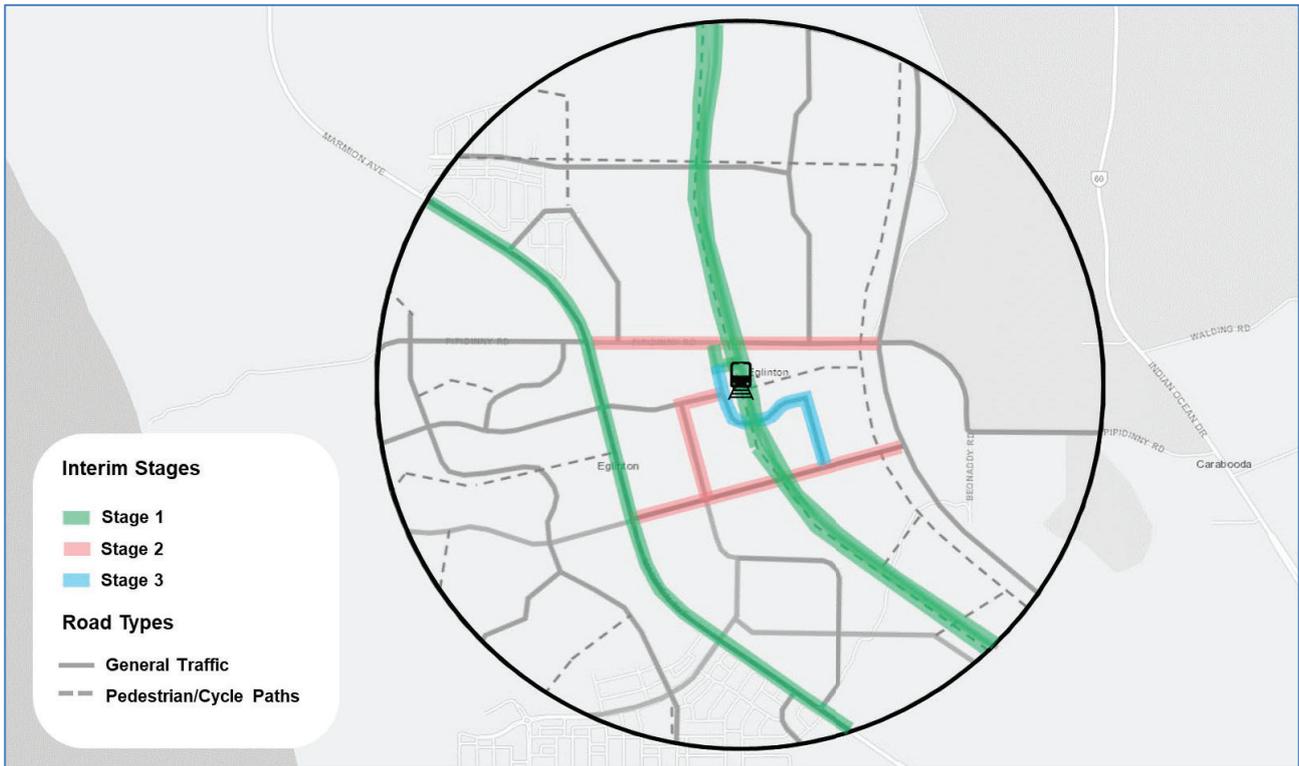
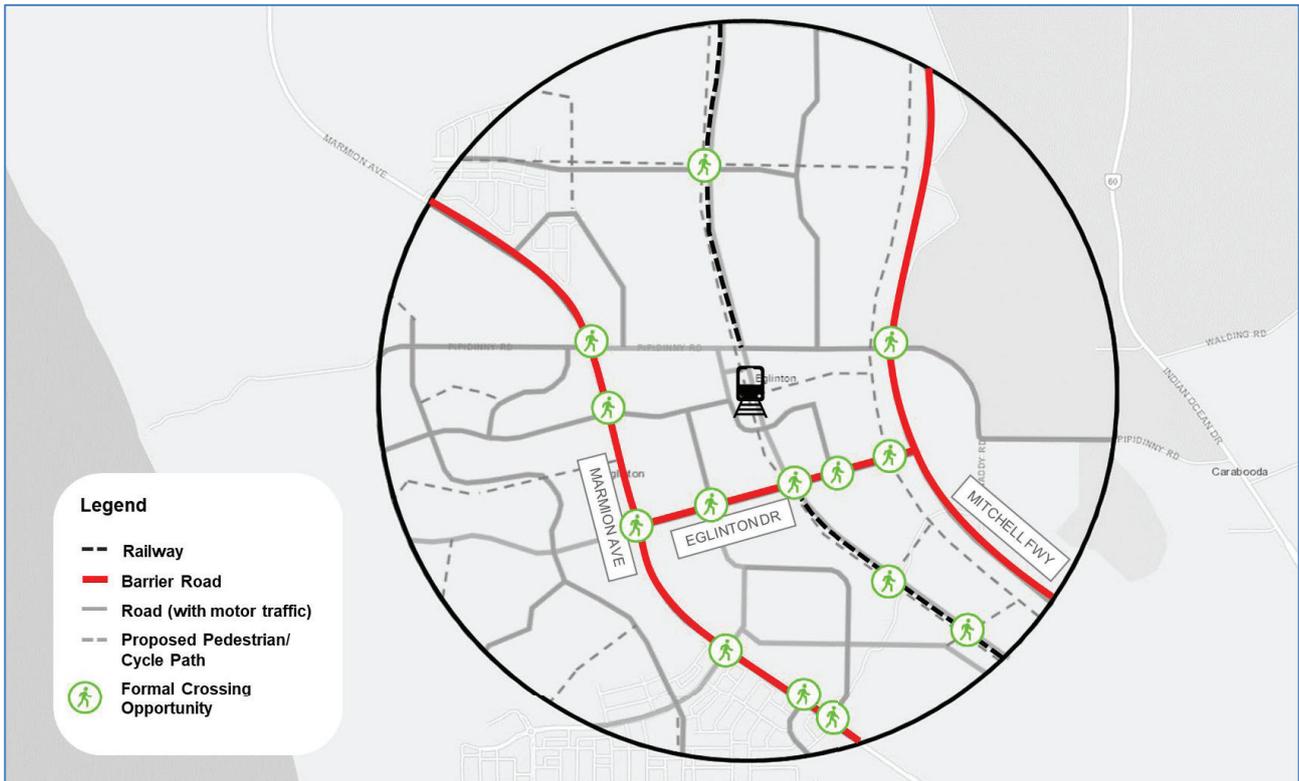


Figure 10 summarizes pedestrian accessibility on the future network around the station. Pedestrians are assumed to be able access roads as well as shared paths highlighted in the figure, except for Michell Freeway. Pedestrians are assumed to be able to walk along the designated barriers roads, however formal crossing facilities are deemed necessary for pedestrians to cross them (along with the above-ground sections of the railway). The assumed crossing locations are also highlighted in the figure.

Figure 10. Current and Proposed Pedestrian Provision



2.3 Station Pedestrian Catchment based on Assumed Pedestrian Network

Figure 11 to Figure 14 demonstrates the pedestrian network catchment area within a 10, 15 and 20 minutes-walk from the station assuming an average walk speed of 4.8 kilometres per hour. The catchments analysis includes the pedestrian network upgrades proposed as a part of the overall station development outlined in Section 2.2 under the three interim staging scenarios and the fully built out scenario.

The figures highlight the importance of the supporting pedestrian network for the potential of the station to capture patronage. The focus should be on delivering development and realising the supporting pedestrian network within the immediate surroundings of the station (within a 800m radius), where the potential to capture pedestrian demand is the greatest. The following priority should be to develop the wider potential pedestrian catchment to fully capture as much pedestrian patronage as possible. The figures also demonstrate that the assumed network is unable to serve the existing residential communities in the north-western and south-western parts of the potential catchment within a twenty-minute walk. This is the case even for the fully built out scenario and should be considered to be a significant issue as any existing development provide a vital source of potential patronage, regardless of the progress of any planned development.

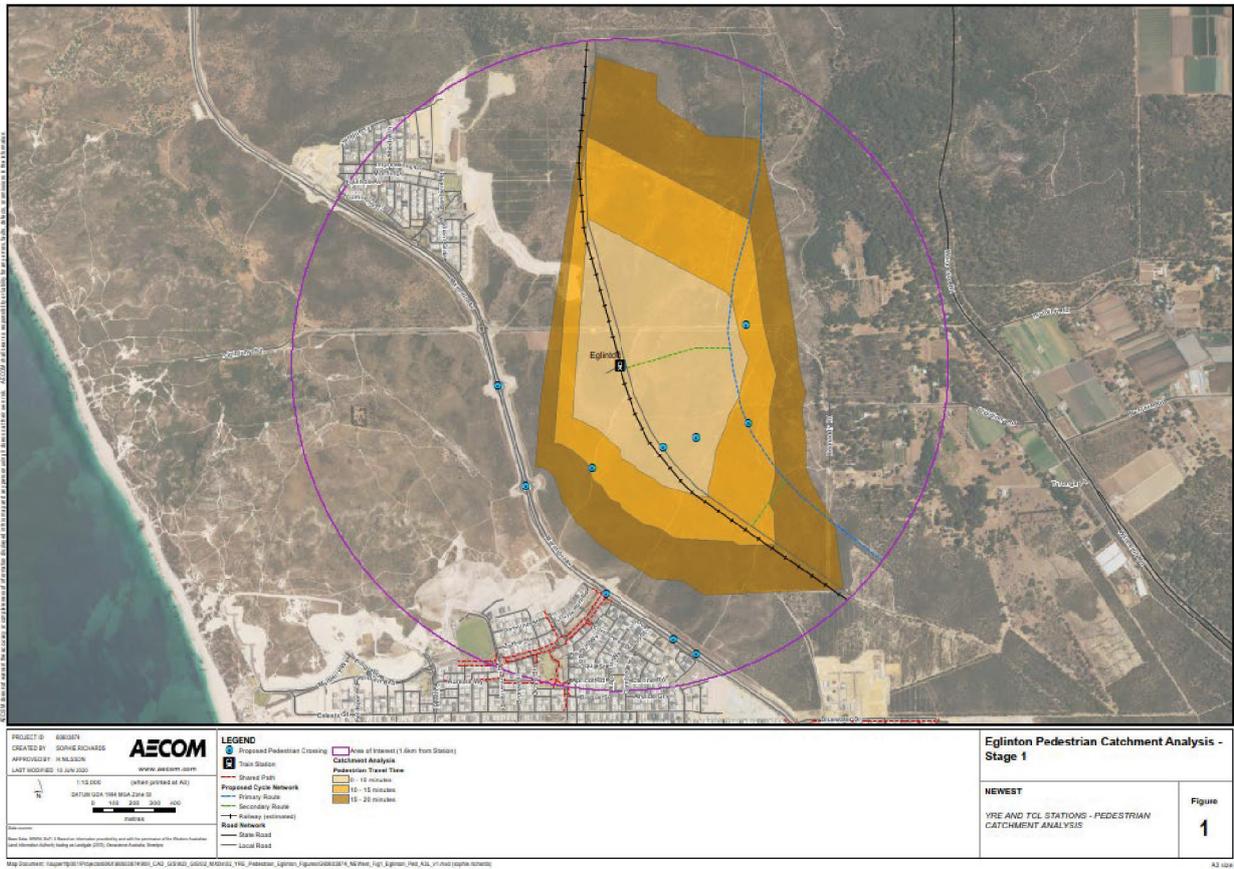


Figure 12. Pedestrian Network Catchment for Interim Stage 2

Figure 13. Pedestrian Network Catchment for Interim Stage 3

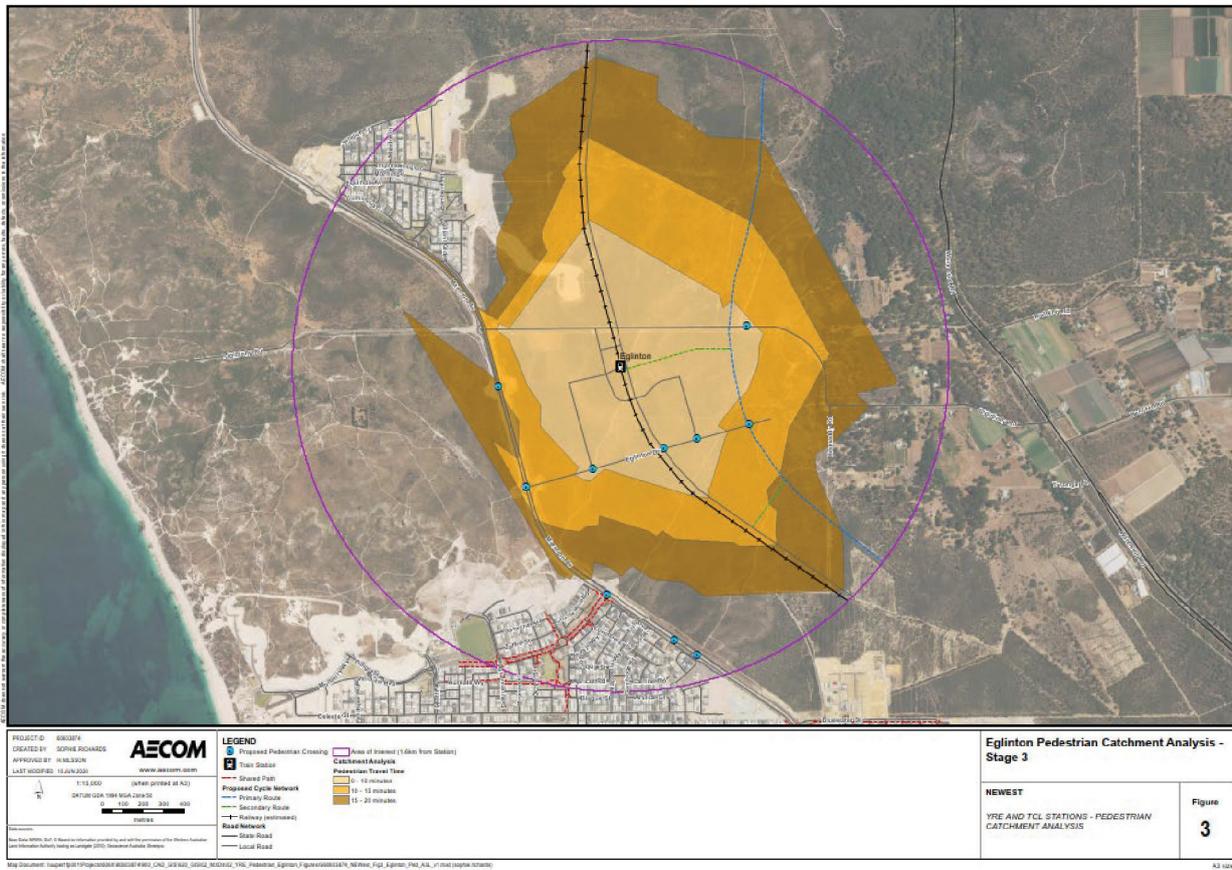
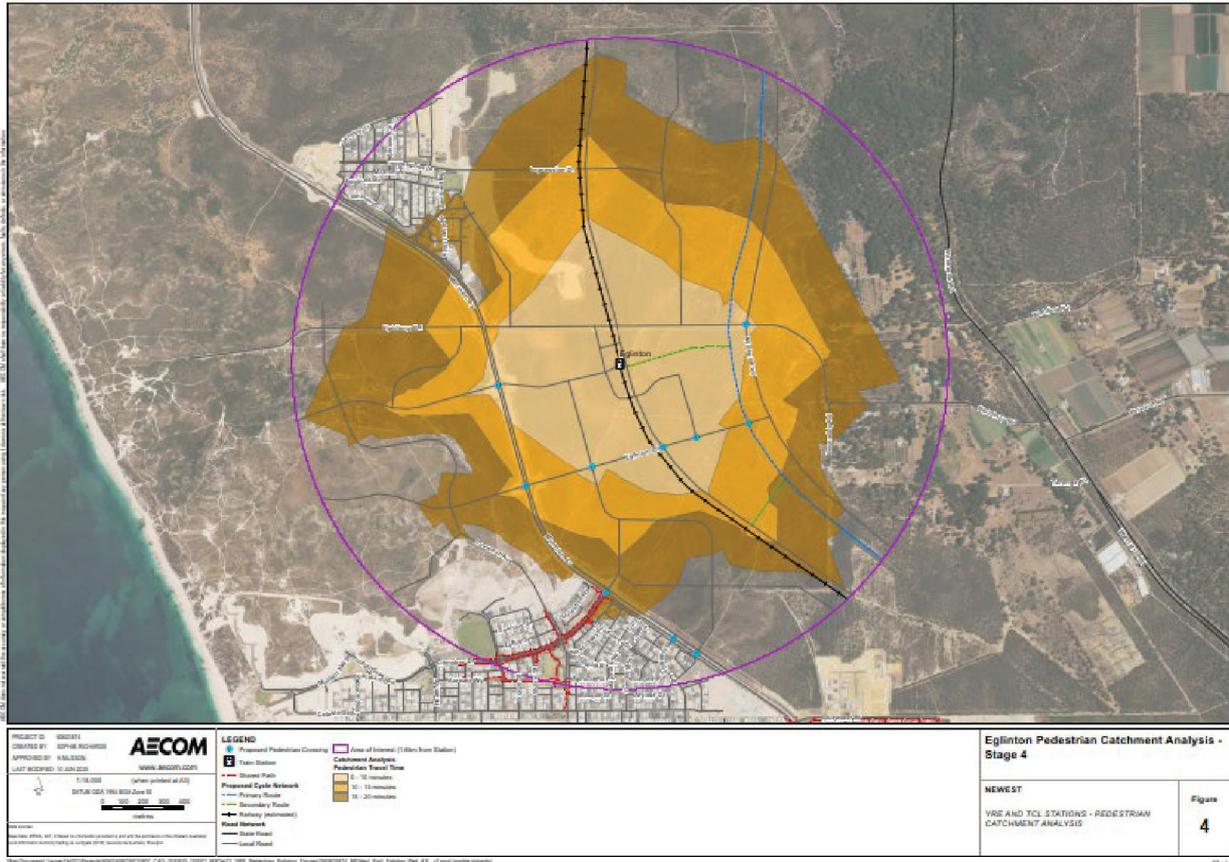


Figure 14. Pedestrian Network Catchment for the Fully Built Out Scenario



3.0 Conclusions

This note has summarised the pedestrian catchment analysis for Eglinton Station. It is estimated that most pedestrian demand will originate from the central zone, mixed use and residential land uses that is planned within the immediate catchment the station (within a 10-minute walk / 800 metre radius). However, residential areas and high schools further afield, such as north of Pipidiny Avenue are also likely to be a major source of pedestrian patronage.

The staging scenario analysis highlights the importance of delivering the supporting infrastructure to realise this potential patronage and that the prioritised focus should be on developing the pedestrian network within the immediate catchment of the station. Even within the fully built scenario, the network catchment analysis highlights a pedestrian and cycling network gap to connect the existing development areas to the north-west and south-west, to the PSP, Eglinton Station and centre. Addressing this connectivity gap in the interim (by station opening) should be a key focus for Local and State Government, and land development agencies.

Memorandum

| | |
|-----------------|--|
| Date | 25/06/2020 |
| To | Willem du Toit, |
| From | Hugo Nilsson Teresa Matassa |
| CC | Thor Farnworth, John Caveill, Chris Deshon, Param Lobana, Guy Smith, Martijn Van Het Kaar, Andy Godden, Mason Bao, Thomas Beaver |
| Subject | EGLINTON MODE SHARE REVIEW |
| Doc No. | TCY-DJV-YSB-TM-MMO-0002 |
| Revision | A |

1. INTRODUCTION

NEWest Alliance has been commissioned by METRONET to undertake a review of the catchment analysis for the Yanchep Rail Extension (YRE), based on the most recent land use, infrastructure and station design assumptions. This note summarizes the data used and the methodology along with the findings in relation to mode specific patronage and associated parking requirements.

This note first considers the existing and forecast land use data and transport network to determine catchments and associated potential patronage for each mode (car, bus, cycle and walk). This is followed by a review of the likely effective mode shares, which, along with the forecast overall patronage volumes, will inform parking requirements.

The analysis in this note builds on previous work catchment analysis and transport assessment work carried out by Arup and WSP. Their work is presented in the below documents, which will be referenced through this note:

- *Yanchep Rail Extension Strategic Access Planning* (Arup, 2018)
- *Yanchep Rail Extension Transport Assessment* (WSP, 2019)

Information relating to the assumed future infrastructure network and land use informing the catchment analysis has been gathered from the following City of Wanneroo structure plans:

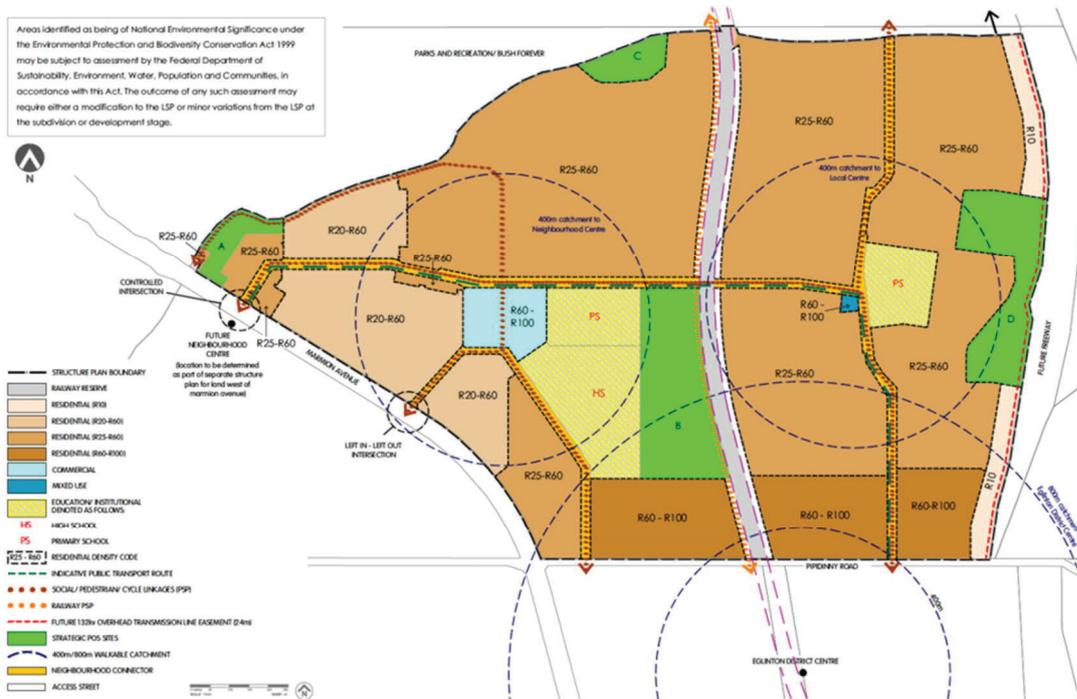
- *Eglinton Structure Plan* (2012)
- *North Eglinton Structure Plan* (2020)

Overviews of the structure plans are provided in Figure 1 and Figure 2

Figure 1: Eglinton Structure Plan



Figure 2: North Eglinton Structure Plan



Plan 1: Structure Plan Map (REV 04)

2. GEOGRAPHICAL CATCHMENT

This section describes the methodology of determining the geographical catchments for each mode. The extent of the geographical catchments will subsequently inform the potential patronage capture in Section 4.2.

2.1 GENERAL CATCHMENT

Land use data from the Metropolitan Land Use Forecasting System (MLUFS) (version 1.6) which was included in the STEM Base Case model outputs for the YRE project, has been used to estimate the potential population within the future Eglinton Station catchment. MLUFS does not cover areas north of Two Rocks, but this is not considered to be an issue as Two Rocks effectively forms the northern edge of the Perth metropolitan area, with population being very scarce beyond this limit. Therefore, for the purpose of this analysis, Two Rocks will form the northern limit of the whole YRE catchment. Similarly, areas to the east of State Route 60 (Indian Ocean Drive) along most of the YRE is very scarcely populated, although this area is covered in MLUFS and will be included in the assumed catchments.

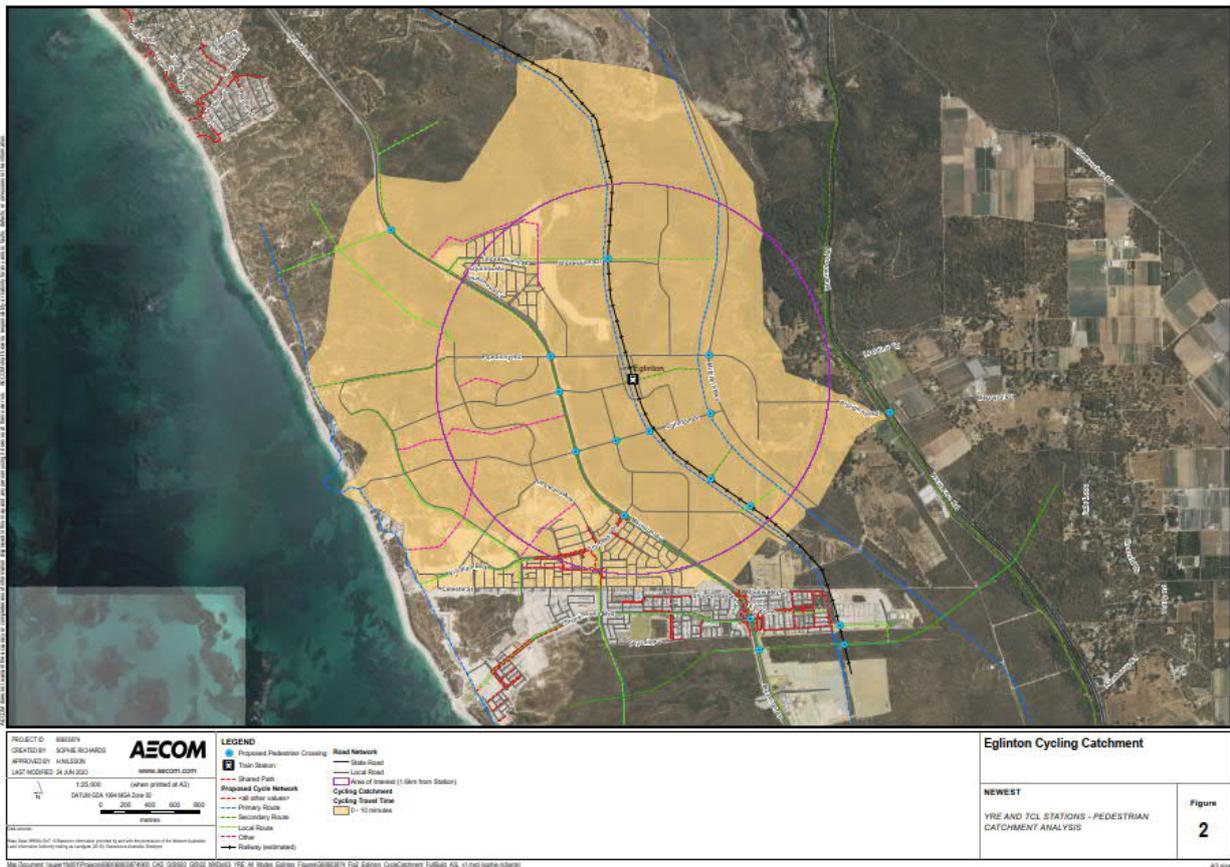
The general (car) catchments for all new stations along the YRE was considered within the same analysis using the same assumptions adopted in the YRE Strategic Access Planning (Arup, 2018). This assumes a tendency that drivers will avoid 'back-tracking' and are likely to prefer driving downstream (towards Perth CBD) rather than upstream the railway line. The assumed general catchment for Eglinton Station is presented in

Figure 3.

2.3 FUTURE (2031) CYCLABLE CATCHMENT

Figure 5 presents the future cyclable catchment around Eglinton Station, within an 3km network distance. This is equivalent to a 10-minute cycle¹ and is the assumed potential cycling catchment. It further considers the assumed extent of the future cycling catchments of the neighbouring Yanchep and Alkimos stations, using the same principle to avoid 'back-tracking' used to define the general catchment for each individual station.

Figure 5: Future (2031) 10 minute Cyclable Catchment

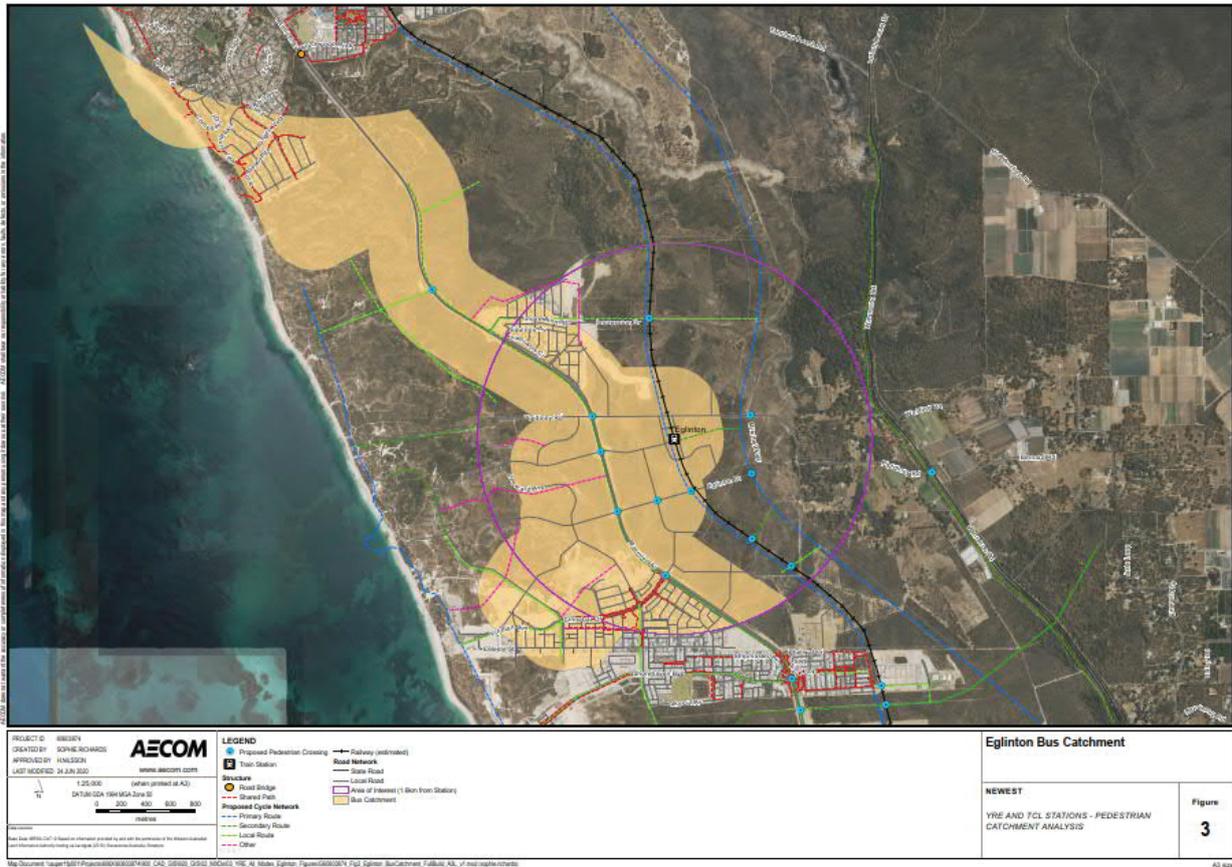


¹ Based on an average of 18/km cycle speed

2.4 FUTURE (2031) BUS CATCHMENT

A preferred future bus network option has been supplied to AECOM by PTA. Figure 6 highlights the resulting associated bus catchment. As route alignment and bus stop locations are yet to be confirmed the catchments are indicative only and formed by a 400m bus route buffer. It further considers the assumed extent of the bus catchments of the neighbouring Yanchep and Alkimos stations, using the same principle to avoid 'back-tracking' used to define the general catchments.

Figure 6: Bus Catchment



3. FORECAST PATRONAGE

The NEWest adopted patronage forecast for Eglinton station is presented in Table 1². The forecasts are derived from the STEM multi-modal transport model and is compared below to previous patronage forecasts used in the previous Arup and WSP studies.

Table 1: Forecast Patronage

| Patronage | Arup (2018) | WSP (2019) | YRE Adopted ² |
|-----------|-------------|------------|--------------------------|
| 2021 | 684 | 1,799 | |
| 2031 | 2,767 | 4,834 | 2,204 |

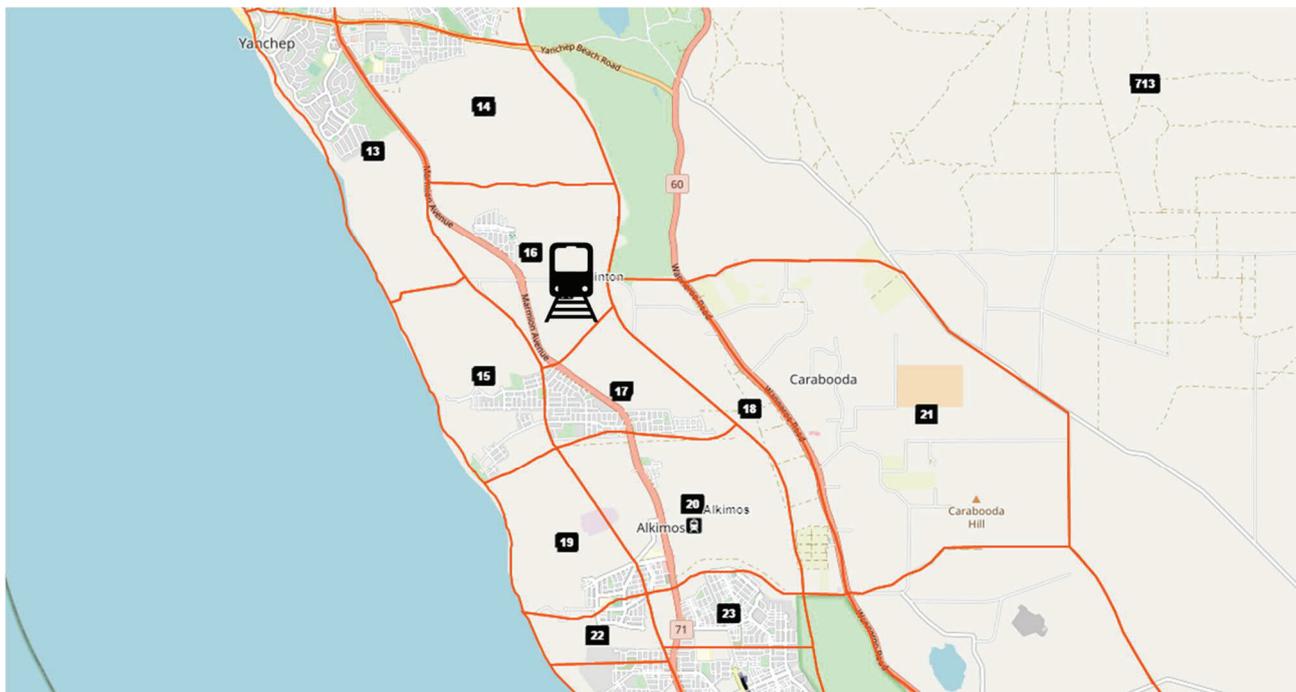
4. POTENTIAL PATRONAGE CAPTURE

MLUFS land use data has been used to estimate potential patronage that can access Eglinton Station. This has been carried out separately for each mode to determine a maximum patronage potential for each mode. Overlap analysis for each mode has been carried out to determine the percentage of area overlap between MLUFS zones and the mode-specific geographical catchment. Detailed information on future land use development gathered from structure plans has been used to further adjust the overlaps to more realistically reflect the potential patronage.

4.1 MLUFS DATA

MLUFS data describe forecasted population and employment figures for the Perth metropolitan region and forms the basis for the catchment analysis. The zones falling with the station catchments are highlighted in Figure 7.

Figure 7: MLUFS Zones



² Patronage forecasts specified in the YRE SWTC

Table 2 provides a break-down of the residential and employment data for each zone for the year 2021 and 2031, along with the resulting growth between the two years.

Table 2: MLUFS Land Use Data

| MLUFS Zone | 20210 | | | 2031 | | | 2021 to 2031 |
|------------|-----------|------------|-------|-----------|------------|--------|--------------|
| | Residents | Employment | Total | Residents | Employment | Total | Growth |
| 13 | 5,230 | 701 | 5,931 | 10,007 | 965 | 10,972 | 85% |
| 14 | 3,080 | 578 | 3,658 | 6,597 | 903 | 7,500 | 105% |
| 15 | 3,085 | 897 | 3,982 | 9,999 | 1,323 | 11,322 | 184% |
| 16 | 1,847 | 605 | 2,452 | 10,080 | 1,348 | 11,428 | 366% |
| 17 | 4,874 | 478 | 5,352 | 6,579 | 891 | 7,470 | 40% |
| 18 | 34 | 21 | 55 | 41 | 34 | 75 | 36% |
| 19 | 1,995 | 630 | 2,625 | 5,091 | 779 | 5,870 | 124% |
| 20 | 1,479 | 783 | 2,262 | 9,194 | 984 | 10,178 | 350% |
| 21 | 309 | 78 | 387 | 309 | 80 | 389 | 1% |
| 713 | 868 | 426 | 1,294 | 869 | 445 | 1,314 | 2% |

4.2 OVERALL CATCHMENT POTENTIAL

Figure 8 provides an overview of the area overlap between the general catchment and the MLUFS zones, along with detailed land use data. The overlap serves as an indication of the proportion of population and employment within each MLUFS zone that will form part of the potential car patronage for Eglinton Station.

Figure 8: Future (2031) Overall Catchment, Land Use and MLUFS Zone Overlap

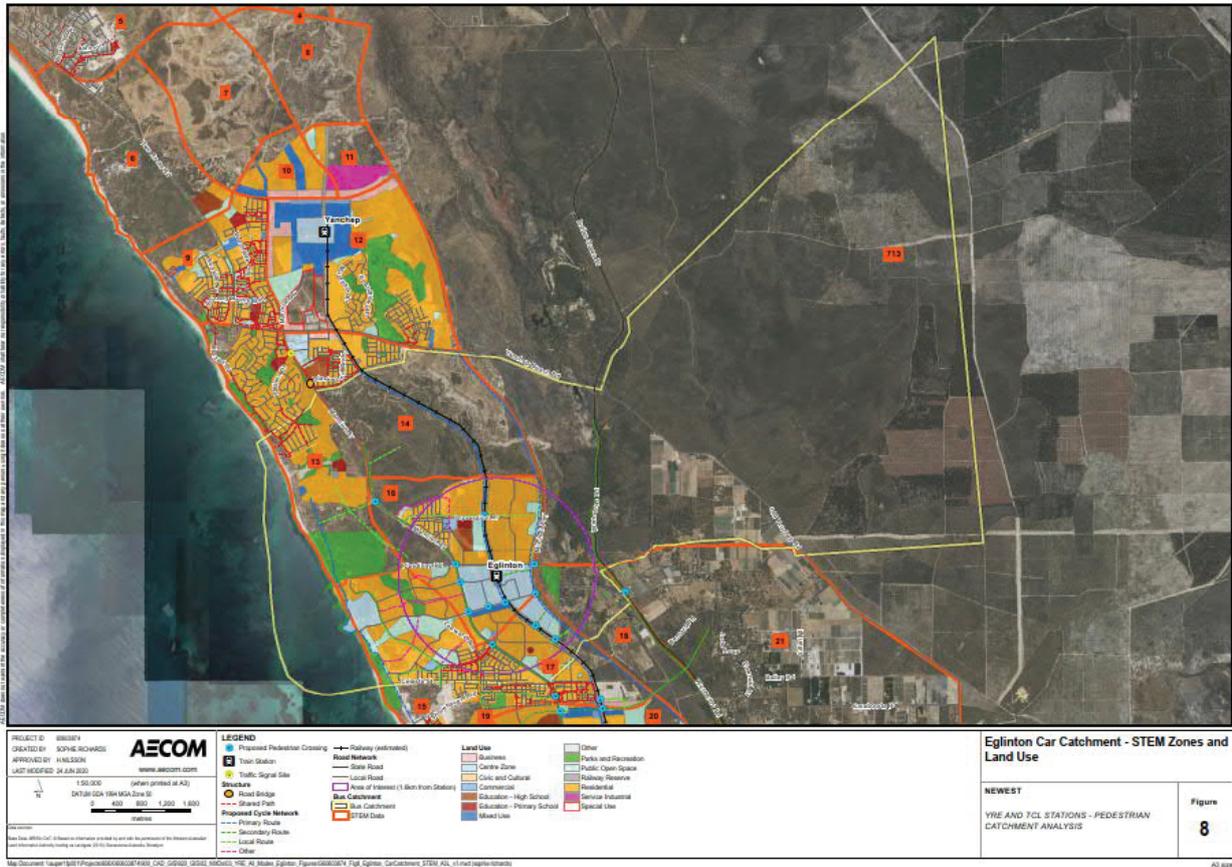


Table 3 highlights the area-based overlaps between the general catchment and the MLUFS zones, along with an adjustment made to the overlap percentage being made following consideration of the existing and planned detailed land use data sourced from structure plans.

Table 3: Future (2031) Overall Catchment and MLUFS Zone Adjusted Overlap

| MLUFS Zone | Overlap | Adjusted overlap | Reason for adjustment |
|------------|---------|------------------|--|
| 13 | 63% | 40% | The captured area consists of large section of MLUFS zone where the land use (bushland) is not expected to generate significant patronage |
| 14 | 79% | 0% | No residential or patronage-generating land use captured |
| 15 | 69% | 95% | Most areas of MLUFS zone with land use (bushland) with low expected patronage falls outside catchment |
| 16 | 100% | 100% | |
| 17 | 51% | 60% | Areas of MLUFS zone with highest patronage potential (mixed use and town centre zone) falls within catchment and most areas of MLUFS zone with low expected patronage (bushland) falls outside catchment |
| 18 | 30% | 0% | No residential or patronage-generating land use captured |
| 713 | 12% | 0% | No residential or patronage-generating land use captured |

4.3 FUTURE (2031) BUS CATCHMENT POTENTIAL

Figure 9 provides an overview of the area overlap between the bus catchment and the MLUFS zones, along with detailed land use data. The overlap serves as an indication of the proportion of population and employment within each MLUFS zone that will form part of the potential bus patronage for Eglinton Station.

Figure 9: Future (2031) Bus Catchment, Land Use and MLUFS Zone Overlap

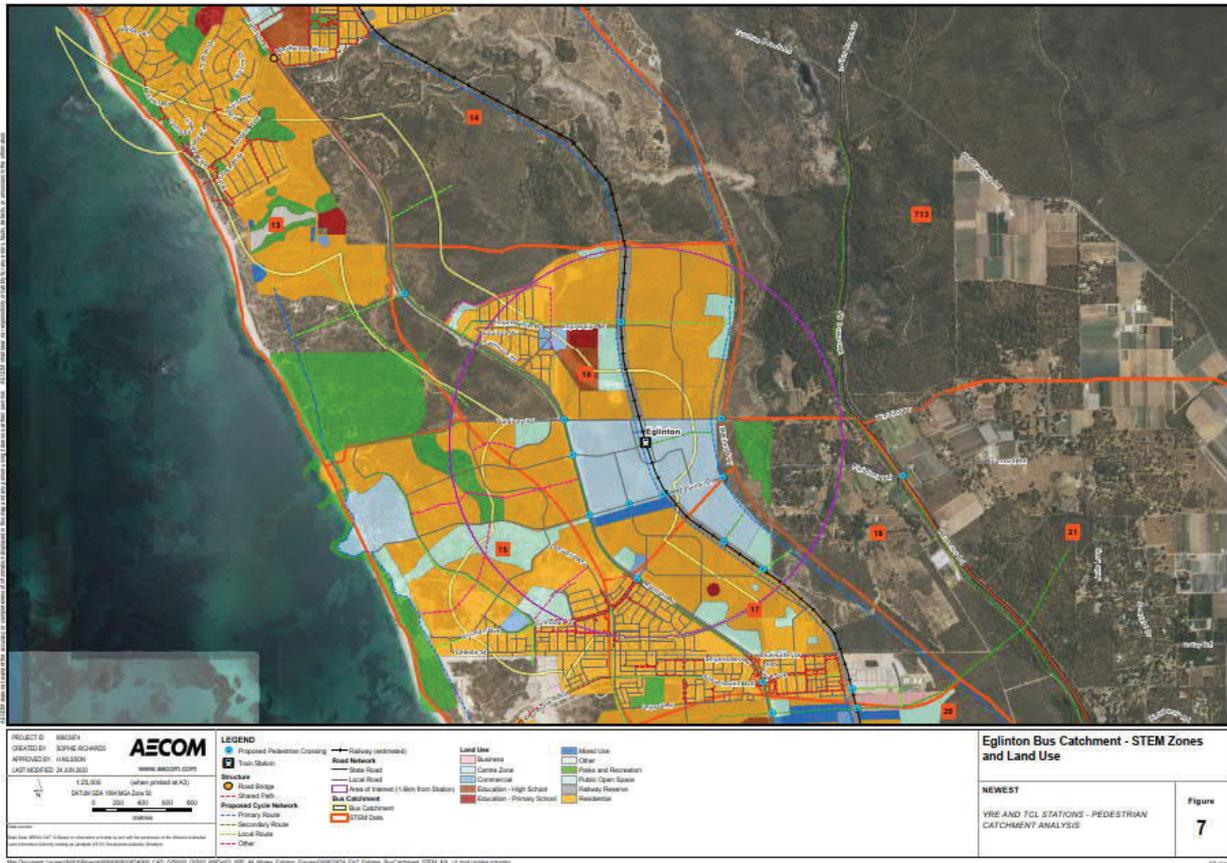


Table 4 highlights the area-based overlaps between the bus catchment and the MLUFS zones, along with any adjustment made to the overlap percentage being made following consideration of the existing and planned detailed land use data sourced from structure plans.

Table 4: Future (2031) Bus Catchment and MLUFS Zone Adjusted Overlap

| MLUFS Zone | Overlap | Adjusted overlap | Reason for adjustment |
|------------|---------|------------------|---|
| 13 | 36% | 30% | The captured area consists of large section of MLUFS zone where the land use (bushland) is not expected to generate significant patronage |
| 14 | 8% | 0% | No residential or patronage-generating land use captured |
| 15 | 34% | 34% | |
| 16 | 56% | 56% | |
| 17 | 19% | 25% | Areas of MLUFS zone with land use (bushland) with low expected patronage falls outside catchment |

4.4 FUTURE (2031) CYCLING CATCHMENT POTENTIAL

Figure 10 provides an overview of the area overlap between the cyclable catchment and the MLUFS zones, along with detailed land use data. The overlap serves as an indication of the proportion of population and employment within each MLUFS zone that will form part of the potential cycle patronage for Eglinton Station.

Figure 10: Future (2031) Cyclable Catchment, Land Use and MLUFS Zone Overlap

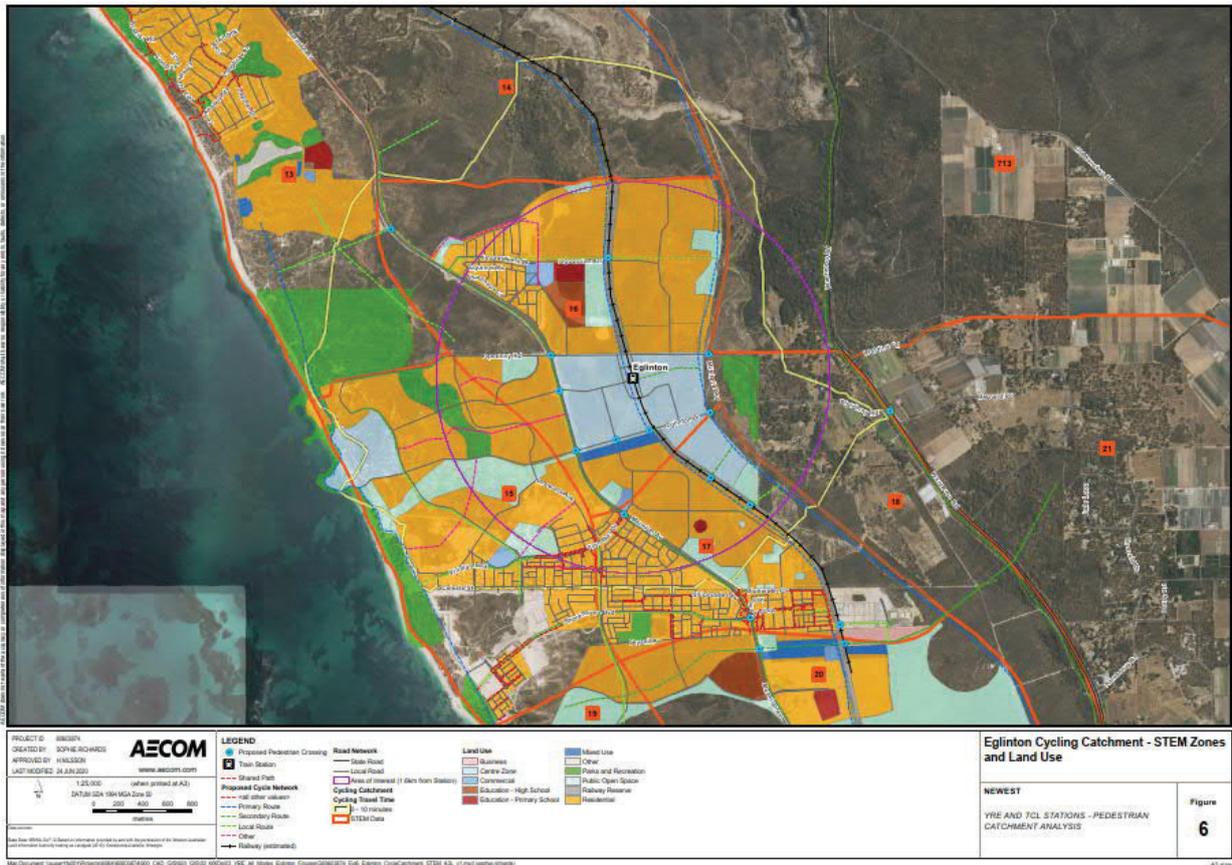


Table 5 highlights the area-based overlaps between the cyclable catchment and the MLUFS zones, along with any adjustment made to the overlap percentage being made following consideration of the existing and planned detailed land use data sourced from structure plans.

Table 5: Future (2031) Cyclable Catchment and MLUFS Zone Adjusted Overlap.

| MLUFS Zone | Overlap | Adjusted overlap | Reason for adjustment |
|------------|---------|------------------|--|
| 13 | 17% | 5% | Little residential or patronage-generating land use captured |
| 14 | 25% | 0% | No residential or patronage-generating land use captured |
| 15 | 64% | 95% | Most areas of MLUFS zone with land use (bushland) with low expected patronage falls outside catchment |
| 16 | 100% | 100% | |
| 17 | 48% | 60% | Areas of MLUFS zone with highest patronage potential (mixed use and town centre zone) falls within catchment and most areas of MLUFS zone with low expected patronage (bushland) falls outside catchment |
| 18 | 23% | 0% | No residential or patronage-generating land use captured |

4.5 FUTURE (2031) WALKING CATCHMENT POTENTIAL

Figure 11 provides an overview of the area overlap between the walkable catchment and the MLUFS zones, along with detailed land use data. The overlap serves as an indication of the proportion of population and employment within each MLUFS zone that will form part of the potential pedestrian patronage for Eglinton Station.

Figure 11: Future (2031) Walkable Catchment, Land Use and MLUFS Zone Overlap

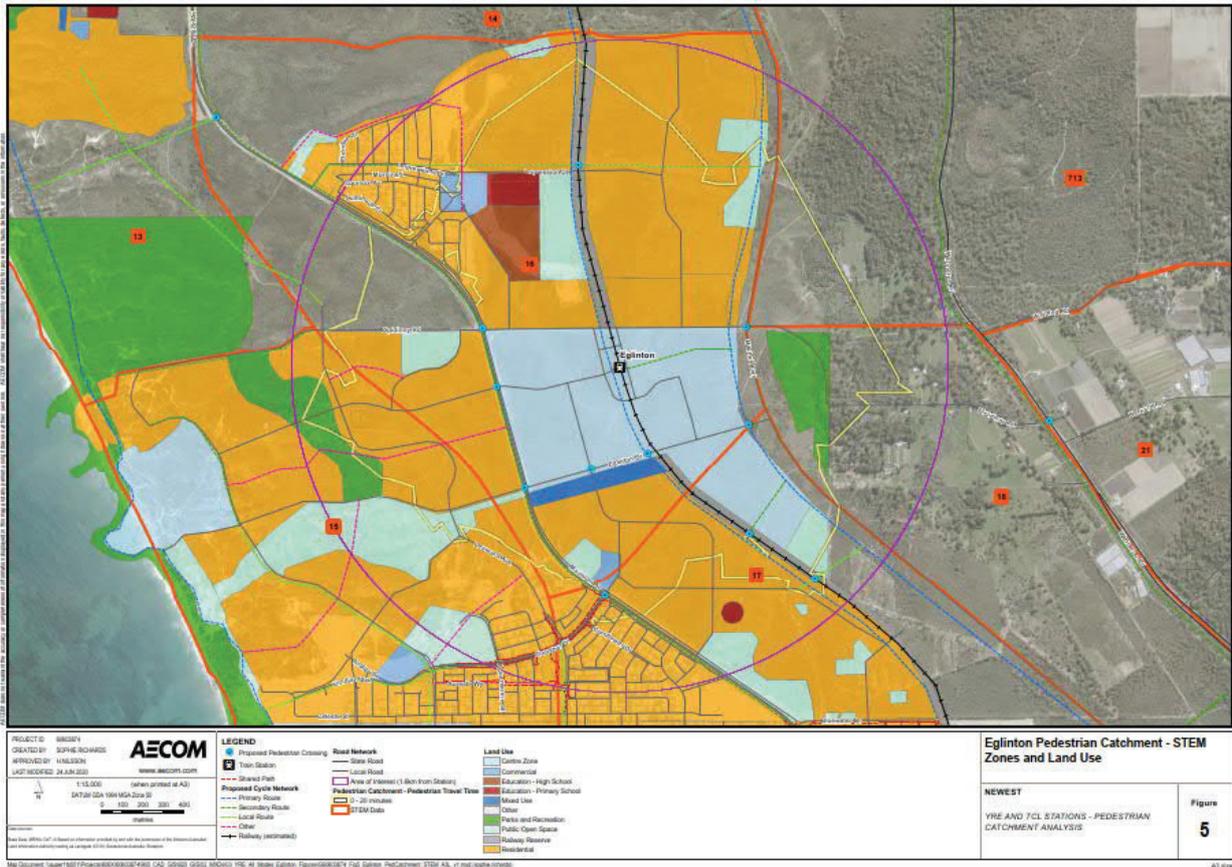


Table 6 highlights the area-based overlaps between the future walkable catchment and the MLUFS zones, along with any adjustment made to the overlap percentage being made following consideration of the existing and planned detailed land use data sourced from structure plans.

Table 6: Future (2031) Walkable Catchment and MLUFS Zone Adjusted Overlap

| MLUFS Zone | Overlap | Adjusted overlap | Reason for adjustment |
|------------|---------|------------------|--|
| 15 | 8% | 8% | |
| 16 | 63% | 80% | Most areas of MLUFS zone with low expected patronage (bushland) falls outside catchment |
| 17 | 17% | 40% | Areas of MLUFS zone with highest patronage potential (mixed use and town centre zone) falls within catchment and most areas of MLUFS zone with low expected patronage (bushland) falls outside catchment |
| 18 | 9% | 0% | No residential or patronage-generating land use captured |

4.6 MODE SHARE POTENTIAL

Table 7 summarizes the adjusted overlaps between the mode-specific catchments and the MLUFS zones, along with the resulting potential patronage volumes using the patronage volumes presented in Section 3.0. It is important to note that these potential patronage volumes only denote the theoretical maximum patronage volumes for each mode.

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Table 7: Potential Patronage by Mode

| MLUFS Zone | Adjusted overlap - 2031 | | | | Potential patronage - 2031 | | | |
|------------|-------------------------|-----|---------|---------|----------------------------|-------|---------|---------|
| | Car | Bus | Cycling | Walking | Car | Bus | Cycling | Walking |
| 13 | 40% | 30% | 5% | 0% | 4,003 | 3,292 | 549 | 0 |
| 14 | 0% | 0% | 0% | 0% | 0 | 0 | 0 | 0 |
| 15 | 95% | 34% | 95% | 8% | 9,499 | 3,849 | 10,756 | 906 |
| 16 | 100% | 56% | 100% | 80% | 10,080 | 6,400 | 11,428 | 9,142 |
| 17 | 60% | 25% | 60% | 40% | 3,947 | 1,868 | 4,482 | 2,988 |
| 18 | 0% | 0% | 0% | 0% | 0 | 0 | 0 | 0 |
| 19 | 0% | 0% | 1% | 0% | 0 | 0 | 59 | 0 |
| 20 | 0% | 0% | 3% | 0% | 0 | 0 | 305 | 0 |
| 21 | 0% | 0% | 1% | 0% | 0 | 0 | 4 | 0 |
| 713 | 0% | 0% | 0% | 0% | 0 | 0 | 0 | 0 |

The combined potential patronage volumes for all MLUFS zones and each mode serve as the basis for the upper limits of the mode shares. This is done by calculating the proportion of potential patronage for each mode relative to the potential car patronage, as summarized in **Table 8**.

Table 8: Potential Mode Shares

| 2031 | Car | Bus | Cycling | Walking |
|-----------------------------------|--------|--------|---------|---------|
| Potential patronage | 27,529 | 15,408 | 27,582 | 13,036 |
| Potential mode share | 100% | 56% | 100% | 47% |
| Potential mode share (Arup, 2018) | 100% | | | 24% |

5. ACCESS MODE SHARE

The effective mode shares for 2031, presented in **Table 9**, have been derived using benchmarking analysis against similar stations and consideration of the potential mode shares derived in Section 4.6. These have subsequently been compared to the mode shares suggested by previous YRE 2018³ analysis (Arup) and YRE 2018⁴ analysis (WSP). For car access modes, 'Kiss and Ride' (KnR) and 'Park and Ride' (PnR) has been estimated separately, in order to be able to assess the required parking supply in Section 6.

It should be noted that the Arup analysis assumes a future year of 2051 and subsequently have a more optimistic target for active mode shares. The WSP analysis, which builds on the Arup analysis, is based on 2021 mode shares, but assumes a fully built out and utilised parking infrastructure at the station. Therefore, the WSP mode shares could potentially underestimate the active mode share targets for a 2031 scenario.

Table 9: Effective Mode Shares 2031

| Mode shares | YRE 2018 ³ | YRE 2019 ⁴ | STEM | YRE 2020 Catchment Analysis | Comments |
|-------------------|-----------------------|-----------------------|------|-----------------------------|--|
| Walking | 5% | 3% | | 20% | Based on increased potential pedestrian patronage compared to Arup analysis and benchmarking against Wellard Station (37%) and Butler Station (33.5%) existing mode shares, with a more conservative estimate of the area within walking distance of the station anticipated to be developed by 2031 |
| Cycling | 20% | 5% | | 5% | Based on large potential cycling patronage and benchmarking against Wellard (5%) and Butler (3%) Station's target 2031 mode shares |
| Walking + Cycling | 25% | 8% | 32% | 25% | Still a conservative assumption compared to existing walking + cycling mode shares for Wellard and Butler Stations, based on conservative assumption of Eglinton development completed by 2031 |
| Bus | 32% | 49% | 34% | 35% | Based on large potential bus patronage and benchmarking against Mandurah and Warnbro stations target mode shares |
| KnR | 23% | 14% | 10% | 17% | Based on benchmarking against existing Butler Station mode share |
| PnR | 20% | 29% | 24% | 23% | Remaining mode share |

A formalised assessment of effective modes shares for the year 2021 has not been undertaken owing to the uncertainty of the completion of the development surrounding the station. It is likely that much of the development supporting active station access modes will not be in place by 2021.

³ YRE 2018 - *Yanchep Rail Extension Strategic Access Planning* (Arup, 2018)

⁴ YRE 2019 - *Yanchep Rail Extension Transport Assessment* (WSP, 2019)

Therefore, a larger proportion of the mode shares are likely to consist of car and bus modes. An indicative assessment of the mode shares for 2021 is presented in **Table 10** and includes a comparison with previous Arup and WSP analysis.

Table 10: Effective Mode Shares 2021

| 2021 | | | | |
|-------------------|-----------------------|-----------------------|-----------------------------|---|
| Mode shares | YRE 2018 ⁵ | YRE 2019 ⁶ | YRE 2020 Catchment Analysis | Comments |
| Walking | 2% | 3% | 3% | A conservative estimate is suggested to reflect the low likelihood of nearby development being completed at opening |
| Cycling | 10% | 5% | 5% | A conservative estimate is suggested to reflect the low likelihood of nearby development or east-west cycle connections being completed at opening |
| Walking + Cycling | 12% | 8% | 8% | A conservative estimate is suggested to reflect the low likelihood of nearby development or east-west cycle connections being completed at opening |
| Bus | 12% | 49% | 30% | A more conservative estimate than WSP is suggested to reflect a reduced bus network being in place at opening |
| KnR | 31% | 14% | 20% | Based on benchmarking against existing Butler Station mode share, and assuming a greater proportion of people coming from outside walking and cycling catchment |
| PnR | 45% | 29% | 42% | Remaining mode share; if unlimited parking is provided. |

Table 11 presents the resulting patronage volumes for each mode for the years 2021 and 2031.

Table 11: Patronage by Mode

| Patronage by mode | 2021 | 2031 |
|-------------------|------|------|
| Walking | 54 | 441 |
| Cycling | 90 | 110 |
| Bus | 540 | 771 |
| KnR | 360 | 375 |
| PnR | 756 | 507 |

6. STATION REQUIREMENTS

Based on the PnR patronage volumes estimated in Section 5, long-term parking supply requirements for Eglinton Station has been assessed, using an assumed 1.1 parking space turnover rate and 1.1 vehicle occupancy rate. The resulting necessary parking supply is presented in **Table 12**, along with a comparison against previous Arup and WSP analysis, STEM modelling assumptions and current design provision. The analysis suggests that the current design provides a sufficient amount of parking for the anticipated 2031 demand. If a greater proportion of development has been delivered by 2031 within the future station walking catchment, the Park n Ride mode share is likely to decrease (with increased active modes) and / or there may be an increase in overall patronage.

⁵ YRE 2018 - *Yanhep Rail Extension Strategic Access Planning* (Arup, 2018)

⁶ YRE 2019 - *Yanhep Rail Extension Transport Assessment* (WSP, 2019)

For the station opening (2021), the assumed minimal delivery of east-west active mode connections to Eglinton Station, and assumed small proportion of new development being completed within the active mode catchments, will limit the walking and cycling mode share, with a conservative estimate of an 8% active mode share to the new Station as outlined in **Table 10**. Along with an assumed more limited bus network, this would result in an approximate Park n Ride mode share of 42%. If the forecast patronage of 1,700 daily boardings was met with this mode share, it would require approximately 625 parking bays. However, if there is a reduced walking, cycling and bus catchment by 2021 it is also likely there will be reduced overall patronage for the station, and the proposed Park n Ride supply of 426 would suffice.

Table 12: Future (2031) Parking Requirements

| Parking | YRE 2018 ⁵ | YRE 2019 ⁶ | STEM | Current 15% Design | YRE 2020 Catchment Analysis |
|---------|-----------------------|-----------------------|------|--------------------|-----------------------------|
| 2021 | 308 | 407 | | 426 | 625 |
| 2031 | 553 | 407 | 400 | 426 | 420 |

7. CONCLUSIONS

This note has reviewed the proposed station access mode shares for Eglinton Station and the associated parking supply is sufficient for the 2031 catchment analysis.

In the interim period for the Station opening, and until the full potential development outlined in the Eglinton City Centre Activity Centre Plan is realised, it is essential that quality and direct walking, cycling and bus connections are delivered in parallel to the METRONET Station project, to existing and new development. This is critical to attract and service potential passengers for Eglinton Station and support the METRONET and City Centre objectives from the time the Station opens.

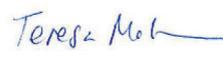
APPENDIX J

TRANSPORT IMPACT ASSESSMENT

Eglinton Station: Transport Impact Assessment

METRONET Stage 1 Initiatives: Yanchep Railway Extension and Thornlie-Cockburn Link

Document Approval

| Rev | Date | Prepared by | Reviewed By | Approved by |
|------------|------------|---|---|---|
| A | 14.07.2020 | Ronan Tyrie-Phillips, Ryan Townsend | Teresa Matassa | Chris Deshon |
| Signature: | |  |  |  |
| Signature: | | | | |

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DETAILS OF REVISION AMENDMENTS AND PLAN TERMINOLOGY

Document Control

The Transport Engineer is responsible for updating this plan to reflect changes as required.

Amendments

Any revisions or amendments must be approved by the Transport Engineer and/or NEWest before being distributed or implemented.

Revision Details

| Revision | Details |
|----------|---|
| A | Issued for NEWest review for 15% Design |

Terms and Definitions

| Term | Meaning |
|----------------------------|--|
| DoS – Degree of Saturation | <p>The DoS is a measure of available capacity at a road intersection, and is the ratio of the demand to capacity. The reported figure in this report reflects the maximum forecast DoS at the intersection:</p> <ul style="list-style-type: none"> - A DoS less than 90 percent indicates that a vehicle movement / intersection is able to operate within the practical capacity, and is less likely to experience significant movement delays. - A DoS over 90 percent indicates a vehicle movement / intersection has exceeded practical capacity and is more likely to experience some delay or congestion, with mitigation measures likely to be required to ensure adequate capacity for priority movements at peak periods. - A DoS of 100 percent or more indicates an intersection has exceeded practical capacity which would likely result in delay for vehicle movements, and be generally considered an undesirable outcome. |
| LoS – Level of Service | <p>The LoS is a measure of the forecast delay for vehicle movements at a road intersection. The LoS measure ranges from A to F, and provides an indicator of the performance of the network or individual movement based on the average delay per passenger car unit (pcu).</p> <p>For the YRE Station Accesses:</p> <ul style="list-style-type: none"> - LoS D is considered acceptable at peak times - LoS E or F for a priority movement reflects unacceptable delay and /or queuing at an intersection. For minor movements, this may be acceptable if queuing does not result in safety issues or impact other movements. |
| Aimsun | Transport network modelling software |
| SIDRA | Intersection analysis software used to analysis intersection performance |

Abbreviations and Acronyms

| Abbreviation/Acronym | Definition |
|----------------------|--|
| DoS | Degree of Saturation |
| LoS | Level of Service |
| PSP | Principle Shared Path |
| PTA | Public Transport Authority |
| ROM24 | Regional Operations Model version 24– Main Roads strategic transport network model used for forecast road demand |
| WAPC | Western Australian Planning Commission |
| YRE | Yanchep Rail Extension |

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1. INTRODUCTION AND BACKGROUND

1.1 METRONET YANCHEP RAIL EXTENSION BACKGROUND

The proposed Eglinton Station forms part of the wider METRONET Yanchep Rail Extension (YRE) project to deliver an extension of the existing rail line, north of the current terminus station at Butler. The project aims to deliver a 14.5 kilometres rail extension between Butler and Yanchep to support the ongoing growth in the region and alleviate traffic congestion along key routes by providing a wider reaching public transport service to the outer regions of Perth.

The YRE project is to be delivered by the NEWest Alliance, on behalf of the Public Transport Authority (PTA).

Yanchep has been identified as an emerging Strategic Metropolitan Centre by State Planning Policy 4.2 – Activity Centres for Perth and Peel (2010), the Yanchep Two-Rocks District Structure Plan (2010) and the Yanchep City Local Structure Plan No. 68 (2011). The City Centre will provide the economic core for the region accommodating a projected working population of 23,500 by the year 2031.

The primary components of the YRE project include the construction of three new train stations at the key locations of Alkimos, Eglinton and Yanchep. Each of the proposed new train stations will also include a bus station for public transport connectivity, Park & Ride, Kiss & Ride (drop-off) plus infrastructure for active modes including walking and cycling.

Figure 1. YRE Project Overview



Source: METRONET

1.2 PROPOSED EGLINTON STATION BACKGROUND

The proposed Eglinton Station is located on the YRE line, approximately 50 kilometres north of Perth. The proposed station site bordered by the existing Pipidiny Road alignment to the north, which provides connectivity to Marmion Avenue to the west and Wanneroo Road to the east. Connectivity with a future Mitchell Freeway extension is also anticipated to the east of the station, via a future Eglinton Drive connection.

Eglinton has been identified as a District Centre (“Directions 2031 and Beyond”) and therefore requires a station which will accommodate the needs of a growing population with an increasing demand for public transport. Eglinton Station will therefore provide connectivity for residents, employees, students and visitors of Eglinton and surrounding areas as the region grows around the focal point of the station.

Within the planned Eglinton District Centre, the station is expected to serve the anticipated growing population of the North-West sub-region and accommodate the anticipated future commercial, retail and residential centre. As per the Alkimos Eglinton District Structure Plan, the Eglinton District Centre in relation to the proposed train station, is shown in Figure 2.

Figure 2. Eglinton District Centre



Source: Alkimos Eglinton District Structure Plan, March 2016 (Landcorp)

Eglinton Station will be the last station before Yanchep on the Yanchep Rail Extension line and will allow for public transport access from surrounding areas to the emerging Strategic Metropolitan Centre of Yanchep.

1.3 PURPOSE OF THIS DOCUMENT

This Transport Impact Assessment (TIA) has been prepared to support the ongoing development application of the proposed Eglinton Station and seeks to outline the existing and proposed transport elements associated with Eglinton Station, due to be constructed as part of the wider METRONET YRE project.

As per the Western Australian Planning Commission (WAPC) Transport Impact Assessment Guidelines for Individual Developments (Volume 4), it is anticipated that the station will generate in excess of 100 vehicle trips within the development peak hour – resulting in what is considered to be a ‘high’ level of impact. Therefore, a transport impact assessment level of investigation is deemed to be appropriate for this development. As such, this document has been prepared in accordance with the framework established within the WAPC guidelines.

1.4 EXISTING SITUATION

1.4.1 PROJECT SITE

The site of the proposed Eglinton Station is located approximately 600 metres east of the existing intersection of Marmion Avenue and Pipidiny Road, which is anticipated to serve as the main access to the external road network. Additional road connectivity to Wanneroo Road is also to be provided via Pipidiny Road, located approximately 2 kilometres east of the station.

The proposed station is to be located on a currently unoccupied greenfield parcel of land; the approximate site boundary is shown in Figure 3

Figure 3. Proposed Eglinton Station Location



Source: Google Maps

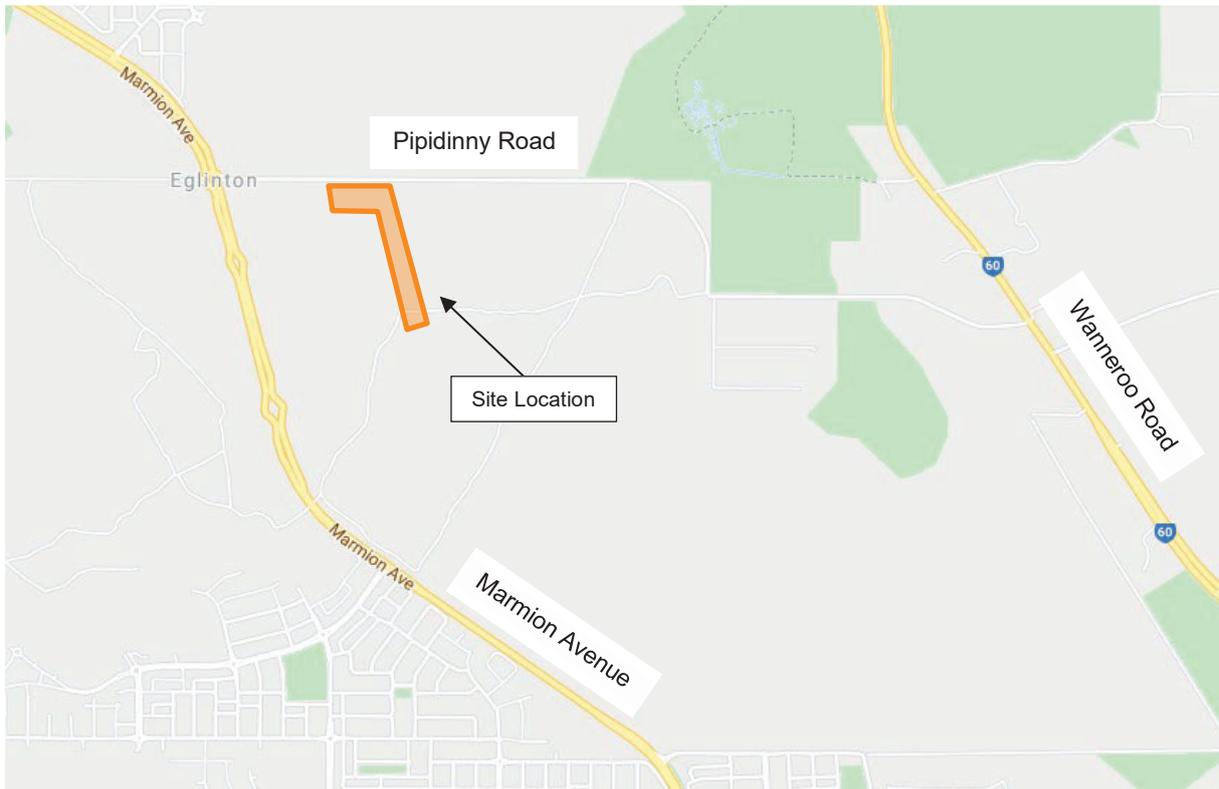
As the site is currently unoccupied, there are no existing land uses or traffic generation associated with site usage in or adjacent to the proposed Eglinton Station boundary. The *Eglinton Local Structure Plan (November 2012)* has been referenced to understand the future transport network and traffic generation by future development around the Station site, as discussed in Section 2.4.

1.5 SURROUNDING ROAD NETWORK

1.5.1 LOCAL ROAD NETWORK

The existing road network in the area surrounding the proposed Eglinton Station site is shown in Figure 4.

Figure 4. Eglinton Station Surrounding Road Network



Source: Google Maps

The proposed Eglinton Station site is expected to be accessed directly from Pipidinny Road. Pipidinny Road provides east-west connectivity between Marmion Avenue and Wanneroo Road. The road is currently a one lane per direction single carriageway (no median) with minimal width unsealed shoulders along the majority of its length. Currently, the speed limit along this section of road is limited to 80km/h. Access between Pipidinny Road and Marmion Avenue is controlled by an existing four-way roundabout.

Marmion Avenue is the nearest major road leading to the site and will likely serve as the major north-south distributor road for vehicles seeking to access the proposed station. Marmion Avenue provides key regional connectivity along the western coast of Perth from the West Coast Highway / Karrinyup Road intersection through to Yanchep Beach Road in the north.

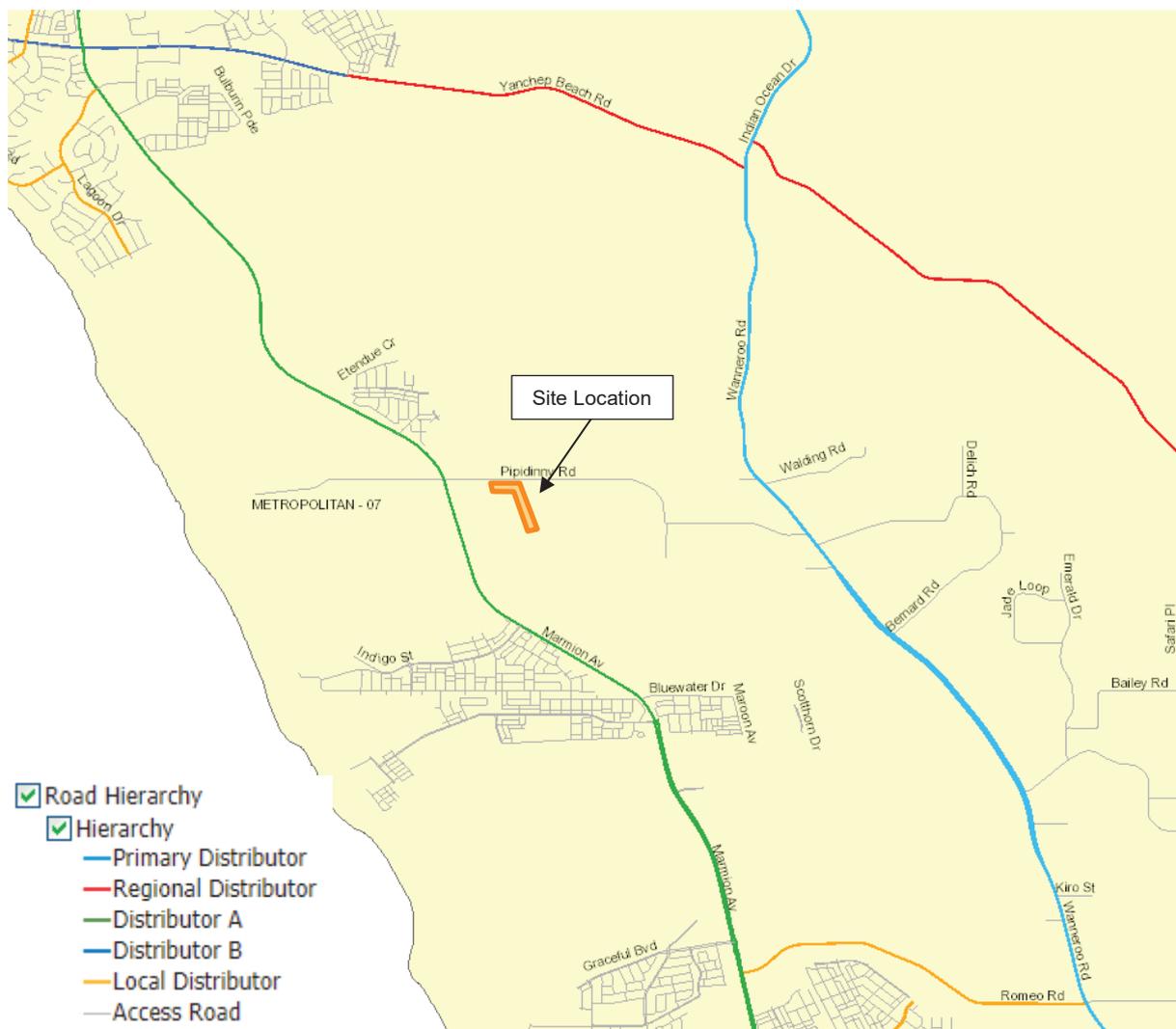
The City of Wanneroo is currently undertaking construction (with expected completion in 2020) of a dual carriageway upgrade along Marmion Avenue from Reflection Boulevard in Brighton, through to Yanchep Beach Road. Therefore, the section of road adjacent to the proposed station location is currently being upgraded to a two-lane per direction dual carriageway (with median). Marmion Avenue currently has a speed limit of 80km/h in the vicinity of the proposed Eglinton Station.

Wanneroo Road, located east of the proposed station location, provides additional north-south distributor access through the region with connectivity to the station via Pipidiny Road. Wanneroo Road is a one lane per direction single carriageway road north of the Pipidiny Road intersection. South of this intersection, a two-lane dual carriageway is provided. The current speed limit along the section of Wanneroo Road adjacent to the project area is 90km/h.

1.5.2 MAIN ROADS WA ROAD HIERARCHY

The road hierarchy system of the surrounding network, as per the Main Roads WA Road Information Mapping System, is shown in Figure 5.

Figure 5. Local Road Hierarchy



Source: MRWA Road Information Mapping System (<https://mrwebapps.mainroads.wa.gov.au/publicmaps/rim>)

As per the above functional road hierarchy in the vicinity of the proposed site location, it can be seen that Marmion Avenue is classified as a District Distributor A, indicating that this route is managed by the local government (City of Wanneroo).

Wanneroo Road is classified as a Primary Distributor and is therefore managed by Main Roads WA.

Finally, Pipidinny Road is classified as an access road and would be managed by local government (City of Wanneroo).

1.6 EXISTING TRAFFIC FLOW INFORMATION

1.6.1 PIPIDINNY ROAD

Traffic data along Pipidinny Road adjacent to the future Eglinton Station site has been sourced from the prior *Yanchep Rail Extension Transport Assessment* (WSP for PTA, May 2019). This traffic information was originally obtained from automatic traffic count data supplied by the City of Wanneroo.

Traffic counts on Pipidinny Road were undertaken across a one week period between Wednesday 25 July 2018 and Wednesday 1 August 2018. The provided traffic data was supplied as total vehicle counts only (i.e. vehicle classification information not provided). To account for the presence of heavy vehicles, it was assumed that the vehicle split was 95% light vehicles and 5% heavy vehicles. This was found to be consistent with the observed MRWA Traffic Map classification on Marmion Avenue near Alkimos for the year 2017/18.

The recorded AM and PM peak counts for Pipidinny Road are summarised in Table 1 and Table 2, respectively.

Table 1. Pipidinny Road 2018 AM Peak Counts

| Pipidinny Road | 2018 AM Peak (07:00 – 08:00) | |
|----------------|------------------------------|-----------|
| | Eastbound | Westbound |
| Light Vehicles | 221 | 61 |
| Heavy Vehicles | 12 | 3 |
| Total | 233 | 64 |

Table 2. Pipidinny Road 2018 PM Peak Counts

| Pipidinny Road | 2018 PM Peak (17:00 – 18:00) | |
|----------------|------------------------------|-----------|
| | Eastbound | Westbound |
| Light Vehicles | 78 | 192 |
| Heavy Vehicles | 4 | 10 |
| Total | 82 | 202 |

1.6.2 MARMION AVENUE

Marmion Avenue traffic flow information was sourced from the Main Roads WA Traffic Map. The nearest segment of road to the project area with recent traffic data is from the detector located south of the Graceful Boulevard intersection in Alkimos (located approximately 5 kilometre south of the Eglinton Station project site). Latest data available for this segment of Marmion Avenue is from the 2017/18 period.

The recorded AM and PM peak counts for Marmion Avenue are summarised in Table 3 and Table 4, respectively.

Table 3. Marmion Avenue 2017/18 AM Peak Counts

| Marmion Avenue | 2017/18 AM Peak (08:00 – 09:00) | |
|----------------|---------------------------------|------------|
| | Northbound | Southbound |
| Light Vehicles | 739 | 1,121 |
| Heavy Vehicles | 54 | 34 |
| Total | 793 | 1,155 |

Table 4. Marmion Avenue 2017/18 PM Peak Counts

| Marmion Avenue | 2017/18 PM Peak (15:00 – 16:00) | |
|----------------|---------------------------------|------------|
| | Northbound | Southbound |
| Light Vehicles | 1,040 | 816 |
| Heavy Vehicles | 55 | 27 |
| Total | 1,095 | 843 |

1.6.3 WANNEROO ROAD

Traffic data for Wanneroo Road was also sourced from the Main Roads WA Traffic Map. Information was obtained from the detector located approximately 500 metres north of the Pipidiny Road intersection for the 2017/18 period.

The recorded AM and PM peak counts for Wanneroo Road are summarised in Table 5 and Table 6, respectively.

Table 5. Wanneroo Road 2017/18 AM Peak Counts

| Wanneroo Road | 2017/18 AM Peak (07:00 – 08:00) | |
|----------------|---------------------------------|------------|
| | Northbound | Southbound |
| Light Vehicles | 176 | 353 |
| Heavy Vehicles | 47 | 48 |
| Total | 223 | 401 |

Table 6. Wanneroo Road 2017/18 PM Peak Counts

| Wanneroo Road | 2017/18 PM Peak (16:00 – 17:00) | |
|----------------|---------------------------------|------------|
| | Northbound | Southbound |
| Light Vehicles | 447 | 241 |
| Heavy Vehicles | 40 | 37 |
| Total | 487 | 278 |

1.6.4 MARMION AVENUE / PIPIDINNY ROAD ROUNDABOUT

No existing vehicle turning count information at the existing Marmion Avenue / Pipidinny Road roundabout was available at the time this report was prepared, due to a combination of factors including the construction works occurring along Marmion Avenue as part of the duplication works and the state-wide travel restrictions in place from March 2020.

1.7 EXISTING BUS ROUTES

Current Transperth bus route information for the area surrounding the Eglinton Station site has been sourced from Transperth network mapping.

The bus routes which currently operate in the vicinity are shown in Figure 6. As the new Eglinton Station will include a bus interchange to support convenient and efficient bus access to the new rail infrastructure, there will be a number of future bus services connecting to Eglinton Station. Future bus services are discussed in Section 3.5.

Figure 6. Existing Transperth Bus Route Map



Source: Transperth Network Maps (<https://www.transperth.wa.gov.au/journey-planner/network-maps>)

1.8 EXISTING PEDESTRIAN AND CYCLING NETWORK

The vicinity of the proposed Eglinton Station is not currently covered by the Department of Transport Joondalup and Stirling bike map, as this presently extends only as far as Butler. However, the City of Wanneroo has prepared a key bike routes map for the project area, as shown in Figure 7.

In addition, satellite maps indicate that Marmion Avenue currently provides sealed shoulders on either side of the road, both north and south of the Pipidinny Road intersection.

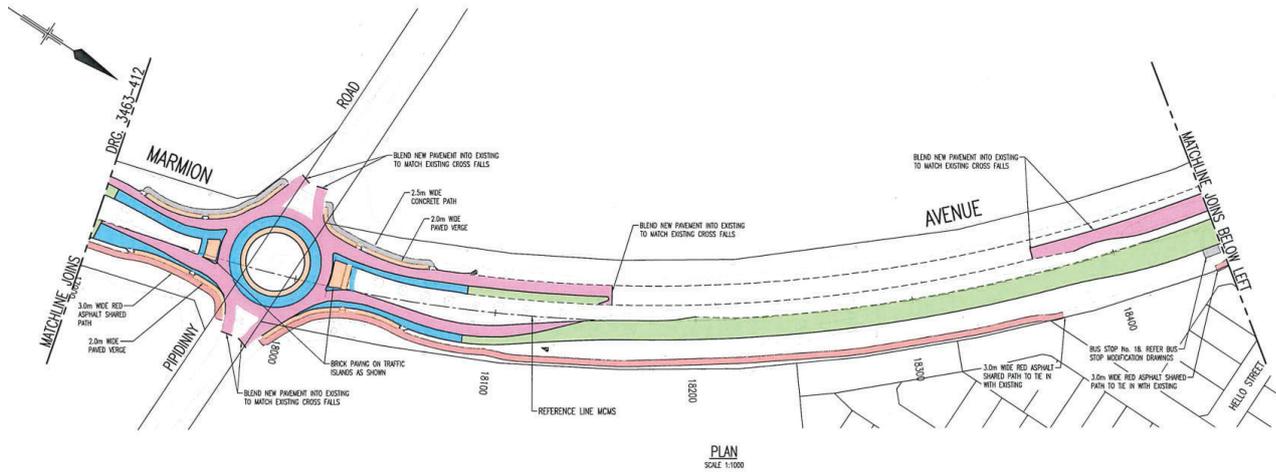
Figure 7. Existing Pedestrian and Cycle Network



Source: City of Wanneroo (https://www.wanneroo.wa.gov.au/downloads/download/323/city_of_wanneroo_bicycle_plan)

There are no existing footpaths along Marmion Avenue but the duplication that is currently underway (with expected completion in 2020), includes upgrades to the existing pedestrian and cycle network. Plans obtained from the City of Wanneroo on the Marmion Avenue dualling indicate a new 3.0 metre wide shared path is to be provided along the eastern side of the roadway, between Santorini Promenade and Yanchep Beach Road. An excerpt of these plans adjacent to Pipidiny Road is shown in Figure 8.

Figure 8. Marmion Avenue Duplication Plans (near Pipidiny Road)



Source: City of Wanneroo
https://www.wanneroo.wa.gov.au/directory_record/424/marmion_avenue_dualling_to_yanchep

As a result of these works, it is expected that the provision of the new shared path will improve cycle and pedestrian connectivity along the Marmion Avenue corridor and allow for future connection via Pipidiny Road to the proposed Eglinton Station.

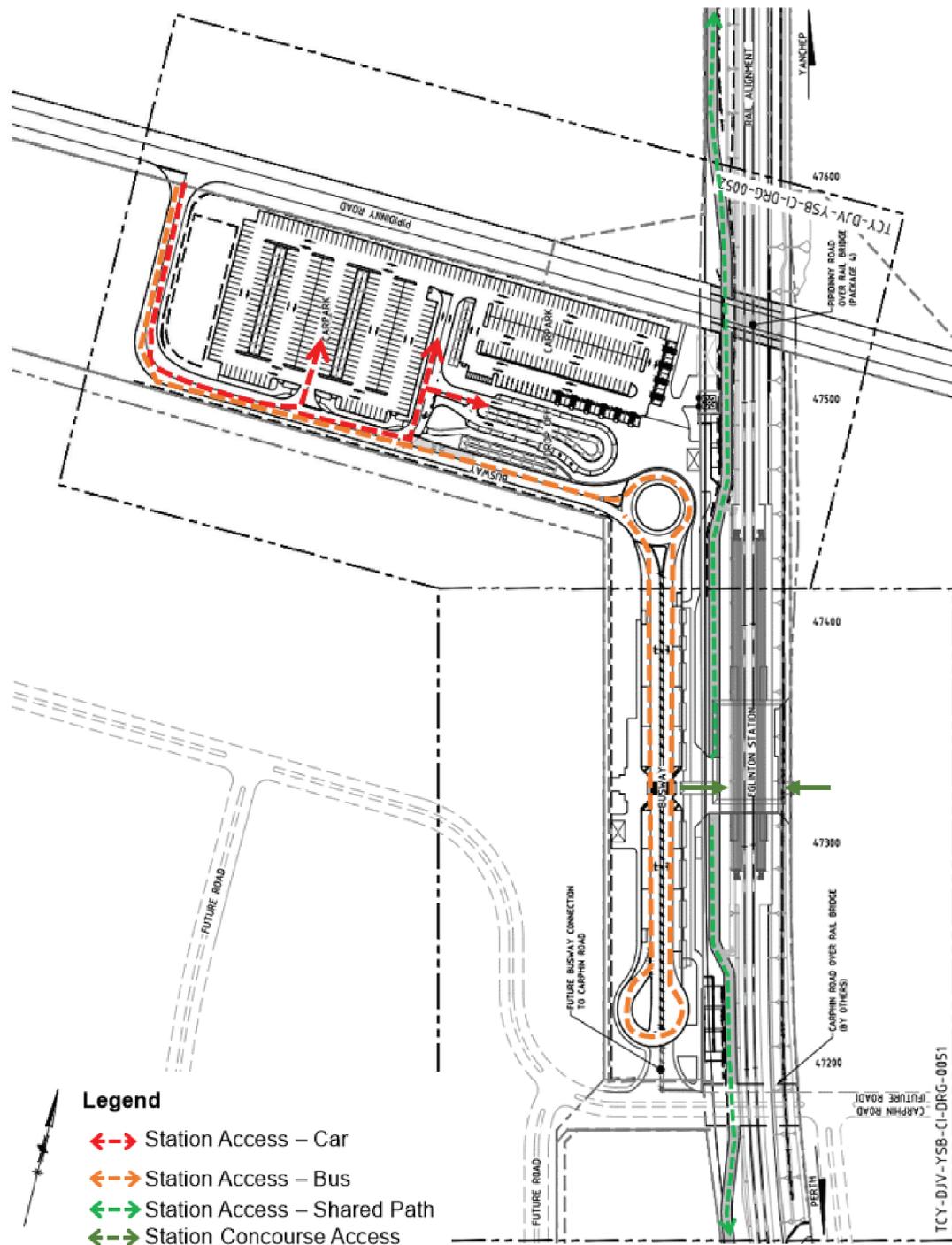
Pipidiny Road itself currently does not provide for any dedicated cycle or pedestrian facilities in the vicinity of the future station. Pipidiny Road also only provides very narrow unsealed shoulders along the majority of its length, and with an 80km/hr posted speed limit does not provide a suitable on-road riding environment based on the existing road configuration.

2. DEVELOPMENT PROPOSAL

2.1 STATION LAYOUT

The proposed Eglinton Station seeks to provide a two platform train station along the Yanchep rail line, along with supporting infrastructure including a 426 bay minimum parking area, drop-off parking zone, and a bus interchange. The general site layout is illustrated in Figure 9.

Figure 9. Eglinton Station Overall Plan and 2021 (Station Opening) Access Arrangements



Eglinton Station is identified as a Neighbourhood Station Precinct under the *METRONET Station Precinct Design Guide (2018)*, and the Station design is intended to support access to the station by walking, cycling, bus and car (Park & Ride and pick-up / drop-off). The Eglinton Station design is consistent with the access priorities identified for this station, as is summarised below and in the following sections (including recommended access improvements by other authorities / development agencies).

Vehicle access to the site shall be via a new intersection with the existing Pipidiny Road, located on the western side of the site boundary. This access will provide for all inbound and outbound vehicles, including bus movements at station opening. Note that there is currently a southern bus access point proposed to be implemented at a later date, as the surrounding road network is developed.

The proposed Eglinton bus interchange is located to the west of the station platforms. The interchange provides a total of 8 active bus bays along with 4 layover bus bays in a space efficient dog-bone configuration, that also allows for full recirculation of buses within the site boundary. Buses access the interchange via the shared primary site access on Pipidiny Road, but approximately halfway into the site buses then utilise a bus only segment of internal road to approach the interchange.

The long-term parking area (Park & Ride) is located north-west of the main station platforms and is connected to the station frontage via the station plaza. The car parking seeks to provide a minimum of 426 bays, which includes both long term bays and a number of specific use bays such as accessible (i.e. disabled) bays and taxi parking. Further details on the parking supply is provided in Section 3.7.

Located adjacent to the long-term parking area is the station drop-off area (Kiss & Ride), which provides for station pick-ups and drop-offs in a clockwise circulation to allow for safe access to vehicles for passengers.

As part of the station construction, a new north-south Principle Shared Path (PSP) is to be provided alongside the rail extension within the rail cutting. Access between the station plaza and the PSP is proposed to be via wheelchair friendly ramps provided at both the northern and southern ends of the station site. Along with the PSP connectivity, end of trip facilities are to be provided including sheltered bicycle parking, a number of bicycle U-rails, drinking fountain and public toilets, with further details provided in Section 3.6.

2.2 CHANGES TO SURROUNDING TRANSPORT NETWORKS

The construction of Eglinton Station does not include significant changes to the surrounding transport network as part of the project. As outlined above, primary access to the station site shall be via a new crossover located along the existing alignment of Pipidiny Road.

The Eglinton Station project considers the more widespread and significant changes to roads detailed in the overall *Eglinton Local Structure Plan No. 82 (November 2012)*, to be constructed as part of the future development outside of the Station site boundary.

These future modifications are discussed in further detail within Section 2.4: Committed Developments and Other Transport Proposals.

2.3 INTEGRATION WITH SURROUNDING AREA

The proposed Eglinton Station is to be located on an area of land east of Marmion Avenue which is currently unoccupied and has no existing land use. Similarly, the area surrounding the proposed station site is undeveloped.

However, Eglinton Station is expected to become one of the key features of the future Eglinton District Activity Centre and the future residential / retail development allowed for in the *Eglinton Local Structure Plan*. Therefore, the presence of the proposed Eglinton Station within the Eglinton District Centre supports sustainable development of the local area and acts as a catalyst for the implementation of the local structure plan aspirations and is consistent with the METRONET Station Precinct principles and objectives.

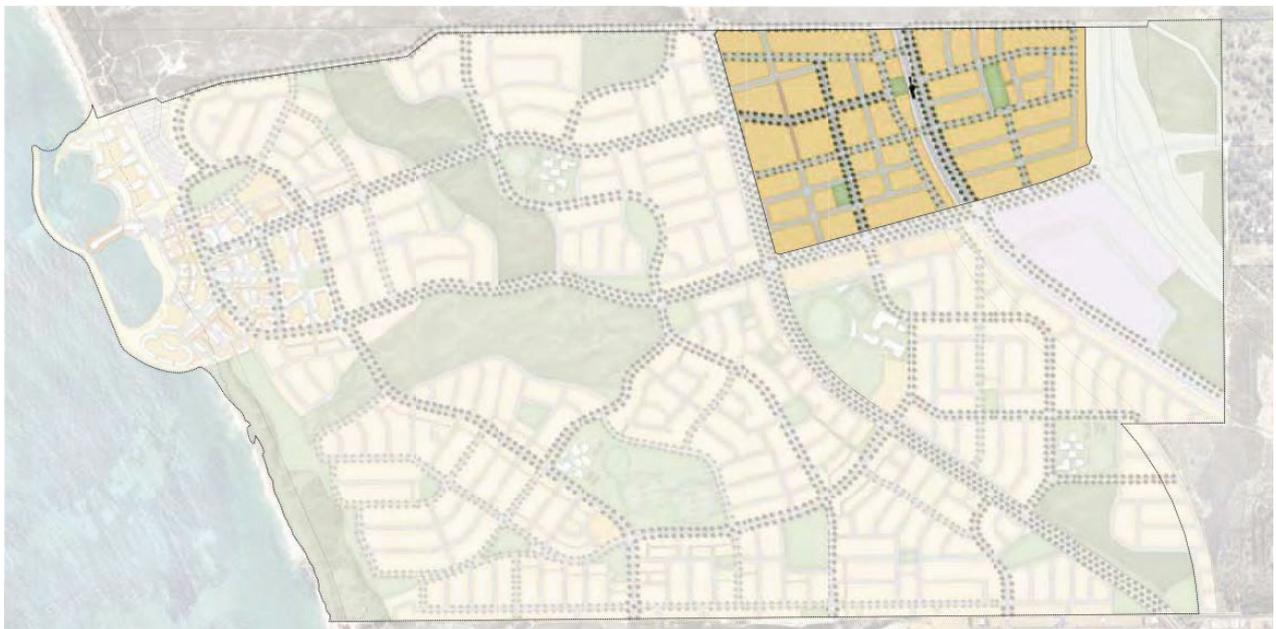
2.4 COMMITTED DEVELOPMENTS AND OTHER TRANSPORT PROPOSALS

2.4.1 EGLINTON LOCAL STRUCTURE PLAN NO. 82

As noted above, the *Eglinton Local Structure Plan No. 82 (November 2012)* is the primary planning document which outlines the intended development for the surrounding Eglinton area, of which the proposed Eglinton Station forms a critical component. In particular, the region of the Eglinton Local Structure Plan which includes the proposed station is indicated as Precinct 5 – District Activity Centre.

Precinct 5, as illustrated in the Eglinton Local Structure Plan, is shown in Figure 10.

Figure 10. Eglinton Local Structure Plan: District 5 – District Activity Centre



Source: Eglinton Local Structure Plan No. 82 (November 2012) – Part 2.

The Eglinton Local Structure Plan describes the District Activity Centre as the following:

“The Eglinton District Activity Centre will be focused around a main street. Activated public streets will be the principal organising element of the centre with the focus on developing a high-quality public realm where development addresses the street creating ‘active frontages’ with windows and balconies overlooking the street.

The District Activity Centre is not just a place to purchase goods and service or to do business. It will be the main focus for community life in Eglinton. Careful consideration has been given to the design and layout of the streets to accommodate an intense range of uses and activities that can stimulate a vibrant ‘streetlife’ and foster social interaction.

Being adjacent to a rail station, medium to high residential development is proposed, creating a true transit-oriented precinct (both east and west of the rail line) that facilitates and encourages high utilisation of the major public transport elements.”

Furthermore, the Eglinton Local Structure Plan outlines a number of other proposed major infrastructure changes in the surrounding area, as part of the planned wider area development. This includes significant upgrades to the surrounding road network, aimed at providing accessibility to the various adjacent land uses and improved network connectivity.

The proposed movement network as defined within the Eglinton Local Structure Plan is illustrated in Figure 11.

Figure 11. Eglinton Local Structure Plan: Proposed Movement Network



Source: Eglinton Local Structure Plan No. 82 (November 2012) – Part 2.

Notable changes to the movement network in the area surrounding the District Activity Centre include:

- Provision of Eglinton Drive, a new east-west link located south of Pipidiny Road and the proposed station.
 - The new Eglinton Drive is anticipated to connect to a proposed new interchange with a future Mitchell Freeway extension, located south east of the project site.
- A number of neighbourhood connector roads and local roads will then fill out the remaining access network inside the District Activity Centre.

Similarly, the Eglinton Local Structure Plan outlined both the concept public transport network and the indicative pedestrian and cycle network for the ultimate structure plan layout. These networks are illustrated in Figure 12 and Figure 13, respectively.

Currently, the implementation of the Eglinton Local Structure Plan is in the early stages of delivery and the majority of the land identified in the scheme is still currently undeveloped and much of the supporting transport network has not yet been implemented. However, the presence of the proposed Eglinton Station is a critical element of the overall structure plan and is considered the major catalyst for the future development of the region.

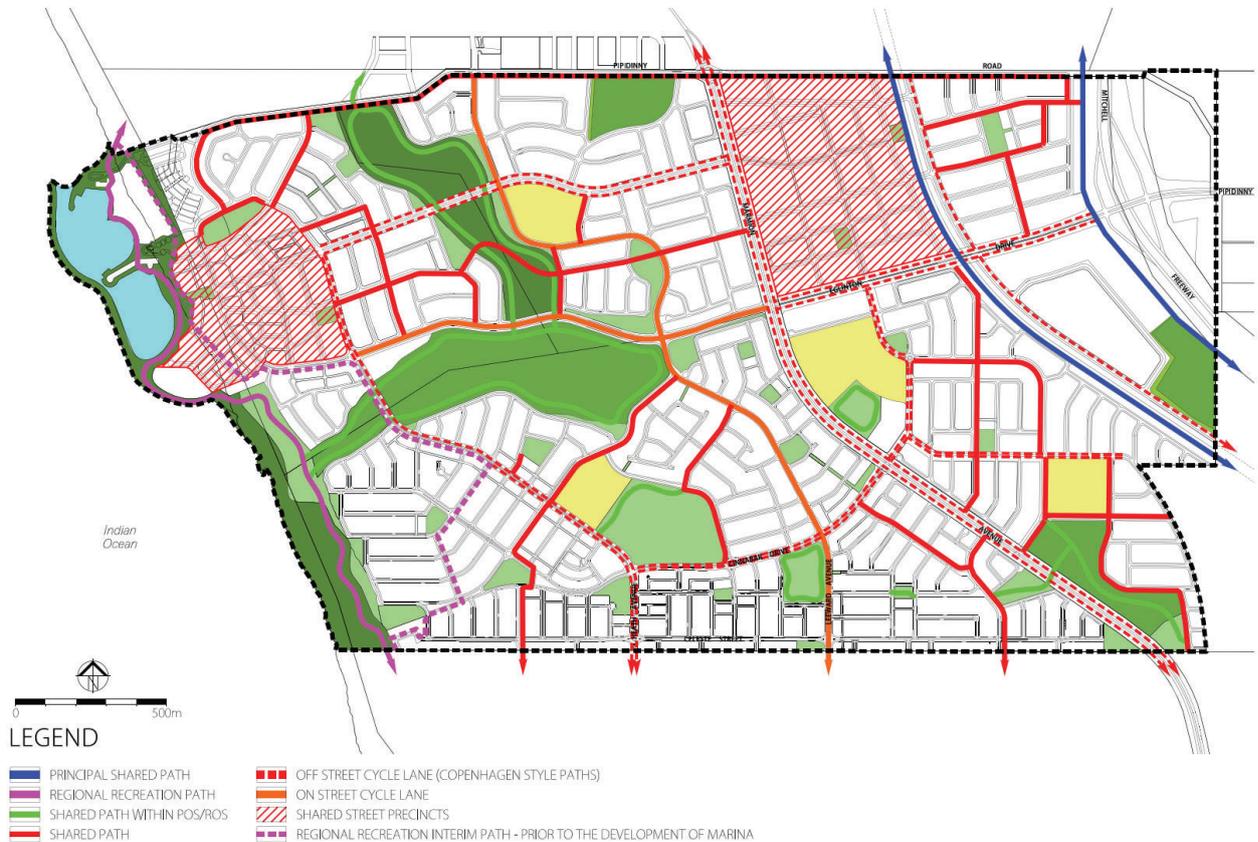
Therefore, while the proposed Eglinton Station development does not propose the construction of these major network transport connections as part of the project, the surrounding local district is prepared for the future expansion and development of the region (including the station), as demonstrated by the planning included as part of the Eglinton Local Structure Plan.

Figure 12. Eglinton Local Structure Plan: Ultimate Planned Public Transport Network



Source: Eglinton Local Structure Plan No. 82 (November 2012) – Part 2.

Figure 13. Eglinton Local Structure Plan: Indicative Pedestrian and Cycle Network



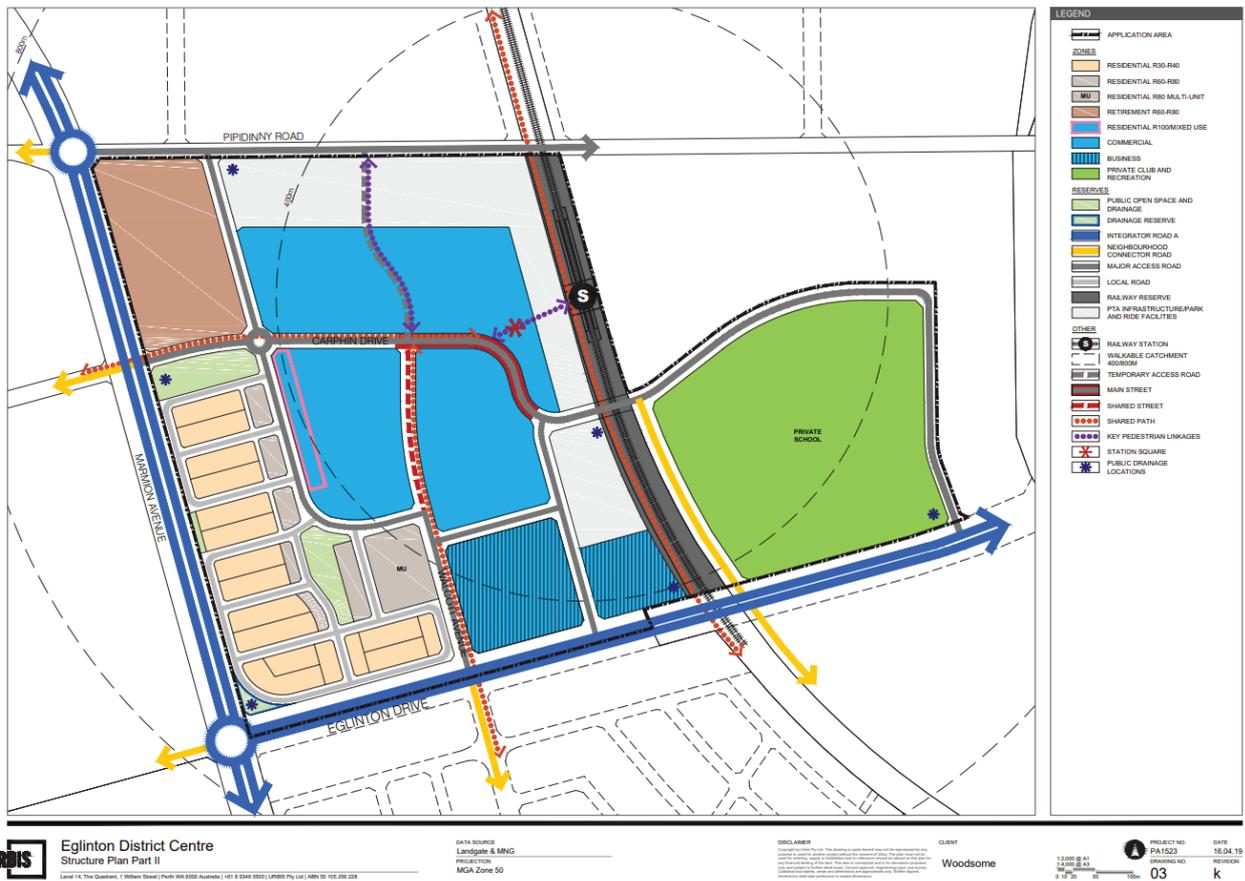
Source: Eglinton Local Structure Plan No. 82 (November 2012) – Part 2.

2.4.2 EGLINTON ACTIVITY CENTRE PLAN NO. 104

Further to the overall Eglinton Local Structure Plan, a localised structure plan focusing on the Eglinton Activity Centre was also produced. This plan targets primarily the area identified as the District Activity Centre (District 5), which not only includes the Eglinton Station but also numerous residential and commercial developments, plus a future private school site.

The full Activity Centre Plan map, as shown in the structure plan, is displayed in Figure 14.

Figure 14. Eglinton District Centre – Activity Centre Plan Map



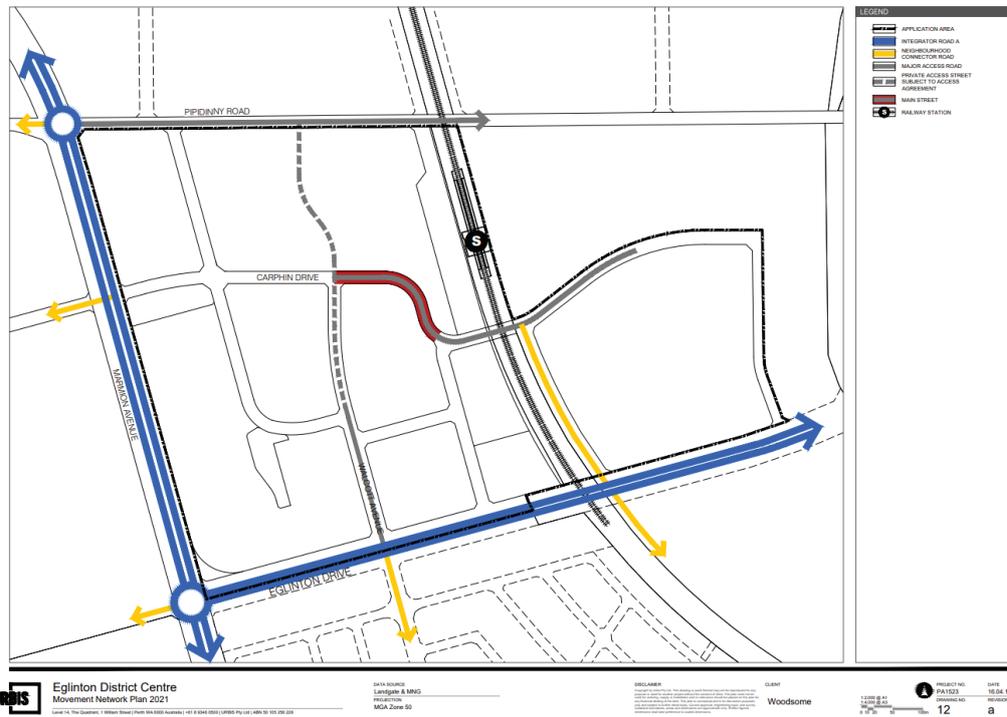
Source: Eglinton Activity Centre Plan No. 104 – Part 2 (Urbis, June 2019).

Included within the Eglinton Activity Centre structure plan was the assumed movement networks for the 2021 and 2031 time periods, shown in Figure 15 and Figure 16, respectively.

The Eglinton Activity Centre Plan No. 104 assumed the following movement network will be constructed around the Station by the year 2021:

- Pipidiny Road – minor upgrade only around station carpark and bus access (no footpaths or speed reduction along Pipidiny Road by 2021)
- Eglinton Drive - Integrator Arterial A east-west connection
- Walcott Avenue – partially complete as a north-south private access road from Eglinton Drive (only provides non-vehicle access to station site)
- Carphin Drive – partially complete as a short east -west connection between local activities across the rail corridor.

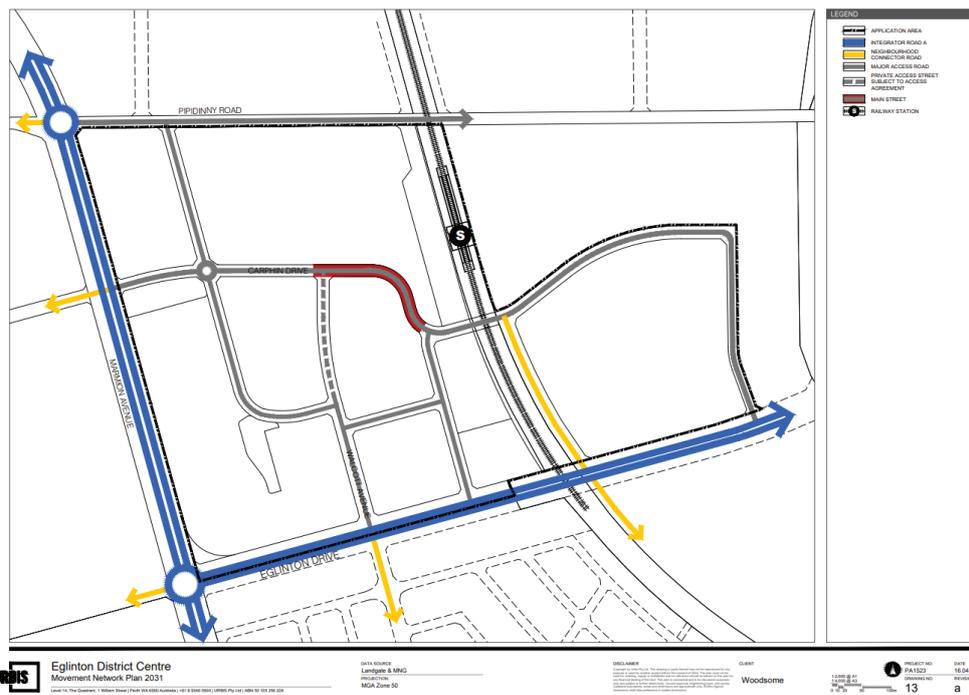
Figure 15. Eglinton District Centre – Activity Centre Movement Network 2021



Source: Eglinton Activity Centre Plan No. 104 – Part 2 (Urbis, June 2019).

By the year 2031, it can be seen that the assumed road network illustrated in Figure 16 included full build-out of the internal road network (including footpaths / shared paths along all roads) within the Eglinton Activity Centre.

Figure 16. Eglinton District Centre – Activity Centre Movement Network 2031



Source: Eglinton Activity Centre Plan No. 104 – Part 2 (Urbis, June 2019).

In addition to Part 2 (Explanatory Report) of the *Eglinton Activity Centre Plan No. 104*, Part 3 of the documentation includes an *Eglinton Activity Centre Plan Transport Assessment* report prepared by Arup (March 2019). It is noted that this Transport Assessment included not only the traffic generated by the future land use within the Activity Centre, but it also included the Eglinton Station with an assumed parking provision of 400 bays. Therefore, the assessment conducted by Arup is expected to be compatible with this Transport Assessment prepared by NEWest for Eglinton Station.

This Transport Assessment conducted sought to estimate the future traffic flows on the surrounding road network (including both existing roads and new road connections built as part of the structure plan) through preparation of an Aimsun mesoscopic model and provide an analysis on the forecast performance of the network. The reporting also included assessment on the future public transport provision and the active transport modes which are expected to service the area.

Aspects of the future demand forecasts on select roads outlined in the *Eglinton Activity Centre Plan Transport Assessment* have been referenced in this report, in order to support some of the assessments directly associated with the Eglinton Station.

3. ANALYSIS OF TRANSPORT NETWORKS

3.1 BACKGROUND AND APPROACH

The traffic assessment of the network surrounding the proposed Eglinton Station development is detailed within this section of the report. The goal of this assessment is to demonstrate that the transport infrastructure provided as part of the project is suitable for use and is capable of adequately accommodating the forecast transport demands associated with the future station.

3.1.1 ASSESSMENT YEARS / TIME PERIODS

For the transport infrastructure assessment of the Eglinton Station, the assessment focuses on the proposed opening year of 2021, and a post-opening year of 2031 to account for the medium term development in the area and presence of nearby major infrastructure changes, particularly the future Mitchell Freeway extension and interchange expected to be located at Pipidiny Road.

As the station is largely expected to accommodate work related trips to / from the Perth CBD, the assessment will focus primarily on the AM and PM peak periods. While weekend traffic is anticipated, both the station patronage and background traffic flows during the weekend are expected to be significantly lower than the respective weekday peaks.

The peak period intervals are primarily based on the existing traffic flow data for vehicle traffic along Pipidiny Road which demonstrates that the AM peak hour occurs from 07:00 to 08:00 and the PM peak hour from 17:00 to 18:00.

3.1.2 ASSUMED ROAD NETWORK FOR THE EGLINTON STATION TRANSPORT ASSESSMENT

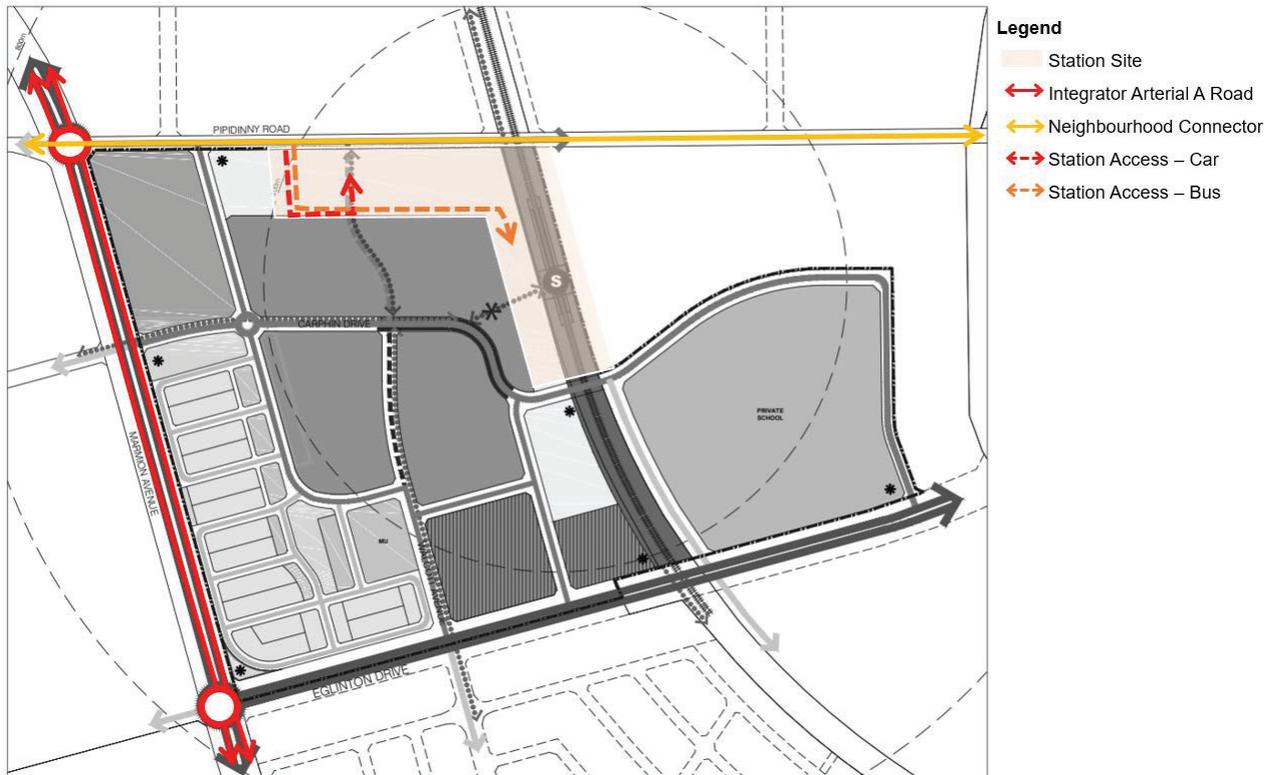
At the time this assessment on the Eglinton Station was prepared, consultation with the City of Wanneroo had not determined the final timing for the delivery of new development and associated movement network upgrades surrounding the Eglinton Station, with no clear timeframe for the completion of the proposed future Eglinton Drive and Carphin Drive connections.

Therefore, for the purposes of this assessment a conservative approach has been taken and the following scenario is assumed for the opening year (2021) of the Eglinton Station:

- Vehicle access will be primarily based on the existing road network; which **excludes** the proposed Eglinton Drive, Carphin Drive or other new internal road connections.
- Pipidiny Road – assumed this only includes a minor upgrade only around station carpark and bus access (no footpaths or speed reduction along Pipidiny Road by 2021).

The assumed road network in the opening year scenario is illustrated in Figure 17.

Figure 17. Eglinton Station – Assumed 2021 Road Network for Station Opening



For the 2031 ‘future year’ scenario, the Eglinton Station Transport Impact Assessment assumes the following road network is complete:

- Full build-out of the remaining internal road connections are assumed to be completed, including shared paths / footpaths (consistent with the Eglinton Activity Centre Plan assumed staging for 2031).
- Assumed Pipidiny Road upgrade with shared path as proposed in the Eglinton Local Structure Plan.

The assumed road network in the 2031 future year scenario is illustrated in Figure 18.

Figure 18. Eglinton Station – Assumed 2031 Road Network for ‘Future Scenario’



3.1.3 INTERSECTIONS TO BE INCLUDED IN THE INTERSECTION ANALYSIS FOR EGLINTON STATION

The access arrangement for the opening year scenario of Eglinton Station proposes that all vehicular traffic (including Transperth buses) enter and exit the site via the main access on Pipidiny Road, as illustrated in Figure 17. Therefore, the main access to the station site with Pipidiny Road will be a key focus of the traffic analysis study to be undertaken in this assessment.

3.1.4 INTERSECTIONS EXCLUDED IN THE INTERSECTION ANALYSIS FOR EGLINTON STATION

It is anticipated that a majority of vehicle traffic accessing the site will do so from the west of the site via the intersection of Pipidiny Road and Marmion Avenue. Liaison with the City of Wanneroo confirmed that the Marmion / Pipidiny roundabout was a key element of the surrounding road network of interest in terms of assessing the impact of the proposed development.

The current duplication of the Marmion Avenue and associated modification to the Marmion Avenue approaches to the roundabout are in anticipation of traffic growth along this corridor, including the Eglinton Activity Centre. The Transport Assessment for the Eglinton Activity Centre Plan (*Arup, March 2019*) included an assessment of this roundabout for the station opening (2021) and in 2031 and included traffic generation by the Station and anticipated development within the activity centre. Due to the recent upgrade works and impact of the COVID-19 pandemic on traffic demand it has not been feasible to collect traffic data, to update the forecast background traffic demand for each approach to the roundabout and update previous analysis of the potential performance of this roundabout in 2021 and 2031 scenarios.

Instead, a summary of the findings from the *Eglinton Activity Centre Plan Transport Assessment*, for the performance of the roundabout at the station opening is provided below in Section 3.4.3. As there is not likely to be a significant increase in the traffic generated by Eglinton Station by 2031 (as outlined in Section 3.3.1), the increased traffic growth at this roundabout will be associated with future land use development around the Station and is expected to be analysed as part of these site Transport Impact Assessments, including any required upgrades that may be required to the Pipidiny Road approach and departure lanes.

Finally, given the future extension of the Mitchell Freeway east of the site and the significant road network changes anticipated to occur as part of those works, in addition to the low proportion of site traffic approaching from the east, it is not proposed to undertaken traffic analysis at existing intersections east of Eglinton Station (i.e. Pipidiny Road / Wanneroo Road) as part of this assessment. Detailed traffic assessments will need to be undertaken as part of the wider network improvements associated with those individual projects.

3.1.5 METHODOLOGY

The overall approach to the transport assessment undertaken in this report is largely in line with the previous *Yanchep Rail Extension Transport Assessment (May 2019)* undertaken by WSP as part of the preliminary works leading up to the current engagement.

Baseline traffic demands have been sourced from City of Wanneroo data. Traffic growth rates for the background traffic growth is then applied to the base traffic demand, for the respective assessment year.

Traffic generated by the station development (including Park & Ride, Kiss & Ride as well as bus traffic) is then added on top of the background traffic, based on the forecast station patronage for that time period.

Note: Given that much of the surrounding area is not yet developed and the Eglinton Local Structure Plan likely has a development horizon of several decades for full build-out, the performance at intersections in the future will be heavily influenced by the number, size and type of surrounding developments within the structure plan area. As the timeframes for developing individual lots are subject to change and individual site approvals, the increase in traffic demand on given segments of the network for a particular timeframe is difficult to predict.

Therefore, the analysis undertaken in this section of the assessment has been based on the estimated impact of the Eglinton Station development plus background traffic growth only. The impact of additional developments and land uses has not been quantified within this assessment. The performance of the surrounding road network is an element that governing authorities will likely need to maintain and ensure ongoing monitoring as the structure plan is implemented over time and traffic demands in the area increase.

3.1.6 PERFORMANCE METRICS AND LEVEL OF SERVICE TARGETS

The network results of the analysis summarised in this report are presented in terms of:

- Delay – The average delay experienced per passenger car unit (measured in seconds).
- Level of Service (LoS) – The LoS (ranging from A to F) provides an indicator of the performance of the network or individual movement based on the average delay per passenger car unit (pcu).
- Degree of Saturation (DoS) – The DoS is a ratio of the demand to capacity, with DoS over 90 percent indicating a congested intersection, and DoS of 100 percent indicating an intersection

at capacity and DOS over 100 percent indicating oversaturated conditions. The DoS provided represents the maximum DoS at the intersection.

- Queue – The length of the average maximum back of queue (measured in number of passenger car units) on the approach measured over a number of cycles.
- As per the “8803-000-005 Specification - Station Building and Civil Works”, the level of service requirements for intersection performance specified by the Scope of Work and Technical Criteria (SWTC) are as follows:

3.3 Level of Service for Intersections

The overall level of service (LOS) for intersections during peak periods (as defined in Transportation Research Board’s Highway Capacity Manual - Special Report 209) shall be Level D or higher, with no individual major movement having a LOS lower than Level D and no individual minor movement having a LOS lower than Level E.

3.2 FORECAST NETWORK FLOWS

Forecast flows along the major road network surrounding the Eglinton Station have been sourced from ROM24 Link Volume Plots, supplied by Main Roads WA. These all-day link volume plots have been obtained for forecast years 2021, 2031 and 2041.

Each scenario includes various network assumptions relevant to the given year. In particular, the 2031 future year network includes the next stage of the Mitchell Freeway extension through to Yanchep. This next stage of the freeway extension includes new interchange connections at Romeo Road, Pipidinny Road and Yanchep Beach Road, resulting in significant changes to the surrounding major road network and forecast demands.

3.2.1 PIPIDINNY ROAD

Previous modelling and forecasts undertaken for the 2021 opening year scenario by WSP indicate that background traffic growth along Pipidinny Road has been assumed to be 15% per annum (based on a 500 vehicle per day increase, as advised by City of Wanneroo). To maintain consistency with prior analysis, this assumption has been unchanged for the 2021 opening year forecast.

To determine the growth rate of traffic along Pipidinny Road between 2021 and 2031, the ROM24 plots were referenced to determine if a future scenario growth rate can be calculated. While Pipidinny Road is modelled within the ROM24 2031 scenario, the link is currently not modelled within the ROM24 2021 scenario. Therefore, a direct growth rate cannot be determined for Pipidinny Road from these link volume plots.

However, assuming that growth along Pipidinny Road is consistent with the adjacent road network, the forecast growth along Marmion Avenue may be applied to Pipidinny Road. Based on the 2021 and 2031 Link Volume Plots, the average growth rate is summarised in Table 7.

Table 7. Marmion Avenue 2021 to 2031 average growth rate (south of Pipidinnny Road)

| Marmion Avenue | All-Day Link Volume (vehicles) | |
|-------------------------|--------------------------------|------------|
| | Northbound | Southbound |
| 2021 | 7,100 | 6,400 |
| 2031 | 13,700 | 15,500 |
| Average Growth (10yr) | 116% | |
| Average Growth (annual) | 8% | |

Based on the growth rates above, for the purposes of this assessment it has been assumed that background traffic along Pipidinnny Road would be anticipated to grow at a rate of approximately 8% per annum over the 2021 to 2031 period. This results in a total background traffic demand along Pipidinnny Road in the order of 10,000 vehicles per day and is consistent with the upper band of estimates in the earlier *Eglinton Activity Centre Plan – Transport Assessment* (Arup, March 2019).

Given the nature of the subject area and the future network changes over the assessment time period, this level of growth appears to be a reasonable assumption. Note that the forecast flows generated by the Eglinton Station development would then be applied over and above any growth in background traffic flows. This process is outlined in further detail within Section 3.3: Development Trip Generation and Distribution.

3.3 DEVELOPMENT TRIP GENERATION AND DISTRIBUTION

This section outlines the key methodology and figures / assumptions utilised in order to determine the forecast trip generation and distribution profile associated with the proposed Eglinton Station.

3.3.1 TRIP GENERATION

One of the major factors in calculating the trip generation associated with the site is the number of estimated daily station boardings. The agreed daily boardings have been developed through the Department of Transport STEM model and have been sourced from the Project Definition Report to remain consistent with previous assessments.

The forecast daily boardings for the Eglinton Station are shown in Table 8.

Table 8. Eglinton Station Daily Boardings Forecast

| Year | 2021 | 2031 |
|------------------------------------|-------|-------|
| Daily Boardings (passengers / day) | 1,799 | 2,204 |

The Eglinton Station access mode share has been sourced from the *Yanchep Rail Extension Transport Assessment* (WSP, May 2019), which in turn based the adopted mode share figures from the *Yanchep Rail Extension Strategic Access Planning Report* (Arup, February 2018).

The distribution of the mode share is based on Murdoch Station surveys undertaken by PTA in 2012, and has also been adjusted based on the forecast daily boardings and a Park & Ride occupancy of 1.2 persons per vehicle. The assumed mode share at Eglinton Station for the opening year of 2021 is shown in Table 9.

Table 9. Adopted 2021 Eglinton Station Mode Share

| Access Mode | Mode Share (2021) |
|-------------|-------------------|
| Walking | 3% |
| Cycling | 5% |
| Bus | 49% |
| Kiss & Ride | 14% |
| Park & Ride | 29% |
| Total | 100% |

Based on the above mode share figures, this translates to a maximum parking accumulation of 396 vehicles in the year 2021. The current proposed long term parking provision at the Eglinton Station is 413 standard bays plus 20 accessible (disabled) bays. Therefore, this parking accumulation equates to approximately 92% parking occupancy in the opening year scenario.

As the forecast daily boardings increase through to the year 2031 (by approximately 22%), it would be expected that the associated vehicle trip generation would also increase. However, as the Eglinton Station has a parking cap of 433 bays (including standard and accessible), the proportion of the mode share utilising the Park & Ride facility is also capped accordingly.

Therefore, the mode share for the future scenario of 2031 has been adjusted to account for this Park & Ride cap (assuming Park & Ride is 100% utilised by 2031), while also accommodating the overall increase in patronage in the other transport modes. Note that while a future Kiss & Ride target mode share for Eglinton Station in the long term (with full build out of the Eglinton Activity Centre) would be approximately 15%, for the purposes of this assessment a higher maximum mode share of 20% has been assumed in order to test the robustness of the station access point. The final mode share for this assessment at Eglinton Station for 2031 is shown in Table 10.

Table 10. Adopted 2031 Eglinton Station Mode Share

| Access Mode | Mode Share (2031) |
|-------------|-------------------|
| Walking | 7% |
| Cycling | 5% |
| Bus | 42% |
| Kiss & Ride | 20% |
| Park & Ride | 26% (cap) |
| Total | 100% |

Lastly, the arrival and departure profile of vehicles is a critical element of the station trip generation. As per the methodology adopted in the earlier previous *Yanchep Rail Extension Transport Assessment* (WSP, May 2019), the daily profile of boardings at Eglinton Station has been assumed to be comparable to the existing Clarkson Station due to the similar journey time to the Perth CBD.

Based on data collected at the Clarkson Station, the inbound and outbound trip distribution for both Park & Ride and Kiss & Ride modes assumed for the Eglinton Station is summarised in Table 11.

Table 11. Adopted daily passenger Boarding / Alighting trip generation profile

| Time (Hour Beginning) | Vehicle Trips (Train Passenger Boardings) | | Vehicle Trips (Train Passenger Alightings) | |
|-----------------------|--|-------------|---|-------------|
| | Park & Ride | Kiss & Ride | Park & Ride | Kiss & Ride |
| 5:00 | 10% | 6% | 0% | 0% |
| 6:00 | 24% | 14% | 0% | 0% |
| 7:00 | 44% | 31% | 0% | 1% |
| 8:00 | 7% | 11% | 0% | 1% |
| 9:00 | 5% | 6% | 0% | 2% |
| 10:00 | 1% | 5% | 0% | 1% |
| 11:00 | 1% | 3% | 1% | 2% |
| 12:00 | 0% | 3% | 2% | 2% |
| 13:00 | 1% | 2% | 4% | 2% |
| 14:00 | 1% | 2% | 6% | 5% |
| 15:00 | 0% | 3% | 8% | 8% |
| 16:00 | 2% | 2% | 19% | 16% |
| 17:00 | 1% | 5% | 31% | 13% |
| 18:00 | 2% | 3% | 19% | 13% |
| 19:00 | 1% | 2% | 5% | 11% |
| 20:00 | 0% | 1% | 2% | 11% |
| 21:00 | 0% | 0% | 1% | 9% |
| Total | 100% | 99% | 98% | 97% |

- Note: Some figures do not add up to 100% as the data does not cover a full 24 hour period.
- Note: Kiss & Ride Inbound and outbound vehicle trips for each passenger boarding and alighting are accounted for and are equal (i.e. inbound vehicle trips and outbound vehicle trips are equal for a given time period).

3.3.2 DIRECTIONAL DISTRIBUTION OF TRAFFIC FLOWS

The directional distribution adopted for this assessment has largely utilised the same methodology employed in the previous *Yanchep Rail Extension Transport Assessment*. The approach / departure behaviour and distribution of vehicles accessing the Eglinton Station parking facility assumes the following factors:

- i. Within the assessment timeframe (opening year and +10 year scenario) Park & Ride traffic is assumed to arrive / depart at a ratio of 70% from the west of the station (i.e. via Marmion Avenue) and the remaining 30% from the east of the station (i.e. via Wanneroo Road).
- ii. Kiss & Ride traffic distribution is assumed to be the same as the Park & Ride distribution above.
- iii. Internal traffic distribution within the Eglinton Station car park is based on a proportional split of the approximate number of bays accessible from the internal access points. Note that Kiss & Ride and Transperth buses have only a single route available inside the site.

Directional distribution diagrams have been prepared based on the proposed external and internal access arrangements for both Park & Ride and Kiss & Ride transport modes, shown in Figure 19 and Figure 20, respectively. These proportions have been adopted for the purposes of calculating the anticipated traffic impact detailed within Section 3.4: Road Network Impact Analysis.

Figure 19. Park & Ride Directional Distribution (AM + PM peaks)

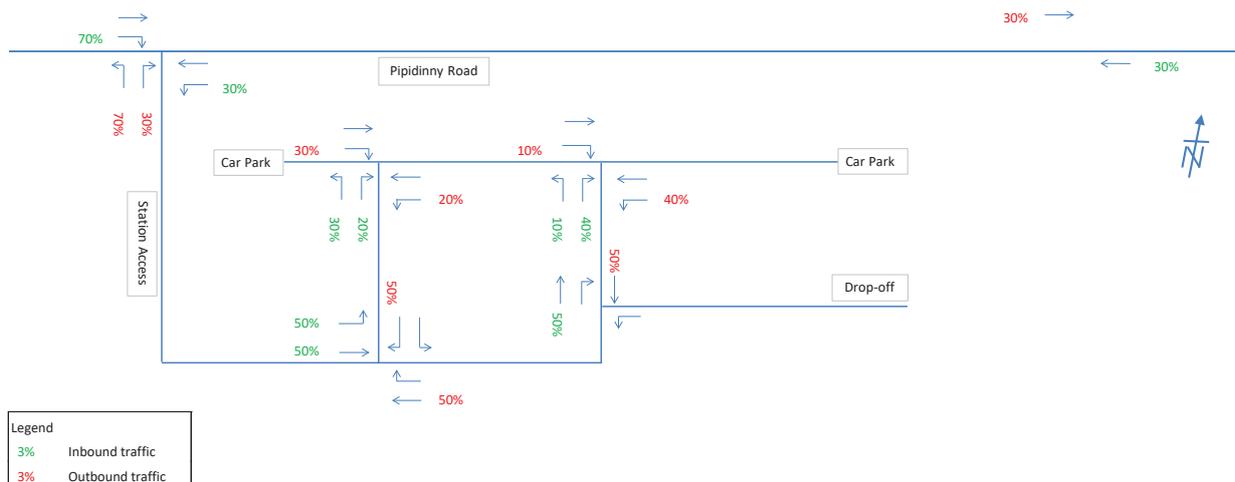
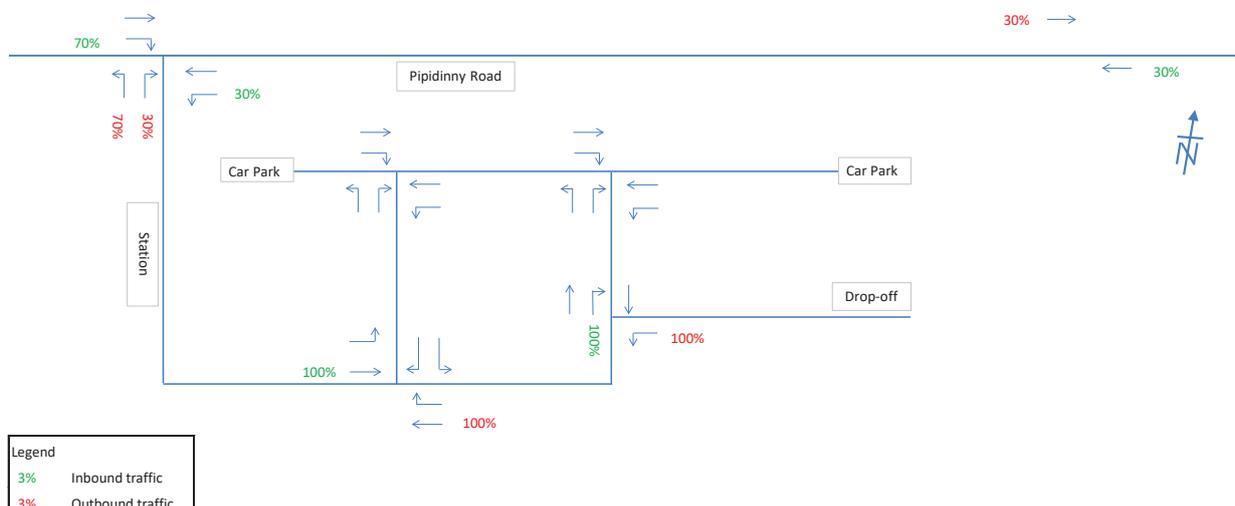


Figure 20. Kiss & Ride Directional Distribution (AM + PM peaks)



3.3.3 FINAL DEVELOPMENT TRAFFIC FLOWS

Based on a combination of the previously discussed passenger daily boardings, mode share assumptions and arrival / departure profiles, the final development traffic flows for the Eglinton Station site have been developed.

Note that these flows include both the peak hour background traffic on the road network (including any background traffic growth) plus the peak hour traffic generated by the development car park and bus interchange.

The final 2021 'opening year' AM and PM peak traffic flows are shown in Figure 21 and Figure 22, respectively. The final 2021 'future year' development flows for AM and PM peak periods are shown in Figure 23 and Figure 24, respectively.

Figure 21. 2021 AM Peak Development Traffic Flows (07:00 – 08:00)

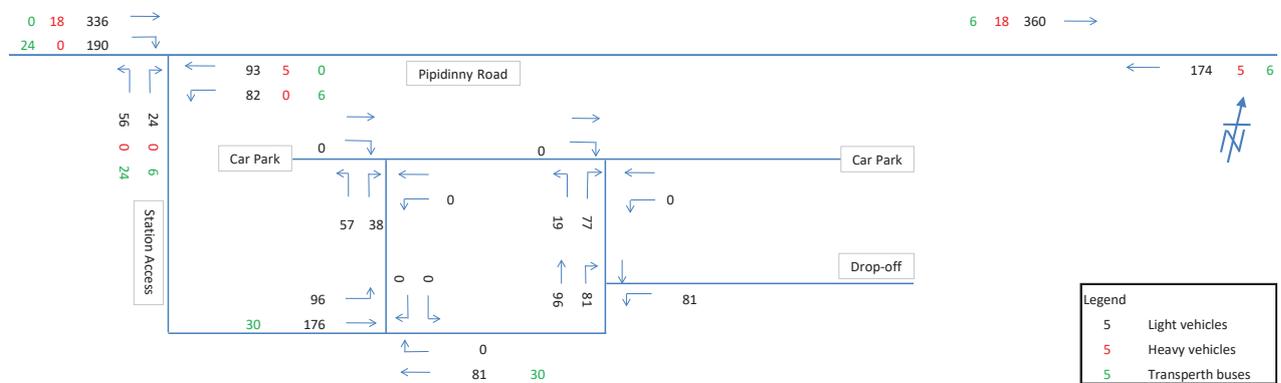


Figure 22. 2021 PM Peak Development Traffic Flows (17:00 – 18:00)

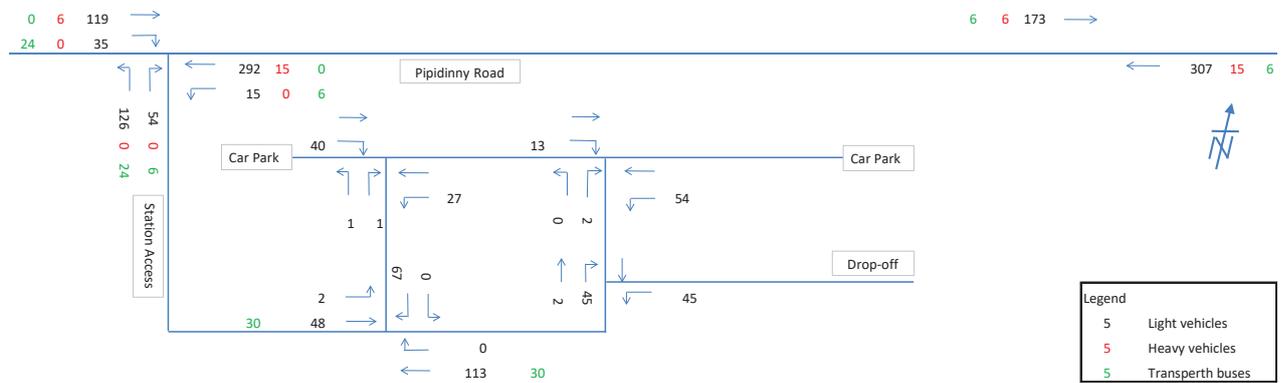


Figure 23. 2031 AM Peak Development Traffic Flows (07:00 – 08:00)

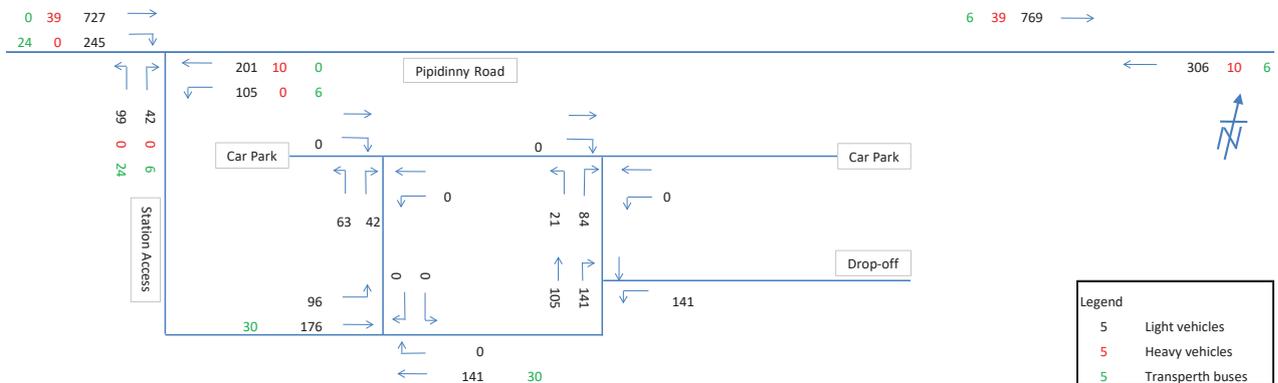
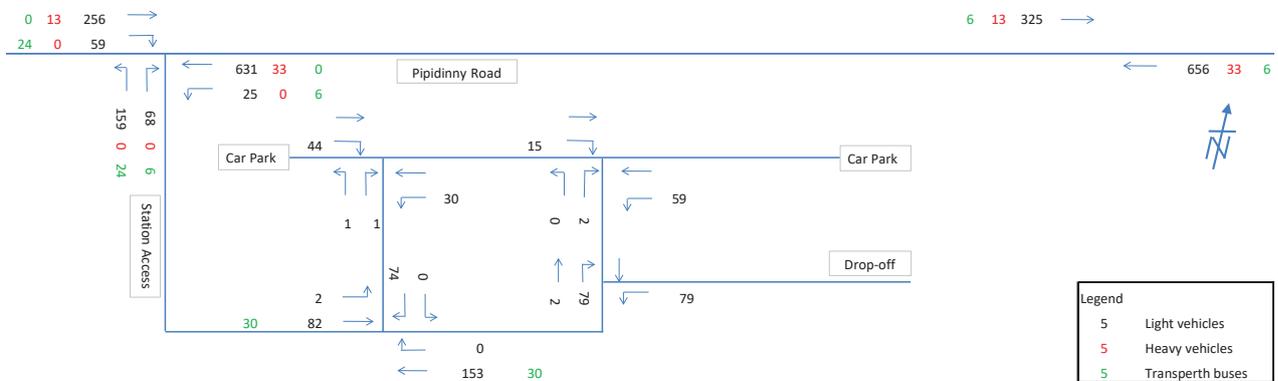


Figure 24. 2031 PM Peak Development Traffic Flows (17:00 – 18:00)



3.4 ROAD NETWORK IMPACT ANALYSIS

3.4.1 EGLINTON STATION ACCESS / PIPIDINNNY ROAD

The primary access point in and out of the Eglinton Station parking area is located approximately 500 metres east of Marmion Avenue, on the southern side of the Pipidinnny Road corridor. This will serve as the primary access point for all vehicle transport modes for the opening year scenario, including Transperth buses.

Currently, it is anticipated that a future southern connection to a yet to be constructed road south of the station (Carphin Drive) will allow Transperth bus access to the bus interchange via other future developer roads. However, the timeframe on when this future connection will be implemented is not yet confirmed. Therefore, Transperth buses will continue to use the primary access via Pipidinnny Road for the foreseeable future.

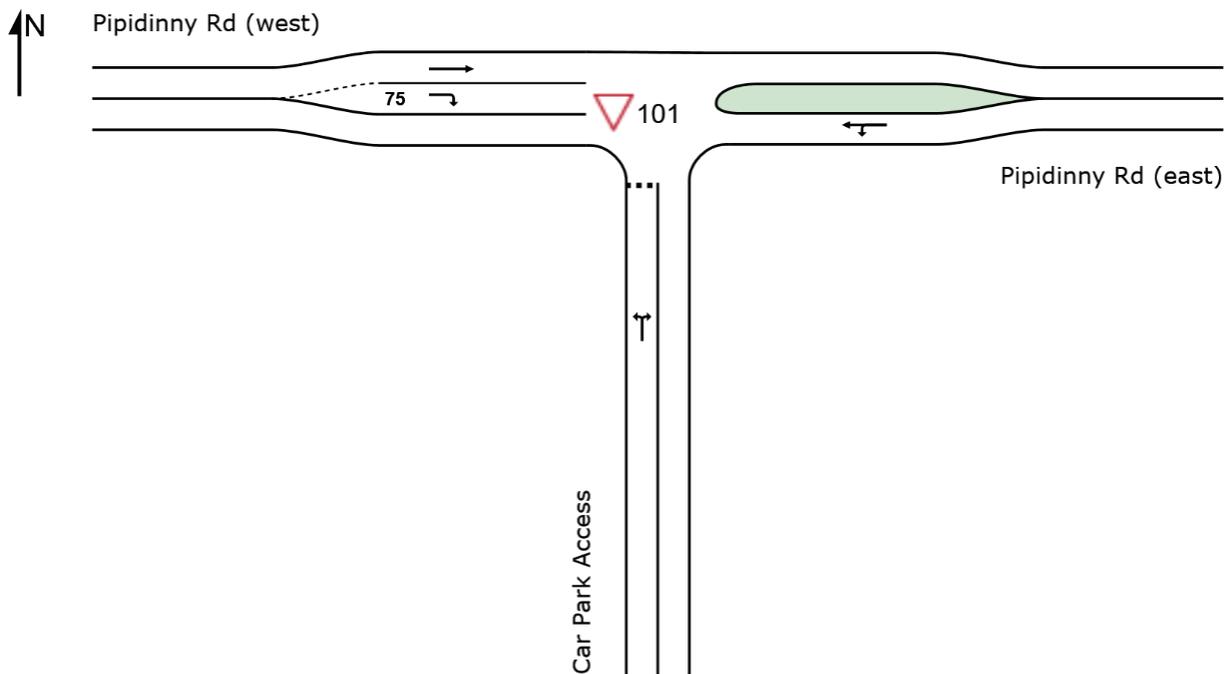
The operation of this access point is a key aspect of the transport solution for Eglinton Station, as this will likely serve as the primary vehicle access point for the life of the station. Therefore, the safety and efficiency of the main station access point is an important element in the overall station design.

The current configuration of Pipidinnny Road allows for just a single traffic lane per direction with no existing median. Given that a significant proportion of the vehicles entering the Eglinton Station car park are expected to approach from the west via Marmion Avenue, it is proposed that the site access point be upgraded to allow for right turn storage along Pipidinnny Road, while also allowing eastbound through vehicles to safely pass any queued vehicles wishing to enter the station.

Specifically, the type of intersection treatment proposed to be adopted at the main site access at Pipidiny Road is an Auxiliary Lane Turn Treatment (Type AU) specified by Main Roads WA Supplement to Austroads *AGRD Part 4A A.6*.

For the purposes of this Transport Assessment, an equivalent to this layout has been modelled within SIDRA Intersection and assessed for the relevant peak periods during both the 2021 'opening year' scenario and the 2031 'future year' scenario. Forecast demand flows prepared in Section 3.3.3 have been adopted for this analysis. The SIDRA layout of the Eglinton Station Access / Pipidiny Road intersection is shown in Figure 25.

Figure 25. Eglinton Station Access / Pipidiny Road Intersection Layout



Based on the above layout, peak hour intersection analyses were undertaken to determine the forecast performance of the access point and determine if any additional adjustments would be required to achieve the desired level of service targets for intersection performance. The SIDRA Intersection results for the 2021 and 2031 morning and afternoon peaks are detailed below.

Figure 26. Eglinton Station Access / Pipidiny Road – 2021 AM Peak Results

| Movement Performance - Vehicles | | | | | | | | | | | | |
|---------------------------------|------|--------------------|------------|---------------|-------------------|------------------|-----------------------|------------------|--------------|---------------------|------------------|--------------------|
| Mov ID | Turn | Demand Total veh/h | Flows HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back Vehicles veh | Queue Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
| South: Car Park Access | | | | | | | | | | | | |
| 1 | L2 | 80 | 30.0 | 0.120 | 2.8 | LOS A | 0.5 | 5.1 | 0.23 | 0.42 | 0.23 | 32.4 |
| 3 | R2 | 30 | 20.0 | 0.120 | 6.6 | LOS A | 0.5 | 5.1 | 0.23 | 0.42 | 0.23 | 35.2 |
| Approach | | 110 | 27.3 | 0.120 | 3.8 | LOS A | 0.5 | 5.1 | 0.23 | 0.42 | 0.23 | 33.2 |
| East: Pipidiny Rd (east) | | | | | | | | | | | | |
| 4 | L2 | 88 | 6.8 | 0.106 | 6.5 | LOS A | 0.0 | 0.0 | 0.00 | 0.30 | 0.00 | 53.2 |
| 5 | T1 | 98 | 5.1 | 0.106 | 0.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.30 | 0.00 | 60.5 |
| Approach | | 186 | 5.9 | 0.106 | 3.1 | NA | 0.0 | 0.0 | 0.00 | 0.30 | 0.00 | 56.8 |
| West: Pipidiny Rd (west) | | | | | | | | | | | | |
| 11 | T1 | 354 | 5.1 | 0.190 | 0.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 | 69.9 |
| 12 | R2 | 214 | 11.2 | 0.158 | 7.0 | LOS A | 0.8 | 6.9 | 0.34 | 0.61 | 0.34 | 26.3 |
| Approach | | 568 | 7.4 | 0.190 | 2.7 | NA | 0.8 | 6.9 | 0.13 | 0.23 | 0.13 | 45.2 |
| All Vehicles | | 864 | 9.6 | 0.190 | 2.9 | NA | 0.8 | 6.9 | 0.11 | 0.27 | 0.11 | 45.4 |

Figure 27. Eglinton Station Access / Pipidiny Road – 2021 PM Peak Results

| Movement Performance - Vehicles | | | | | | | | | | | | |
|---------------------------------|------|--------------------|------------|---------------|-------------------|------------------|-----------------------|------------------|--------------|---------------------|------------------|--------------------|
| Mov ID | Turn | Demand Total veh/h | Flows HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back Vehicles veh | Queue Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
| South: Car Park Access | | | | | | | | | | | | |
| 1 | L2 | 150 | 16.0 | 0.216 | 2.9 | LOS A | 0.9 | 8.2 | 0.44 | 0.50 | 0.44 | 30.2 |
| 3 | R2 | 60 | 10.0 | 0.216 | 4.0 | LOS A | 0.9 | 8.2 | 0.44 | 0.50 | 0.44 | 33.2 |
| Approach | | 210 | 14.3 | 0.216 | 3.2 | LOS A | 0.9 | 8.2 | 0.44 | 0.50 | 0.44 | 31.1 |
| East: Pipidiny Rd (east) | | | | | | | | | | | | |
| 4 | L2 | 21 | 28.6 | 0.181 | 6.8 | LOS A | 0.0 | 0.0 | 0.00 | 0.04 | 0.00 | 54.5 |
| 5 | T1 | 307 | 4.9 | 0.181 | 0.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.04 | 0.00 | 68.7 |
| Approach | | 328 | 6.4 | 0.181 | 0.4 | NA | 0.0 | 0.0 | 0.00 | 0.04 | 0.00 | 67.6 |
| West: Pipidiny Rd (west) | | | | | | | | | | | | |
| 11 | T1 | 125 | 4.8 | 0.067 | 0.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 | 70.0 |
| 12 | R2 | 59 | 40.7 | 0.071 | 8.9 | LOS A | 0.3 | 4.0 | 0.49 | 0.68 | 0.49 | 23.1 |
| Approach | | 184 | 16.3 | 0.071 | 2.8 | NA | 0.3 | 4.0 | 0.16 | 0.22 | 0.16 | 44.8 |
| All Vehicles | | 722 | 11.2 | 0.216 | 1.9 | NA | 0.9 | 8.2 | 0.17 | 0.22 | 0.17 | 46.8 |

Figure 28. Eglinton Station Access / Pipidinnny Road – 2031 AM Peak Results

| Movement Performance - Vehicles | | | | | | | | | | | | |
|---------------------------------|------|--------------------|------------|---------------|-------------------|------------------|--------------------------------|------------|--------------|---------------------|------------------|--------------------|
| Mov ID | Turn | Demand Total veh/h | Flows HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
| South: Car Park Access | | | | | | | | | | | | |
| 1 | L2 | 123 | 19.5 | 0.253 | 2.6 | LOS A | 0.9 | 9.2 | 0.41 | 0.48 | 0.41 | 29.3 |
| 3 | R2 | 48 | 12.5 | 0.253 | 12.4 | LOS B | 0.9 | 9.2 | 0.41 | 0.48 | 0.41 | 32.2 |
| Approach | | 171 | 17.5 | 0.253 | 5.4 | LOS A | 0.9 | 9.2 | 0.41 | 0.48 | 0.41 | 30.2 |
| East: Pipidinnny Rd (east) | | | | | | | | | | | | |
| 4 | L2 | 111 | 5.4 | 0.178 | 6.5 | LOS A | 0.0 | 0.0 | 0.00 | 0.22 | 0.00 | 55.1 |
| 5 | T1 | 211 | 4.7 | 0.178 | 0.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.22 | 0.00 | 62.8 |
| Approach | | 322 | 5.0 | 0.178 | 2.2 | NA | 0.0 | 0.0 | 0.00 | 0.22 | 0.00 | 59.9 |
| West: Pipidinnny Rd (west) | | | | | | | | | | | | |
| 11 | T1 | 766 | 5.1 | 0.411 | 0.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 | 69.8 |
| 12 | R2 | 269 | 8.9 | 0.224 | 7.7 | LOS A | 1.1 | 9.3 | 0.47 | 0.68 | 0.47 | 26.3 |
| Approach | | 1035 | 6.1 | 0.411 | 2.0 | NA | 1.1 | 9.3 | 0.12 | 0.18 | 0.12 | 51.0 |
| All Vehicles | | 1528 | 7.1 | 0.411 | 2.4 | NA | 1.1 | 9.3 | 0.13 | 0.22 | 0.13 | 49.1 |

Figure 29. Eglinton Station Access / Pipidinnny Road – 2031 PM Peak Results

| Movement Performance - Vehicles | | | | | | | | | | | | |
|---------------------------------|------|--------------------|------------|---------------|-------------------|------------------|--------------------------------|------------|--------------|---------------------|------------------|--------------------|
| Mov ID | Turn | Demand Total veh/h | Flows HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
| South: Car Park Access | | | | | | | | | | | | |
| 1 | L2 | 183 | 13.1 | 0.420 | 7.0 | LOS A | 2.0 | 18.2 | 0.70 | 0.96 | 0.97 | 26.5 |
| 3 | R2 | 74 | 8.1 | 0.420 | 9.5 | LOS A | 2.0 | 18.2 | 0.70 | 0.96 | 0.97 | 29.5 |
| Approach | | 257 | 11.7 | 0.420 | 7.7 | LOS A | 2.0 | 18.2 | 0.70 | 0.96 | 0.97 | 27.4 |
| East: Pipidinnny Rd (east) | | | | | | | | | | | | |
| 4 | L2 | 31 | 19.4 | 0.377 | 6.7 | LOS A | 0.0 | 0.0 | 0.00 | 0.03 | 0.00 | 56.4 |
| 5 | T1 | 664 | 5.0 | 0.377 | 0.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.03 | 0.00 | 68.9 |
| Approach | | 695 | 5.6 | 0.377 | 0.3 | NA | 0.0 | 0.0 | 0.00 | 0.03 | 0.00 | 68.2 |
| West: Pipidinnny Rd (west) | | | | | | | | | | | | |
| 11 | T1 | 269 | 4.8 | 0.144 | 0.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 | 70.0 |
| 12 | R2 | 83 | 28.9 | 0.158 | 12.7 | LOS B | 0.6 | 7.0 | 0.68 | 0.88 | 0.68 | 22.2 |
| Approach | | 352 | 10.5 | 0.158 | 3.0 | NA | 0.6 | 7.0 | 0.16 | 0.21 | 0.16 | 48.8 |
| All Vehicles | | 1304 | 8.1 | 0.420 | 2.5 | NA | 2.0 | 18.2 | 0.18 | 0.26 | 0.23 | 49.7 |

The intersection analysis results for the Eglinton Station Access via Pipidinnny Road indicate that the proposed intersection arrangement is expected to perform at a satisfactory level of service and achieve the required performance targets for both the opening year and future year scenarios.

The results show that in the opening year, the average delay to enter the station from Pipidinnny Road (west) is expected to be less than 10 seconds during the peak periods. The delay for vehicles exiting the Eglinton car park is also expected to be no greater than 7 seconds on average.

By the future year of 2031, the delay for vehicles entering the station remains relatively low with a wait time of 8 seconds expected on average during the AM peak and 13 seconds in the PM peak. Vehicles exiting the station (particularly those intending to travel east on Pipidinnny Road) are likely to experience average delays of 10-12 seconds in the peaks, resulting in a level of service B and a

queue length of approximately 2 vehicles (~18 metres). While this delay is higher than the wait times experienced for the other intersection movements, this still satisfies the target performance for individual movements and is not expected to negatively impact bus movements to a significant degree.

3.4.2 SOUTHERN BUS INTERCHANGE ACCESS (VIA FUTURE CARPHIN DRIVE)

For the opening year scenario of 2021, it is proposed that the main site access on Pipidiny Road is utilised for all vehicle movements, including Transperth bus access to the Eglinton bus interchange.

The longer-term proposal for the station is to provide an additional southern access point to the bus interchange to be exclusively used by Transperth buses, via the future Carphin Drive connection, along the southern edge of the lot boundary. As outlined in Section 2.4.2, it is assumed that this connection will occur after the opening year, but before the year 2031 when full build-out is expected.

It is anticipated that this access will allow for improved local public transport connectivity throughout Eglinton District Activity Centre, as the additional developments and land uses come online over the coming years. The concept layout of the potential future southern bus access point is shown in Figure 32.

Given that it is uncertain which year the future Carphin Drive connection is likely to be constructed and the number and extent of surrounding developments which are likely to be active at that time are currently unknown, it is difficult to conduct an assessment of this access point at the present time.

The *Eglinton Activity Centre Plan Transport Assessment* prepared by Arup (March, 2019) suggests that the forecast traffic demand in the year 2031 along the future Carphin Drive may be in the order of 4,000 – 5,000 vehicles per day in the area at the southern end of the station. At this level of traffic demand, it would be anticipated that a bus only access with a give-way treatment would be sufficient to accommodate the likely bus movements.

However, it would be recommended that a further assessment for this potential future access be conducted at a later point in time when the Carphin Drive bus access point is due to be constructed and additional data on the land usage and forecast flows on the surrounding network can be used to inform the assessment at the relevant time. Updated Transperth network and schedule plans should also be obtained at the time to confirm the number of services that are expected to use the southern access.

This assessment would then be able to confirm the most suitable layout of the access point and determine if the intersection treatment is appropriate for the given demands.

3.4.3 MARMION AVENUE / PIPIDINNY ROAD ROUNDABOUT

As a result of limitations in collection data during the period when this Transport Impact Assessment was prepared (due to COVID-19 impacts and Marmion Avenue construction works) a detailed SIDRA Intersection assessment of the existing Marmion Avenue / Pipidiny Road roundabout was unable to be completed.

However, as outlined in Section 2.4.2, the *Eglinton Activity Centre Plan No. 104* included an *Eglinton Activity Centre Plan Transport Assessment* report prepared by Arup (March 2019). This work primarily featured the preparation of an Aimsun mesoscopic model to provide traffic forecasting and analysis on the performance of the surrounding Eglinton Road network in 2021 and 2031 scenarios.

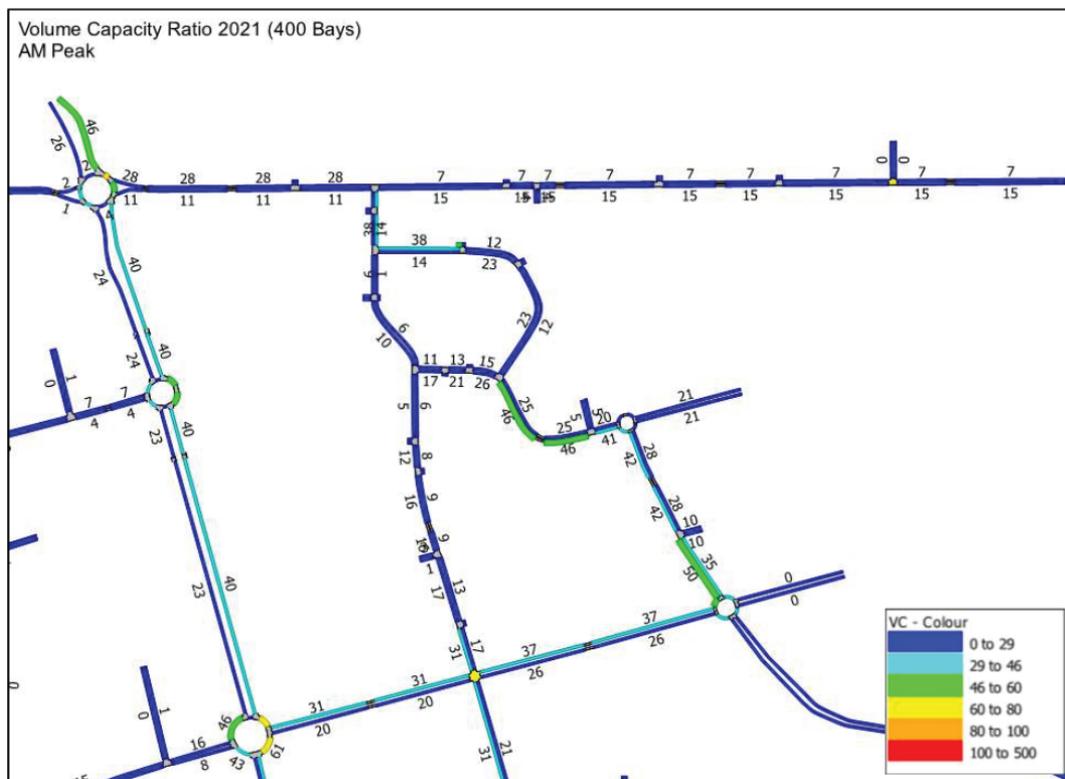
It is noted that while the Aimsun assessment undertaken by Arup states that the Eglinton Station is assumed to have a 400 bay Park & Ride facility in the opening year of 2021 for the purposes of the assessment, the current Eglinton Station plans proposed in this Transport Impact Assessment include a total provision of 433 Park & Ride bays. Given these figures are relatively close, it is believed that the Arup assessment is able to provide a reasonable assessment of the current Eglinton Station proposal.

It is also noted that the 2021 model of the network includes multiple development sites in and around the future Walcott Avenue and Eglinton Drive. These land uses, in addition to the Eglinton Station, generate further traffic demand on the surrounding network (including Pipidiny Road). Given this, the volumes reported by Arup are likely to be a high end estimation of the likely traffic on the network in the opening year, as it is unknown whether these other development sites will be active by the time the Eglinton Station is open.

Therefore, in the absence of further assessments, it is considered that this analysis undertaken by Arup in 2019 is recent enough and is suitably consistent with the current Eglinton Station plans to provide a satisfactory assessment on the potential performance at the Marmion Avenue / Pipidiny Road roundabout.

The 2021 AM and PM peak hour models developed by Arup show the forecast volume to capacity ration on the key segments of the road network in the area surrounding the Eglinton Station. Again, as the forecast volumes include both the Eglinton Station traffic and surrounding residential / commercial development traffic, the reported volume to capacity ratios are expected to be a high end estimate of the likely flow in the opening year. The resulting volume to capacity ratio plots for the 2021 AM and 2021 PM peak periods are shown in Figure 30 and Figure 31, respectively.

Figure 30. 2021 AM Peak Forecast Volume to Capacity Ratio (Arup, 2019)



Source: Eglinton Activity Centre Plan No. 104 – Transport Assessment (Arup, March 2019)

Again, the observed congestion issues reported by Arup appear to be a result of a combination of background traffic growth, major additional network connections (e.g. Mitchell Freeway extension) and traffic generated by multiple developments within the Eglinton Activity Centre. The contribution and impact on the surrounding network of the Eglinton Station alone is likely to be minimal given the proposed Park & Ride capacity of 433 bays. However, it would be recommended that the performance of the major access points along Marmion Avenue are monitored by City of Wanneroo as the implementation of the Eglinton Activity Centre plan continues to ensure that adequate vehicle access can be maintained in the area during peak periods.

3.5 PUBLIC TRANSPORT ROUTES AND SERVICING

With the introduction of the new Yanchep Rail Extension and the associated bus interchanges at each of the stations along the route, adjustments to existing bus routes and the introduction of new services are expected.

The future Transperth bus network proposed to service the Eglinton Station bus interchange is outlined in Table 12. This information has been supplied by PTA / Transperth and is subject to changes or adjustments pending future planning and community consultation.

Table 12. Eglinton Station – Planned bus services

| Route | Headway (mins) | | Notes |
|-------------------------|----------------|-----------------------|---|
| | Peak | Inter-Peak / Off-Peak | |
| 485 via Marmion (south) | 10 | 30 | Operating on temporary alignment waiting connection of Carphin Dr |
| 486 via Marmion (south) | 10 | 30 | |
| 489 via Marmion (north) | 10 | 30 | |
| 490 via Marmion (north) | 20 | 30 | Coordinated with 491 |
| 491 via Marmion (north) | 20 | 30 | Coordinated with 490 |

- Routes 487 and 492 will not be operating in the opening year of 2021. Opening year of service to be confirmed with PTA / Transperth at a later date.

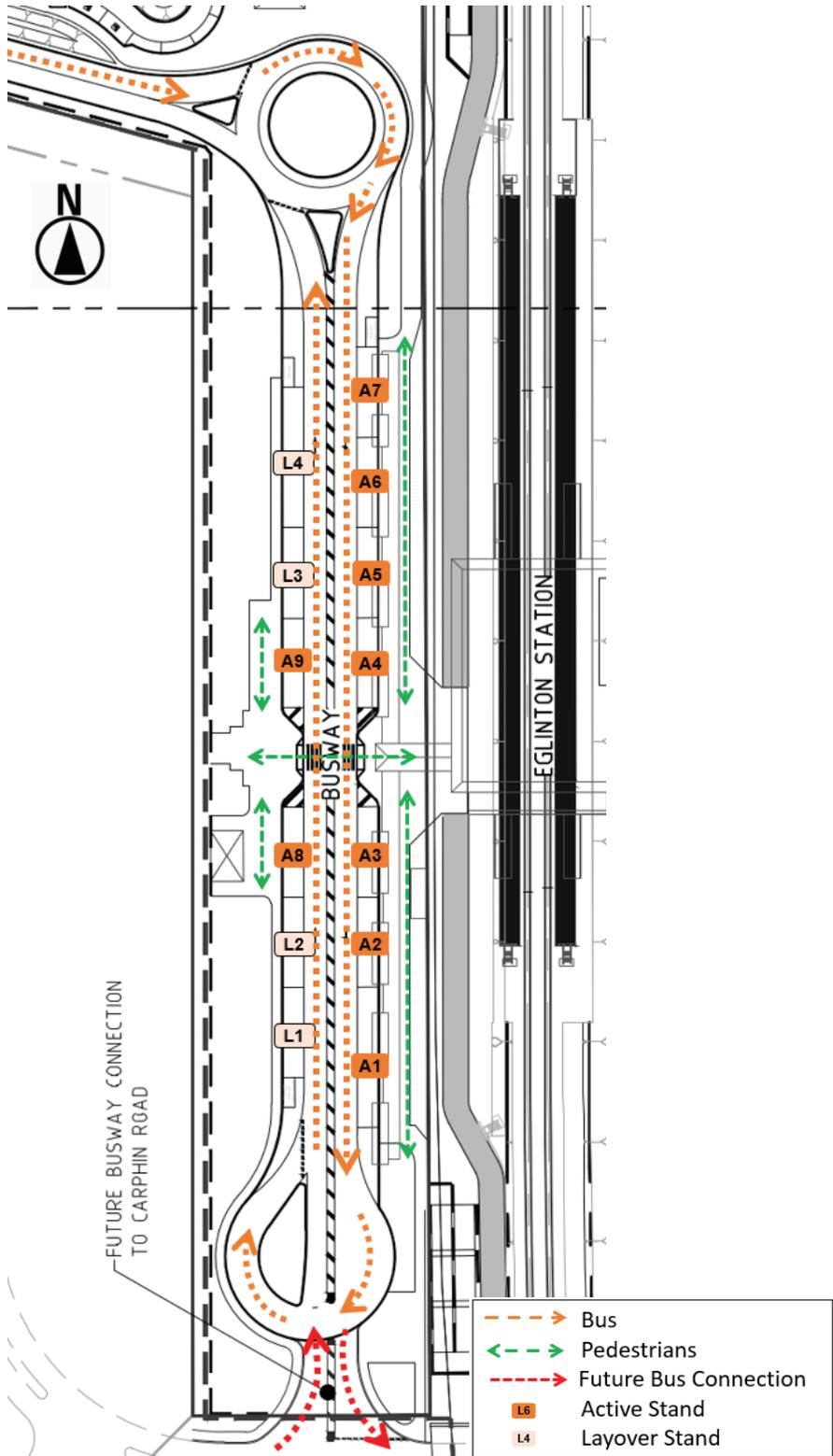
It is noted that the majority of future bus services are expected to service Eglinton Station via Marmion Avenue and Pipidiny Road. Whilst future services are anticipated to utilise the future southern bus access point via Carphin Drive, and potentially other internal roads within the Eglinton District Activity Centre, it is unknown when these road networks will be complete and when bus services can be adjusted to make best use of the local connectivity. Additional adjustments to Transperth bus services will need to be revisited as the surrounding road network and land usage around Eglinton Station develops over time.

3.5.1 BUS INTERCHANGE

The bus interchange at Eglinton Station will be located on the west of the rail corridor, directly adjacent to the station entrance / forecourt. The schedule of accommodation details that the bus interchange should at minimum include a total of 8 active bays (which includes 1 articulated bay) and at least 4 layover bays (including 1 articulated bay). Ultimately, the proposed design satisfies these requirements and provides an additional standard size active bay over and above the minimum requirements within the bus bay arrangement.

Figure 32 illustrates how Transperth buses and pedestrians will integrate within the bus interchange and the potential location of the active and layover bays. The design also shows the future potential connection for buses via Carphin Drive to the south of the interchange.

Figure 32. Eglinton Station – Bus Interchange Layout



3.6 PEDESTRIAN & CYCLE ACCESS / AMENITY

3.6.1 NORTH-SOUTH CONNECTIVITY

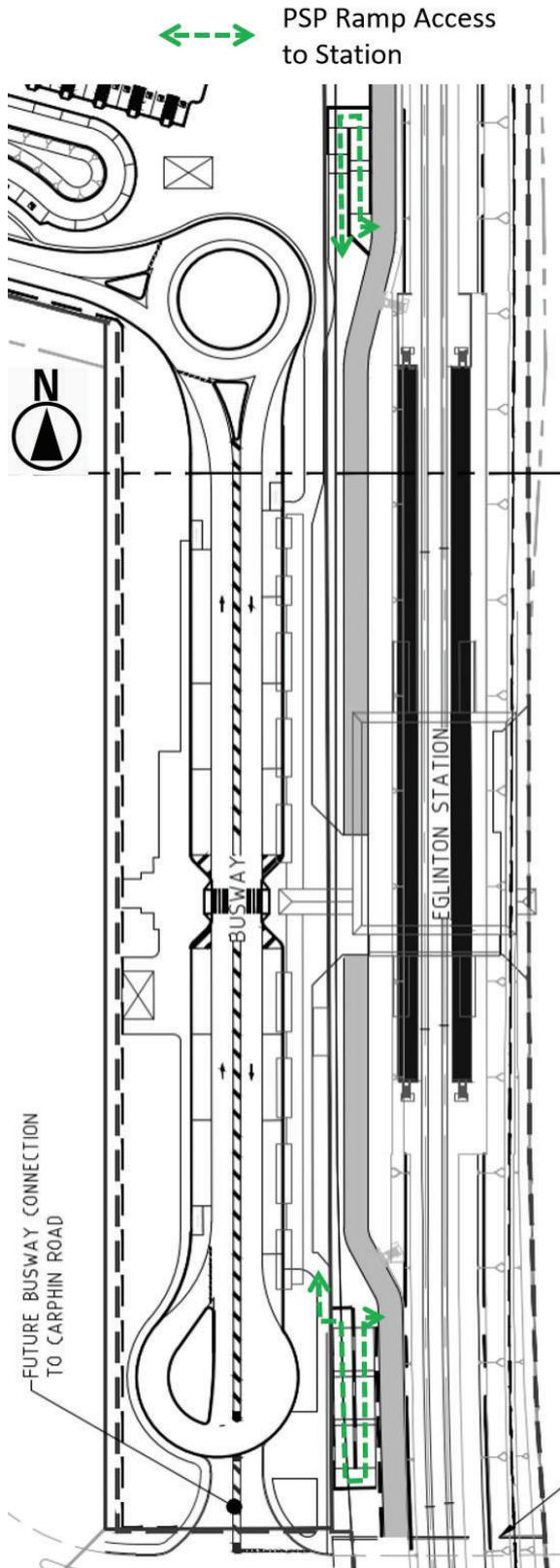
A major element of the METRONET YRE project includes the provision of a new PSP corridor within the rail reserve that covers the full length of the project from Butler through to Yanchep. This infrastructure comprises a high-quality grade-separated PSP connection which follows the entire rail corridor. The proposed PSP includes a 5.0 metre wide shared path with 0.5 metre shoulders on either side – as per current Department of Transport guidelines for PSP quality connections. The path itself is proposed to operate along the western side of the rail corridor, with connections provided at key points along the network, such as Eglinton Station.

Given that the rail corridor for the YRE will operate within a cut below the design level of the Eglinton Station, it is proposed that ramped connections will be provided between the station level and the PSP level to allow full movement of users.

As per the current concept design plans, it is proposed that the PSP connection will be provided via a ramp system with individual ramp segments provided at 1:14 gradient and landings provided every 9.0 metres. Currently, two ramped connections are proposed between the PSP and the Eglinton Station plaza level. The southern ramp connection is located approximately 80 metres south of the station with a level difference of approximately 4 metres between PSP finished surface level and precinct finished surface level. The northern PSP ramp connection is approximately 100 metres north of the station with a level difference of nearly 1.5 metres between the PSP level and the plaza surface level.

The proposed PSP location, ramped connection and cycle parking locations for Eglinton Station are illustrated in Figure 33.

Figure 33. Eglinton Station – PSP Alignment and Ramp Arrangement (north)

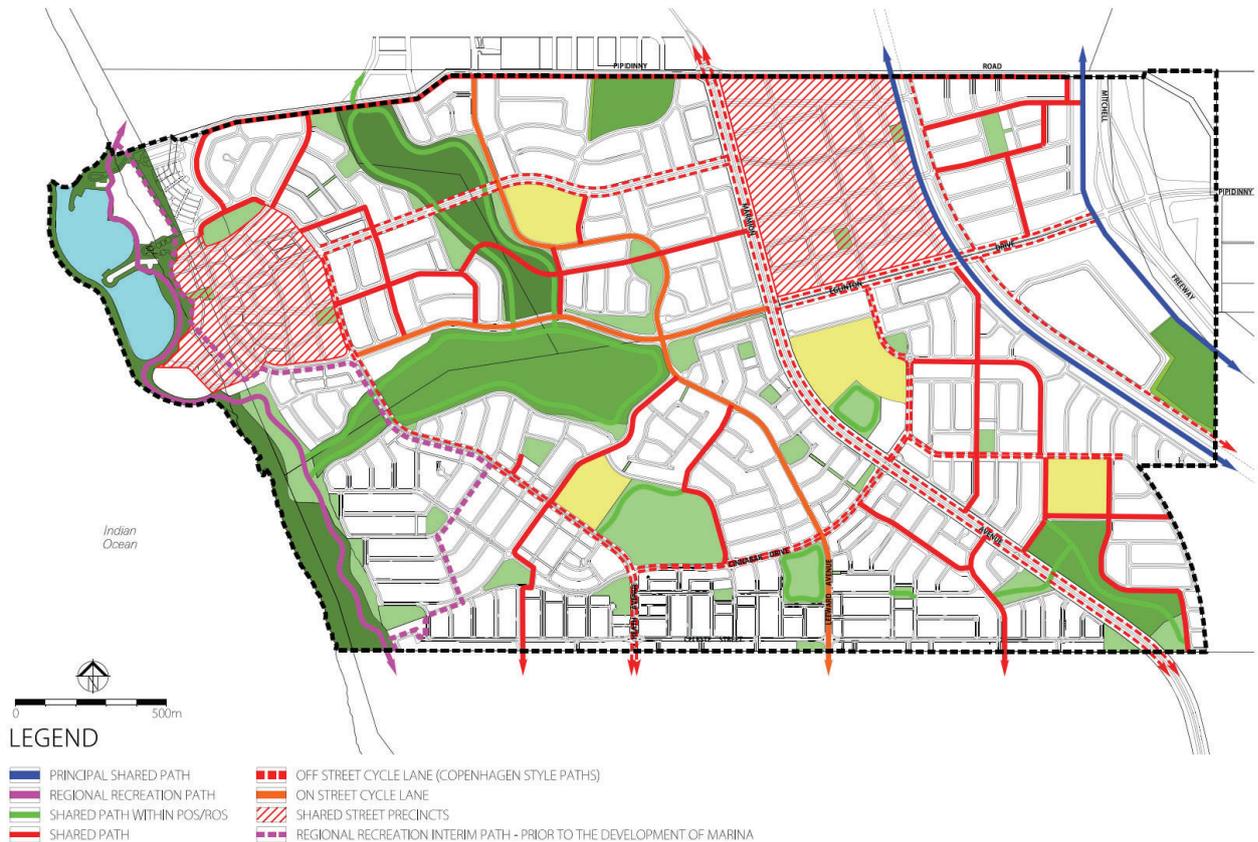


3.6.2 PEDESTRIAN CATCHMENT ANALYSIS AND EAST-WEST STATION CONNECTIVITY

Currently there are no direct walking or cycling routes to the Eglinton Station site, as there are no existing paths or cycle facilities along Pipidinnny Road which is the only existing east-west connection to the site of the future Station.

The future footpath and shared path routes proposed within the Eglinton Station precinct are illustrated below in Figure 34, which will be delivered as part of new development within this locality.

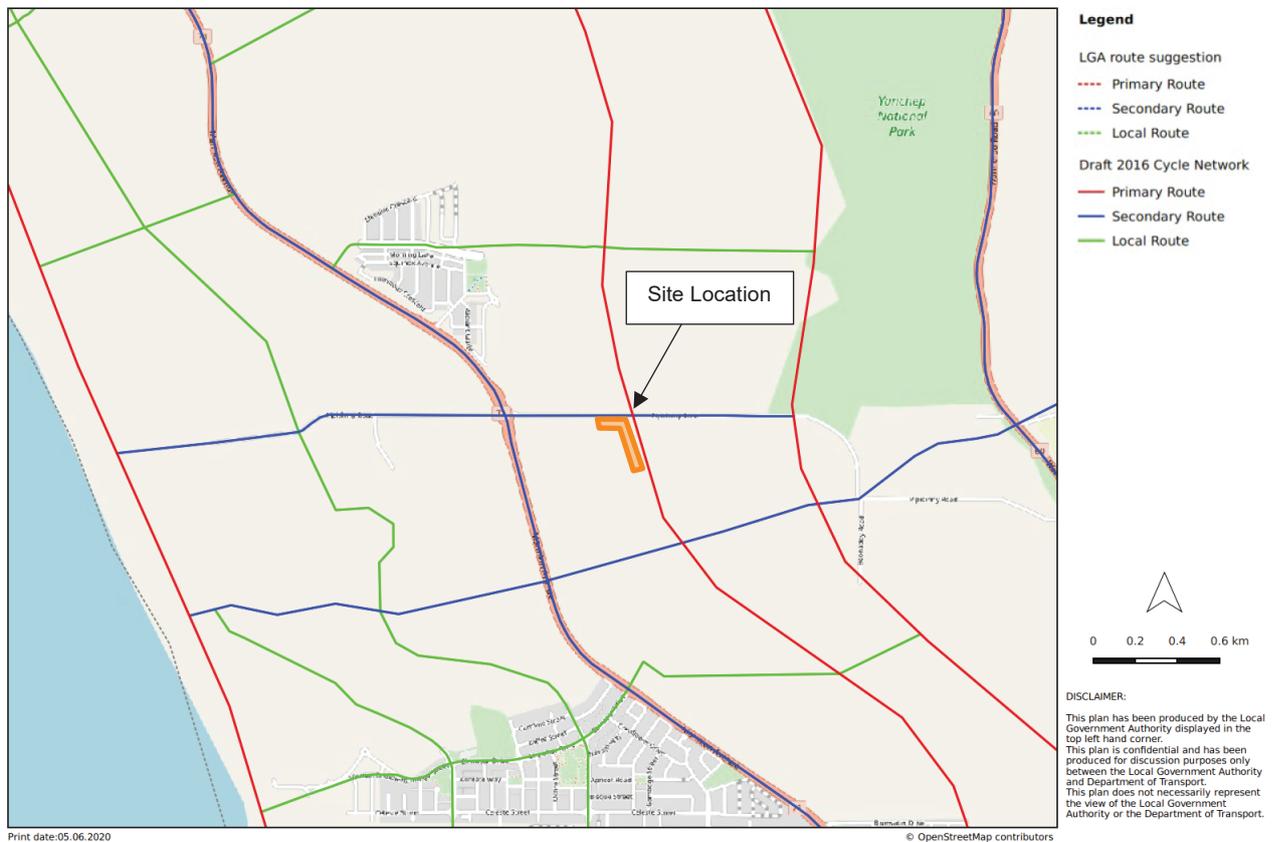
Figure 34. Eglinton Local Structure Plan: Indicative Pedestrian and Cycle Network



Source: Eglinton Local Structure Plan No. 82 (November 2012) – Part 2.

The City of Wanneroo has also supplied NEWest with a Draft Long-Term Cycle Network Plan for the area surrounding the Eglinton Station, which highlights Pipidinnny Road as well as other future connections as major cycle routes within the local region. The plan also indicates the currently planned hierarchy of routes in the area. Note that this plan may be subject to change or revision by City of Wanneroo as ongoing consultation continues. The Draft Long-Term Cycle Network Plan is shown in **Figure 35**.

Figure 35. City of Wanneroo Draft Long Term Cycle Network Plan (Eglinton Rail Precinct)



Source: City of Wanneroo

Liaison with City of Wanneroo confirmed that shared path infrastructure along Pipidiny Road is not currently confirmed to be provided by the time the Eglinton Station is operational in the year 2021, as it intended to be delivered as part of future structure plan development around the Station.

Therefore, the assumed pedestrian and cycling connectivity within the Eglinton Activity Centre which is confirmed to be delivered at the opening of Eglinton Station is limited to the new north-south PSP along the rail corridor, as illustrated in Figure 36. Whilst cycle and pedestrian access limited to the rail corridor PSP will likely be a short-term situation until further development commences around the Station site, it will in the interim limit connectivity options to the new Station from existing residential areas to the north-west and south-west of the station until Pipidiny Road shared path or alternative routes (such as the extension of Cinnibar Drive to the south) are constructed to connect to the new PSP along the YRE.

Figure 36. Pedestrian and Cycling Connectivity within Eglinton Activity Centre at Station Opening (2021)



Between 2021 and 2031, the delivery of the local roads and additional Eglinton Drive east-west connection by City of Wanneroo and development corporations will include provision for footpaths, shared paths / on-road cycle routes which will greatly increase east-west and north-south connectivity to Eglinton Station, as illustrated in Figure 37. As well as providing direct connectivity from new residential, school and mixed use activities within the Eglinton Activity Centre, the new east-west connections from Marmion Avenue will provide direct connectivity from existing western residential areas.

Figure 37. Pedestrian and Cycling Connectivity within Eglinton Activity Centre by 2031

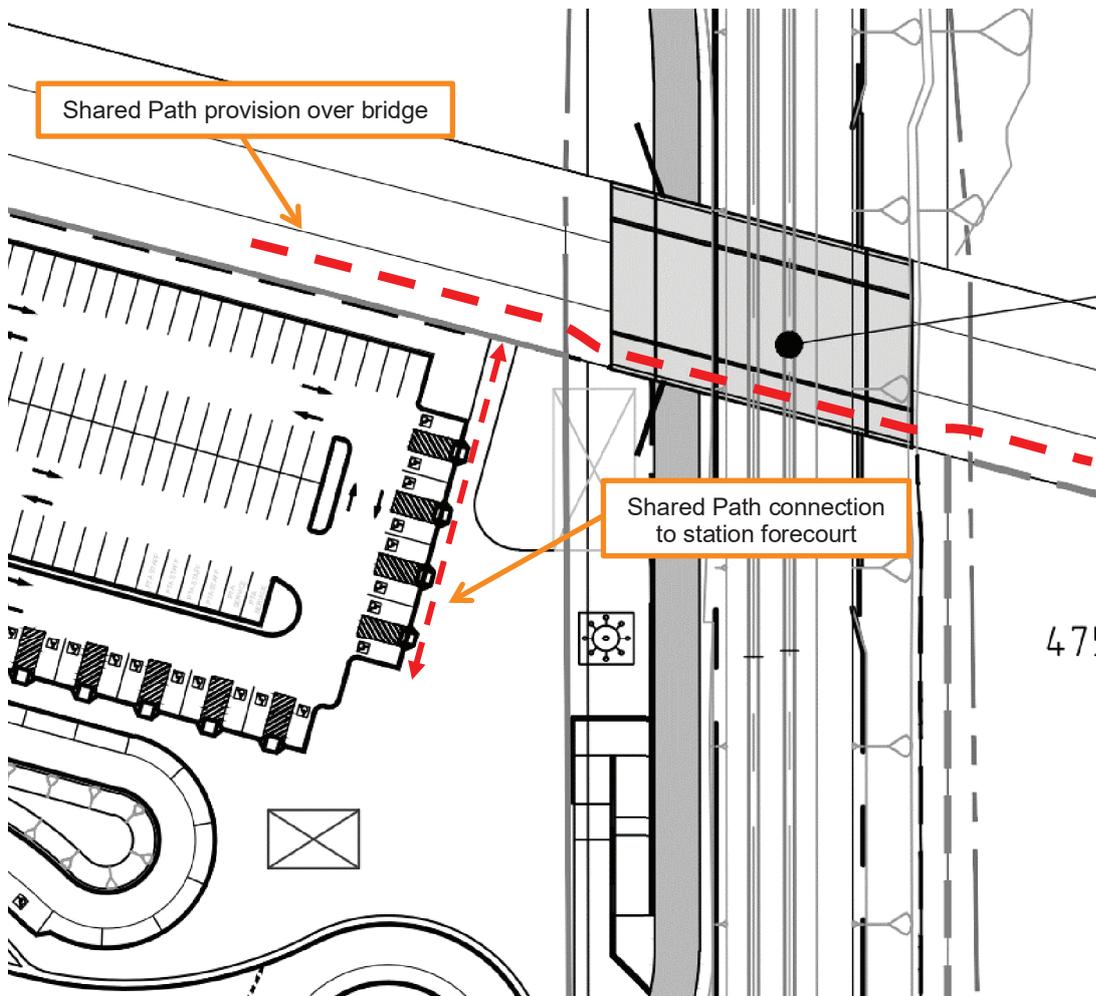


The PTA scope of works for Eglinton Station also includes the Pipidiny Road bridge over the new rail line. The bridge cross-section also allows for the future connection of an east-west shared path along Pipidiny Road by providing a 3.0 metre wide corridor for a path within the limits of the structure.

The City of Wanneroo was able to confirm that the current planning for pedestrian / cycle infrastructure along Pipidiny Road is to provide a 3.0 metre wide shared path located along the southern side of the Pipidiny Road corridor. In preparation for the future provision of this shared path, the Eglinton Station design has allowed for a 3.0 metre wide shared path connection stub located on the eastern end of the site, adjacent to the parking area.

While surface levels vary between the car park surface and the edge of Pipidiny Road in several locations (resulting in the need for retaining walls), the civil design of the station area has ensured that the shared path corridor within the bridge structure is at the same surface level as the internal site connection, thereby allowing for a seamless transition from the path to Eglinton Station when the future shared path is constructed. The location of the shared path access point between Pipidiny Road and the Eglinton Station site is illustrated in Figure 38.

Figure 38. Eglinton Station – Provision of Shared Path Connection to Pipidiny Road



The location of the future Pipidiny Road shared path connection with the station site also allows easy access to the nearby bike shelters, plus connectivity to the major north-south PSP running alongside the rail corridor via the ramp system provided.

3.6.3 CYCLE PARKING AND END OF TRIP FACILITIES

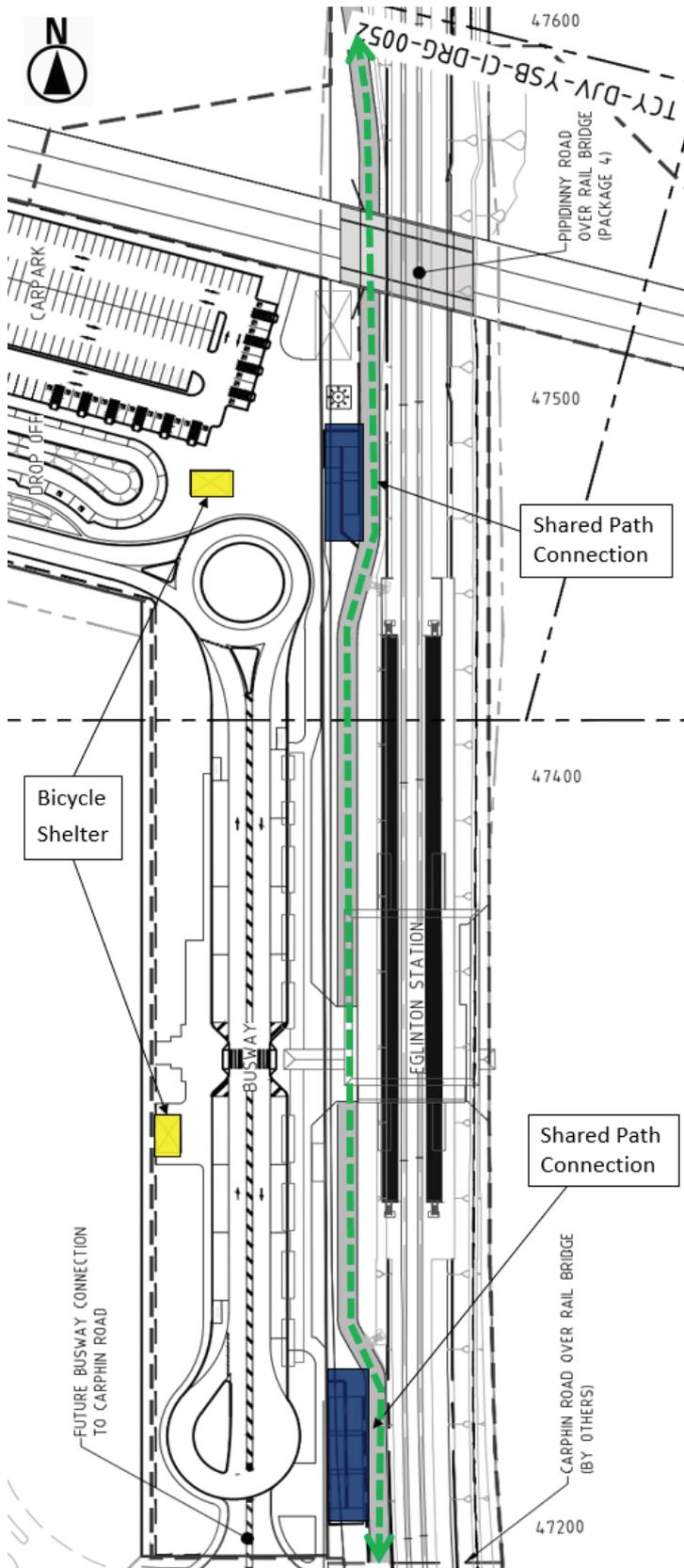
As per the Schedule of Accommodation for Eglinton Station (Section 19.1.6) referenced in the Yanchep Rail Extension and Thornlie Cockburn Link Scope of Work and Technical Criteria document, the bicycle parking provision within the Eglinton Station concept design is summarised below:

- 10 bicycle U-rails (distributed equally on both east and west sides of the station building entry).
- 2x 96 bicycle capacity secure parking shelters (PTA standard 00-A-09-0159-TYPE B Module Arrangement).
- Allowance for inclusion of 1x additional 96 bicycle capacity secure shelter.

Note that no showers or change rooms are required to be provided as part of the Schedule of Accommodation for Eglinton Station. Similarly, secure locker facilities are not required to be provided.

The proposed bike shelter locations are split between the northern and southern ends of the station site and are located near the respective PSP ramp connections. The proposed bike shelter locations are highlighted in Figure 39.

Figure 39. Eglinton Station Bicycle Shelter Locations



3.7 VEHICLE PARKING

As per the Schedule of Accommodation for Eglinton Station (Section 19.1.6) referenced in the Yanchep Rail Extension and Thornlie Cockburn Link Scope of Work and Technical Criteria document, the vehicle parking provision within the Eglinton Station concept design is summarised in Table 13.

Table 13. Eglinton Station Parking Provision

| Type | SWTC minimum Requirement | Provision |
|----------------------------------|---|-----------|
| Total car parking bays (minimum) | 426 | 435 |
| Long Term Parking | Standard parking bays | 404 |
| | Accessible bays (ACROD) | 20 |
| | Motorcycle bays (over and above car parking bays) | 10 |
| | Taxi bays | 2 |
| | Electric car charging bays | 2 |
| Short Term Parking | Drop-off bays (Kiss & Ride) | 20 |
| | Accessible bays (ACROD) | 2 |
| | Taxi bays (ACROD) | 1 |

In addition to the above parking supply, the following service bays are provided for use by PTA staff and other emergency services for the safe and ongoing operation of the station (in accordance with Schedule of Accommodation requirements).

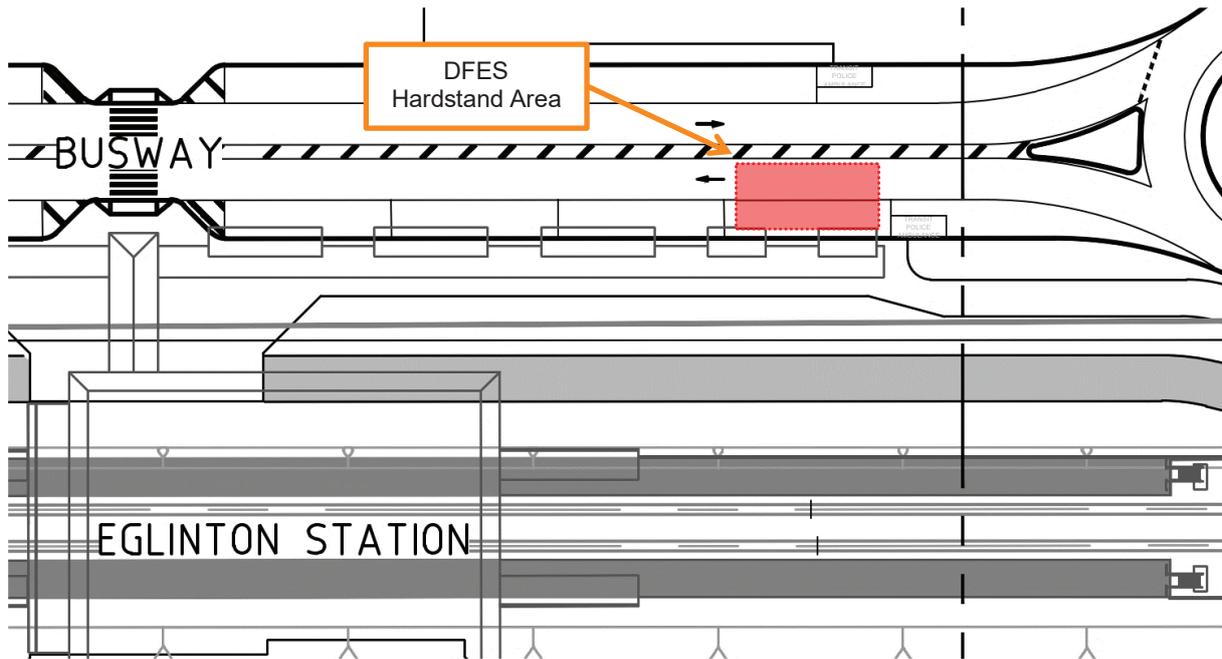
- 2 emergency service bays (ambulance and state transit police).
- 1 fire response vehicle bay (in accordance with DFES requirements).
- 4 PTA Staff parking bays.
- 2 PTA Servicing bays.

3.8 EMERGENCY AND SERVICE VEHICLE ACCESS

3.8.1 EMERGENCY VEHICLE ACCESS

To allow for fire emergency vehicle access to the Eglinton Station building and the associated booster cabinet, it is proposed that the designated DFES hardstand area will be co-located with one of the active bus bays located within the bus interchange area. The location of the nominated DFES bay is indicated in Figure 40.

Figure 40. Eglinton Station DFES Hardstand Location



This location allows for access to the adjacent hydrant booster and provides for adequate firefighting access to the nearby station building. Access to / from the bay location shall be via the same route that Transperth buses would take, therefore it is expected that the roadways leading to the hardstand area are satisfactory for fire response vehicles, as they have been designed for Transperth buses (both non-articulated and articulated).

During a fire emergency, it is proposed that all Transperth vehicles would evacuate the area, thereby leaving the nominated bay empty and accessible for fire appliances.

It should be noted that DFES liaison is ongoing as part of the wider station design and fire engineering review. The nominated bay location is subject to approval from relevant DFES approvers and may be subject to change.

3.9 ROAD SAFETY

3.9.1 PIPIDINNY ROAD CRASH HISTORY

Vehicle crash history data was obtained from the Main Roads WA Crash Analysis Reporting System (CARS) for the section of Pipidinny Road between Marmion Avenue and Beonaddy Road. Crash history information for the previous five full years between January 2015 and December 2019 was extracted, and the results summarised below. Detailed crash history data for Pipidinny Road is included within Appendix A.

In total, it was discovered that a total of 7 accidents had been recorded along this segment of Pipidinny Road in the previous five-year period. Of this total, 4 crashes occurred at the roundabout with Marmion Avenue – all of which were rear end in nature. The remaining three crashes recorded on Pipidinny Road occurred within the 1-kilometre segment east of the roundabout and all appear to have occurred in low light conditions (dark or dawn/dusk).

The detailed crash history indicates that two of the low light crashes recorded east of the roundabout involved collision with a fixed object (e.g. power pole). In these areas, it was also noted that street lighting is not provided. As Pipidinny Road does not appear to be currently illuminated for a significant proportion of its length, it appears that this may be a contributing factor to the nature of crashes in the vicinity of the site. Therefore, appropriate lighting around the primary site access point, in addition to localised road widening to allow for safe vehicle passing, are important features of the station design that have been implemented in order to maximise user safety when accessing the station.

Whilst it is not currently within the scope of works of the Eglinton Station project to undertake more extensive works along Pipidinny Road, it is understood that the City of Wanneroo in coordination with land developers are anticipated to upgrade much of Pipidinny Road within the medium term (by 2031), as surrounding lots are developed over time. Given the above findings, it would be recommended that improved illumination of Pipidinny Road (particularly between Marmion Avenue and Eglinton Station) would be provided as part of the wider road improvement works.

4. SUMMARY AND CONCLUSIONS

NEWest has prepared this Transport Impact Assessment in order to document the transportation elements and support the Development Application submission of the proposed Eglinton Station development, as part of the wider METRONET Yanchep Rail Extension project.

This study examines the function and operation of the methods of transport to and from the new Eglinton Station site, for all modes of transport. As the Eglinton Station will form a critical part of the future Eglinton Activity Centre, robust and accessible ways for users to connect to the site are important for the long-term success of the station and the growth of the surrounding region.

The Eglinton Station includes a 426 bay Park & Ride facility, allowing for long term parking for patrons when using public transport. In addition to this, a 20-bay drop-off facility for Short Term (Kiss & Ride / drop-off) trips is also included within the station design. To accommodate for the vehicle traffic forecast to be generated by these elements, an upgraded site access point has been proposed for the primary site access via the existing Pipidiny Road.

Demand forecast and traffic analysis has been conducted for both 2021 ('opening year' scenario) and 2031 ('future year' scenario) timeframes to assess the anticipated performance of the site access point. SIDRA Intersection analysis was undertaken for both morning and afternoon peak periods for the above scenarios, the results of which showed that the proposed site access arrangement is expected to operate at a satisfactory level of service with acceptable average movement delays, through to the forecast horizon of the year 2031.

The Eglinton Station layout also provides for an integrated bus interchange, located adjacent to the train station entrance. The interchange provides for a total of 9 active bus bays (including one articulated bay) and 4 layover bus bays (including one articulated bay). For the opening year scenario, it is expected that all buses will access the site via the main entrance on Pipidiny Road, and travel along the internal road network (which includes bus exclusive lanes) to access the interchange. There is also a future proposal for a connection at the southern end of the interchange via the yet-to-be constructed Carphin Drive. While it is not anticipated this connection will be active at the time of opening, this bus only access point is expected to become active at a later date when the planned road connections in and around the Eglinton Activity Centre are established.

Accessibility for cycling and walking modes are also key aspects of the station design that are supported by the infrastructure included as part of the Station concept design. A grade separated PSP connection is to be provided along the full length of the rail corridor, extending from the current termination point at Butler Station through to the proposed new end of line station at Yanchep. Access from the PSP to the station forecourt is to be provided via a ramp system with connections both north and south of the station platform. Secure bicycle parking facilities are located adjacent to these PSP access points to encourage the use of sustainable transport modes.

The station forecourt layout also provides future connectivity for future east-west cycling and walking connections along Pipidiny Road, although the construction of paths along the existing Pipidiny Road reserve are to be delivered by City of Wanneroo and land developers. Future shared path connections are expected to be provided after the opening year as part of wider road network improvements included with the Eglinton Activity Centre structure plan.

Overall, the proposed Eglinton Station development is found to satisfy the project requirements as set out by the METRONET Yanchep Rail Extension strategy. Vehicle (including bus) access to and from the station has been demonstrated to operate satisfactorily from the opening year scenario through to the future year scenario of 2031.

The Eglinton Station design supports pedestrian and cycling connectivity via the new PSP and additional east-west connection across the bus interchange. Pedestrian and cycling connectivity to the existing residential areas north-west and south-west of the station and future development within Eglinton Activity Centre are dependent on the east-west routes and new local roads being delivered by City of Wanneroo and land developers. The station will then form a central part of this future activity centre and become a catalyst for the growth and development of the surrounding region and communities.

Appendices

Table 14: Appendix List

| Appendix Reference | Appendix Title |
|--------------------|-----------------------------|
| Appendix A | Eglinton Crash History Data |

Appendix A: Eglinton Crash History Data

Summary Crash History



Report Criteria

| Road | SLK | CWY |
|------------------------|--------------|-----|
| 1100459 - Pipidinny Rd | 3.06 to 1.10 | All |

| Parameter | Value | Description |
|-------------------|------------|-------------|
| From Date | 01/01/2015 | |
| To Date | 31/12/2019 | |
| Crash Type | All | |
| Severity | All | |
| Summarise By Intx | No | |

Summary Crash History



| Selection Criteria | Value |
|--------------------|--------------------------|
| Road | PIPIDINNY RD (1100459) |
| Date | 01/01/2015 to 31/12/2019 |
| Road SLK | 3.06 to 1.10 |

| Severity | Count | Percentage |
|-----------------|----------|---------------|
| Fatal | 0 | 0.0% |
| Hospital | 1 | 20.0% |
| Medical | 0 | 0.0% |
| PDO Major | 3 | 60.0% |
| PDO Minor | 1 | 20.0% |
| Other / Unknown | 0 | 0.0% |
| Total: | 5 | 100.0% |

| MR Type | Count | Percentage |
|-----------------------------|----------|---------------|
| Involving Overtaking | 0 | 0.0% |
| Involving Parking | 0 | 0.0% |
| Involving Animal | 0 | 0.0% |
| Involving Pedestrian | 0 | 0.0% |
| Entering / Leaving Driveway | 0 | 0.0% |
| Other / Unknown | 5 | 100.0% |
| Total: | 5 | 100.0% |

| Light Conditions | Count | Percentage |
|-----------------------------------|----------|---------------|
| Daylight | 1 | 20.0% |
| Dawn Or Dusk | 1 | 20.0% |
| Dark - Street Lights On | 1 | 20.0% |
| Dark - Street Lights Off | 0 | 0.0% |
| Dark - Street Lights Not Provided | 2 | 40.0% |
| Other / Unknown | 0 | 0.0% |
| Total: | 5 | 100.0% |

| Object Hit | Count | Percentage |
|----------------------|----------|---------------|
| SEC Pole | 1 | 50.0% |
| Traffic Light Post | 0 | 0.0% |
| Traffic Sign | 0 | 0.0% |
| Commercial Sign Post | 0 | 0.0% |
| Tree | 0 | 0.0% |
| Other | 1 | 50.0% |
| Total: | 2 | 100.0% |

| Road Grade | Count | Percentage |
|-----------------|----------|---------------|
| Level | 2 | 40.0% |
| Crest Of Hill | 0 | 0.0% |
| Slope | 1 | 20.0% |
| Other / Unknown | 2 | 40.0% |
| Total: | 5 | 100.0% |

| Road Alignment | Count | Percentage |
|-----------------|----------|---------------|
| Curve | 1 | 20.0% |
| Straight | 3 | 60.0% |
| Other / Unknown | 1 | 20.0% |
| Total: | 5 | 100.0% |

| Speed a Factor | Count | Percentage |
|-----------------|----------|---------------|
| Yes | 0 | 0.0% |
| No | 0 | 0.0% |
| Other / Unknown | 5 | 100.0% |
| Total: | 5 | 100.0% |

| Road Condition | Count | Percentage |
|-----------------|----------|---------------|
| Wet | 0 | 0.0% |
| Dry | 3 | 60.0% |
| Other / Unknown | 2 | 40.0% |
| Total: | 5 | 100.0% |

| MR Nature | Count | Percentage |
|-------------------------|----------|---------------|
| Rear End | 2 | 40.0% |
| Head On | 0 | 0.0% |
| Sideswipe Opposite Dirn | 0 | 0.0% |
| Sideswipe Same Dirn | 0 | 0.0% |
| Right Angle | 0 | 0.0% |
| Right Turn Thru | 0 | 0.0% |
| Hit Pedestrian | 0 | 0.0% |
| Hit Animal | 0 | 0.0% |
| Hit Object | 2 | 40.0% |
| Non Collision | 0 | 0.0% |
| Other / Unknown | 1 | 20.0% |
| Total: | 5 | 100.0% |

Detailed Crash History



Report Criteria

| | | |
|-----------------------|--------------|-----|
| Road | SLK | CWY |
| 1100459 - Pipidnny Rd | 3.06 to 1.10 | All |

| Parameter | Value | Description |
|------------|------------|-------------|
| From Date | 01/01/2015 | |
| To Date | 31/12/2019 | |
| Crash Type | All | |
| Severity | All | |

| Road | Road Name | SLK | CWY | True Dist | Intersection | Date | Day | Time | Severity | Crash No. | Type | Light Cond | Road Cond | Speed Limit | Traffic Control | Road Feature | Road Alignment | Speed Factor | MR Nature | Location | RUM | Unit | Unit Type | From Dir | To Dir | Veh/Ped Move | First Object Hit | Second Object Hit | Third Object Hit | Target Impact Point | |
|---------|-------------|------|-----|-----------|---------------------|------------|---------|------|-----------|------------|--------------|-----------------------------------|-----------|-------------|--------------------|--------------|----------------|--------------|------------|----------------------------------|--|---------------------------------------|---------------|-------------------|----------------|------------------------------------|------------------------------------|-------------------|------------------|---------------------|--|
| 1100459 | Pipidnny Rd | 2.06 | S | 2.06 | | 13/11/2015 | Friday | 1810 | Hospital | 2016040106 | Midblock | Dawn Or Dusk | | 80 | No Sign Or Control | | | | | | On Cway | 91-Misc: Passenger Fall In / From Veh | Colliding | Trail Bike | | | Straight Ahead: Not Out Of Control | | | | |
| 1100459 | Pipidnny Rd | 2.25 | S | 2.25 | | 13/05/2018 | Sunday | 0215 | PDO Major | 2018127542 | Midblock | Dark - Street Lights Not Provided | Dry | 80 | No Sign Or Control | | Straight | | Hit Object | On Left Verge After Leaving Cway | 70-Off Path On Straight: Other | Colliding | Station Wagon | | | Out Of Control: Other | Fixed Object Other | | | | |
| 1100459 | Pipidnny Rd | 2.42 | S | 2.42 | | 11/09/2016 | Sunday | 2354 | PDO Major | 2016260271 | Midblock | Dark - Street Lights Not Provided | | 80 | No Sign Or Control | | Straight | | Hit Object | On Left Verge After Leaving Cway | 72-Off Path On Straight: Off Left Cway Obj | Colliding | Car | W | E | Out Of Control: Other | SEC Pole | | | | |
| 1100459 | Pipidnny Rd | 3.06 | S | 3.06 | MARMION AV (170904) | 03/05/2019 | Friday | 1600 | PDO Major | 2019118874 | Intersection | Daylight | Dry | 80 | Give Way Sign | Roundabout | Curve | | Rear End | On Cway | 32-Same Dir: Same Lane Left Rear | Colliding | Panel Van | E - PIP DINN Y RD | S - MARMION AV | Straight Ahead: Not Out Of Control | | | | | |
| 1100459 | Pipidnny Rd | 3.06 | S | 3.06 | MARMION AV (170904) | 03/05/2019 | Friday | 1600 | PDO Major | 2019118874 | Intersection | Daylight | Dry | 80 | Give Way Sign | Roundabout | Curve | | Rear End | On Cway | 32-Same Dir: Same Lane Left Rear | Target | Car | E - PIP DINN Y RD | S - MARMION AV | Stopped: By Traffic Control | | | | Rear | |
| 1100459 | Pipidnny Rd | 3.06 | S | 3.06 | MARMION AV (170904) | 08/10/2019 | Tuesday | 1915 | PDO Minor | 2019283282 | Intersection | Dark - Street Lights On | Dry | 80 | No Sign Or Control | Roundabout | Straight | | Rear End | On Cway | 31-Same Dir: Same Lane Rear End | Colliding | Car | S - MARMION AV | N - MARMION AV | Straight Ahead: Not Out Of Control | | | | | |
| 1100459 | Pipidnny Rd | 3.06 | S | 3.06 | MARMION AV (170904) | 08/10/2019 | Tuesday | 1915 | PDO Minor | 2019283282 | Intersection | Dark - Street Lights On | Dry | 80 | No Sign Or Control | Roundabout | Straight | | Rear End | On Cway | 31-Same Dir: Same Lane Rear End | Target | Car | S - MARMION AV | N - MARMION AV | Stopped: To Avoid Veh | | | | Rear | |

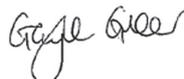
APPENDIX K

STATION ACOUSTIC REPORT

NEWest Eglinton Station Development Application Report - Acoustics

METRONET: Yanchep Railway Extension and Thornlie-Cockburn Link

Document Approval

| Rev | Date | Prepared by | Reviewed By | Approved by |
|-------------------|-------------|---|---|---|
| A | 13-Aug-2020 | Rachel Foster/Laura Keen | Gayle Greer | Chris Deshon |
| Signature: | |  |  |  |
| Signature: | | | | |
| Signature: | | | | |

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DETAILS OF REVISION AMENDMENTS AND PLAN TERMINOLOGY

Document Control

The Acoustic Engineer is responsible for updating this plan to reflect changes as required.

Amendments

Any revisions or amendments must be approved by the Design Manager before being distributed or implemented.

Revision Details

| Revision | Details |
|----------|------------------------------------|
| A | Issued for Development Application |
| | |
| | |
| | |

Terms and Definitions

| Term | Meaning |
|------------------|---|
| 'A' Weighted | Frequency filter applied to measured noise levels to represent how humans hear sounds. |
| Ambient Sound | The all-encompassing sound at a point being a composite of sounds from near and far. |
| Background sound | The ambient sound in the absence of the sound under investigation. |
| dB | The decibel (dB) is a logarithmic unit of measurement that is commonly used to express sound pressure level. An increase of 3 dB corresponds to an approximate doubling of sound power. When applied to sound, an increase of 10dB corresponds approximately to a perceived doubling of loudness; typically 0 dB is the threshold of hearing and 120 dB is the threshold of pain. |
| dB(A) | 'A' Weighted overall sound pressure level. |
| D_w | Weighted Level Difference – Single number that represents the noise reduction in sound between two adjoining enclosed spaces. It is a field measurement that relates to the R_w laboratory measurement, but also includes all building elements and flanking paths and acoustic absorption in the receiving room. The result includes the actual noise reduction for the installed partition and ceiling systems. The higher the D_w , the greater the noise isolation between enclosed spaces. D_w has superseded NIC as the Australian Standard for acoustically rating room to room noise isolation. See NIC Below. |

| | |
|---------------------------------|--|
| $D_{nC,w}/CAC$ | Weighted Ceiling Noise Reduction Index/Ceiling Attenuation Class. This is the ability of a ceiling to prevent the transmission of sound. The $D_{nC,w}/CAC$ is a measure of sound reduction between rooms with a common ceiling plenum (or space). |
| $D_{nT,w}$ | Weighted Standardised Field Level Difference: The D_w rating normalised to a standard room volume and room absorption (or reverberation time). The higher the $D_{nT,w}$ rating, the better the insulation performance. |
| Flanking transmission | The transmission, between two rooms sharing a common partition, of sound generated in the air of one of them via all paths except that through the common partition. |
| Free field | A sound field in a medium of such extent that the effects of the boundaries are negligible throughout the region of interest. |
| Frequency (Hz) | The human ear responds to sound in the frequency range of 20 Hertz to 20,000 Hz. A combination of sound pressure and frequency determine perceived loudness. The centre frequency of an octave is double the frequency of the lower octave. Sound measurements are usually taken at 16 one-third octave bands between 50 and 5,000 Hz. |
| Impact sound transmission level | In a given frequency band, between two rooms situated above the other: the average octave band sound pressure level, throughout the lower room, produced by impacts delivered by a standard tapping machine to the floor of the upper room. |
| Intermittent noise | A noise whose sound pressure level suddenly drops to the background level several times during the period of observation, the time during which the level remains at a constant value different from that of the background level being of the order of 1s or more. |
| $L_{nT,w}$ | The single number quantity used to characterise the impact sound insulation of floors over a range of frequencies. See BS EN ISO 140-7:1998 |
| L_{10} | Noise level exceeded for 10% of the measurement period. This represents the upper intrusive noise level and is often used to represent traffic/ music noise. |
| L_{90} | Noise level exceeded for 90% of the measurement period. This represents the background noise level excluding nearby sources. The L_{90} level is commonly referred to as the background noise level. |
| L_{eq} | Energy averaged noise level over the measurement period. This measure is commonly used when comparing the criterion noise level under the Environmental Noise Regulations and for comparison with relevant standards for air conditioning noise. |

Abbreviations and Acronyms

| Abbreviation/Acronym | Definition |
|----------------------|---|
| AS/NZS | Australian/New Zealand Standard |
| NCC | National Construction Code |
| PA | Public Address systems |
| PTA | Public Transport Authority of Western Australia |
| SPP 5.4 | State Planning Policy 5.4 Road and Rail Transport Noise and Freight Considerations in Land Use Planning |
| SWTC | Scope of work and technical criteria |
| TCL | Thornlie Cockburn Link |
| WAEPNR | Western Australia Environmental Protection (Noise) Regulations 1997 |
| YRE | Yanchep Rail Extension |

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1. INTRODUCTION

The Eglinton Station is a proposed new train station to be located approximately halfway along the new Yanchep Rail Extension (YRE) passenger railway line, as indicated in Figure 1.



Figure 1: Proposed YRE Line

The station is to be located in the currently-undeveloped rail corridor south of Pipidiny Road and east of Marmion Avenue, Eglinton, as indicated in Figure 2.

New roads (Eglinton Drive, Carphin Road, Walcott Avenue and internal precinct roads) within the Eglinton precinct are to be constructed by the adjoining developer.

The station will be a multi-modal interchange providing facilities for pedestrian and cycle access, local bus service interchanges, kiss-and-ride and park-and-ride passengers. Over 426 park-and-ride bays are proposed for the station, the majority of which are to be located on the western side of the station, and accessed from Pipidiny Road.

3. DESIGN CRITERIA

3.1 DESIGN STANDARDS AND CODES

In addition to the Yanchep Rail Extension and Thornlie Cockburn Link Scope of Work and Technical Criteria (SWTC) and the Public Transit Authority of Western Australia (PTA) requirements, other codes and standards required to develop the acoustic design for DA include the following:

- State Planning Policy 5.4 *Road and Rail Transport Noise and Freight Considerations in Land Use Planning*
- AS 2436-2010 *Guide to noise and vibration control on construction, maintenance and demolition sites*
- Western Australia *Environmental Protection (Noise) Regulations 1997* (WAEPNR)
- PTA Technical & Operational standards, policies and procedures

The above list is not exhaustive but is provided to note the key guides and standards to which the design shall align.

3.2 NOISE IMPACTS TO SURROUNDING SENSITIVE PREMISES

3.2.1 BUILDING SERVICES, PA SYSTEM AND CAR PARK

The Yanchep Rail Extension and Thornlie Cockburn Link Scope of Work and Technical Criteria states the following:

Stations and associated infrastructure (e.g. carparks, plant rooms etc) must be designed to comply with the requirements of the Environmental Protection (Noise) Regulations 1997 (WA)

Noise criteria for both steady-state and discrete noise emission from the Eglinton Station project are nominated in this section. The setting of noise emission criteria is intended to protect the acoustical amenity of nearby sensitive receivers.

Environmental noise impacts resulting from the Eglinton Station project are addressed through the Environmental Protection Act 1986 with the prescribed standards detailed in the Western Australian Environmental Protection (Noise) Regulations 1997 (WAEPNR). The regulations are based on maximum allowable noise levels termed the 'assigned noise level'. The regulations require that:

Noise emitted from any premises when received at other premises must not cause, or significantly contribute to, a level of noise which exceeds the assigned level in respect of noise received at premises of that kind

A noise emission is taken to 'significantly contribute to' a level of noise if the noise emission exceeds a value which is 5 dB below the assigned level at the point of reception.

Table 1: Assigned levels by the Western Australian Environmental Protection (Noise) Regulation 1997

| Type of premises receiving noise | Time of Day | Environmental Emission Criterion Level dB(A) | | |
|---|--|--|-------------------------|-------------------------|
| | | L _{A,10} | L _{A,1} | L _{A,max} |
| Nearest noise sensitive receiver: highly sensitive area | 0700 to 1900 hours Monday to Saturday | 45 + influencing factor | 55 + influencing factor | 65 + influencing factor |
| | 0900 to 1900 hours Sunday and public holidays | 40 + influencing factor | 50 + influencing factor | 65 + influencing factor |
| | 1900 to 2200 hours all days | 40 + influencing factor | 50 + influencing factor | 55 + influencing factor |
| | 2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and public holidays | 35 + influencing factor | 45 + influencing factor | 55 + influencing factor |
| Noise sensitive premises: any area other than highly sensitive area | All hours | 60 | 75 | 80 |
| Commercial Premises | All hours | 60 | 75 | 80 |
| Industrial premises | All hours | 65 | 80 | 90 |

The regulations also apply penalties on noise levels that contain annoying characteristics such as tonal components. Where these characteristics do exist and cannot be practicably removed, then the measured levels are adjusted according to the penalties as follows:

- Where tonality is present: +5 dB
- Where modulation is present: +5 dB
- Where impulsiveness is present: +10 dB.

The noise adjustments apply up to a maximum cumulative total of 15 dB.

The influencing factor is applied to account for higher noise areas as a result of nearby industrial and commercial areas and major roads. The influencing factor is determined by considering the land use within two circles having a radius of 100 m and 450 m from the noise sensitive premises of concern and proximity to major and minor roads as defined in the WAEPNR. The nearest noise sensitive receivers on each side of the Eglinton Station project have been identified as shown in Figure 3 (taken from Urbis Structure Plan Part B – Eglinton District Centre) and are summarised in Table 2 below.

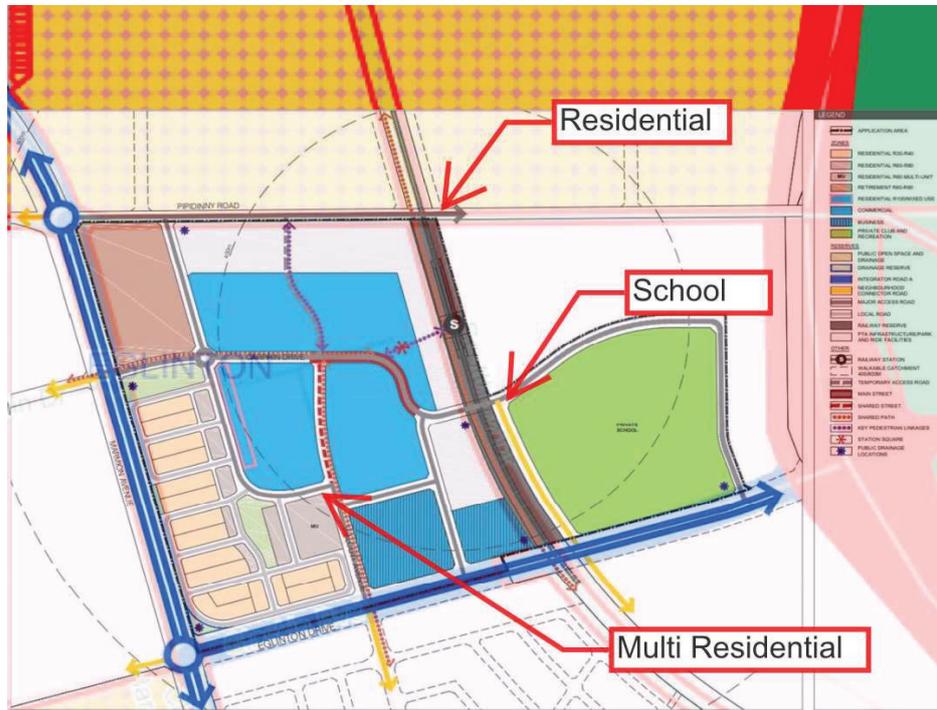


Figure 3: Nearest noise-sensitive receiver locations

Table 2: Nearest noise-sensitive receiver locations

| Location | Noise Sensitive Receiver | Receptor Type |
|------------|--------------------------|-----------------------------------|
| South east | Future Development | School |
| South west | Future Development | Multi-use (including residential) |
| North | Future Development | Residential |

Note: Selection of noise sensitive premises is based on Schedule 1 – Part C of the WAEPNR

Transport factors of 6 dB(A) and 2 dB(A) are applied to noise sensitive receivers if major roads are located within 100 m and 450 m respectively. A transport factor of 2 dB(A) is applied to noise sensitive receivers if a secondary road is located within 100 m of a noise-sensitive receiver.

A major road is defined as having vehicle traffic flows in excess of 15,000 vehicles per day. A secondary road is defined as having traffic flows of 6,000 to 15,000 vehicles per day.

The major roads and secondary roads within 100 m and 450 m of the noise-sensitive receivers are identified in the Arup traffic assessment report shown in **Error! Reference source not found.** and given in Table 4 below.

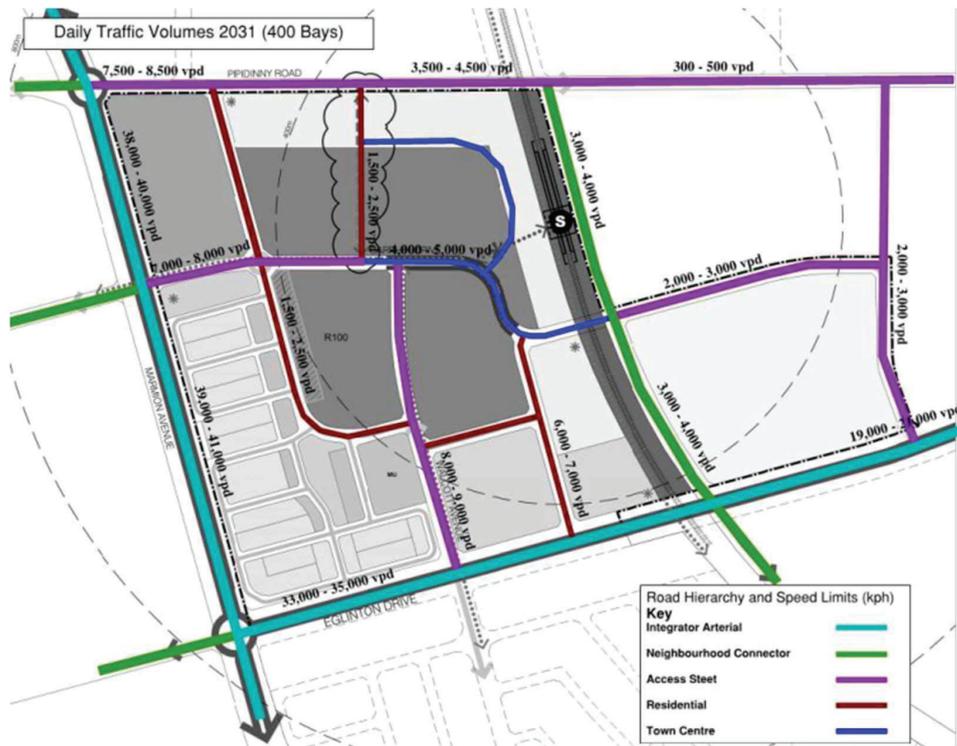


Figure 4: Future traffic volumes adjacent Eglinton Station

Table 3: Major/secondary roads adjacent to Eglinton Station

| Location | Major road within 100 m | Secondary road within 100 m | Major road within 450 m |
|--|-------------------------|---------------------------------|---------------------------------------|
| South east - school | - | Future road (precinct internal) | Marmion Avenue, future Eglinton Drive |
| South west – Multi-use (including residential) | - | Future road (precinct internal) | Marmion Avenue, future Eglinton Drive |
| North - residential | - | - | Marmion Avenue, future Eglinton Drive |

The area surrounding the Eglinton Station is currently greenfield space. The zoning identified in the Urbis drawing (Figure 3) and the zoning plan for the City of Wanneroo, have been used to identify the future zoning around the station. To determine the influencing factor, existing/proposed future roads and future land uses have been utilised. The influencing factor at the nearest noise sensitive receivers is summarised below.

Table 4: Environmental Design Criteria – Influencing Factor

| Location | % Industrial Area Use | | % Commercial Area Use | | Transport Factor | Influencing Factor |
|--|-----------------------|-------|-----------------------|-------|------------------|--------------------|
| | 100 m | 450 m | 100 m | 450 m | | |
| South east - school | 41% | 31% | 2.5% | 8.5% | 4 dB(A) | 12 dB(A) |
| South west – Multi-use (including residential) | 54.5% | 24% | 54% | 8.5% | 4 dB(A) | 10 dB(A) |
| North - residential | 54.5% | 24% | 1% | 8.5% | 2 dB(A) | 8 dB(A) |

The assigned levels are adjusted by the calculated influencing factors to result in the overall noise emission criteria for the area.

Table 5: Environmental Design Criteria – Eglinton Station Assigned Noise Levels, dB(A)

| Type of premises receiving noise | Time of Day | Environmental Emission Criterion Level dB(A) | | |
|--|--|--|------------------|--------------------|
| | | L _{A,10} | L _{A,1} | L _{A,max} |
| South east - school | 0700 to 1900 hours Monday to Saturday | 57 | 67 | 77 |
| | 0900 to 1900 hours Sunday and public holidays | 52 | 62 | 77 |
| | 1900 to 2200 hours all days | 52 | 62 | 67 |
| | 2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and public holidays | 47 | 57 | 67 |
| South west – Multi-use (including residential) | 0700 to 1900 hours Monday to Saturday | 55 | 65 | 75 |
| | 0900 to 1900 hours Sunday and public holidays | 50 | 60 | 75 |
| | 1900 to 2200 hours all days | 50 | 60 | 65 |
| | 2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and public holidays | 45 | 55 | 65 |

| | | | | |
|---|--|----|----|----|
| North - residential | 0700 to 1900 hours Monday to Saturday | 53 | 63 | 73 |
| | 0900 to 1900 hours Sunday and public holidays | 48 | 58 | 73 |
| | 1900 to 2200 hours all days | 48 | 58 | 63 |
| | 2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and public holidays | 43 | 53 | 63 |
| Noise sensitive premises: any area other than highly sensitive area | All hours | 60 | 75 | 80 |
| Commercial Premises | All hours | 60 | 75 | 80 |
| Industrial premises | All hours | 65 | 80 | 90 |

Notes:

1. *A noise emission from a premises is considered to not significantly contribute to the noise at a receiver if the noise emission is 5 dB below the overall noise emission criteria for the area.*

It is noted that the WAEPNR does not specifically identify that the above environmental noise criteria applicable to noise from rail passengers and patrons of the Eglinton Station; however, an assessment is made here to quantify the likely impacts of these to adjacent noise-sensitive receivers.

3.2.2 STATION ENTRY ROADS AND BUS MOVEMENTS

The Yanchep Rail Extension and Thornlie Cockburn Link Scope of Work and Technical Criteria states the following:

The Alliance must design roads works and any associated noise mitigation controls to meet the requirements of Western Australia State Planning Policy 5.4 Road and Rail Transport Noise and Freight Considerations in Land Use Planning.

Table 6: Environmental Design Criteria – New and Upgraded Public Roads and Bus Lanes

| Type of premises receiving noise | Time of Day | New Road | Upgraded Road |
|---|--------------------|-------------------------------------|-------------------------------------|
| Noise-sensitive land use (existing and planned development) | Day (6 am–10 pm) | L _{Aeq} (Day) = 55 dB(A) | L _{Aeq} (Day) = 60 dB(A) |
| | Night (10 pm–6 am) | L _{Aeq} (Night) = 50 dB(A) | L _{Aeq} (Night) = 55 dB(A) |

It is noted that the internal Eglinton precinct roads such as Carphin Road, Walcott Avenue and residential roads, as well as the introduction of Eglinton Drive, are independent of the MetroNet scope of works and the potential impact from these to noise-sensitive receivers is to be assessed and managed by the developers of those roads, and is not covered by this assessment.

It is also noted that the assessment of rail noise to adjacent noise-sensitive receivers is being addressed separately for the MetroNet project, and does not form part of this scope.

3.3 CONSTRUCTION NOISE AND VIBRATION

The WAEPNR clarifies that the environmental noise criteria outlined in Table 5 are not applicable to noise emitted from a construction site where works are carried out between 0700 hours and 1900 hours on any day which is not a Sunday or public holiday if it shown that the construction works are generally carried out in accordance with the control of Section 4 of *AS 2436-2010 Guide to noise and vibration control on construction, maintenance and demolition sites* and if construction work is carried out in accordance with an approved management plan.

It is noted that a specific construction noise and vibration management plan is being addressed separately for the MetroNet project, which will include relevant site clearing and construction works associated with the Eglinton Station, and does not form part of this scope.

4. ACOUSTIC DESIGN ELEMENTS

4.1 STATION IMPACTS TO SURROUNDING SENSITIVE PREMISES

4.1.1 BUILDING SERVICES

Mechanical services plant selections for the Eglinton Station have not been determined at this stage, however, will likely comprise:

- Small exhaust fans to ablution facilities and electrical plant spaces
- Critical cooling to comms spaces
- Air conditioning to occupied spaces (crib room) incorporating split systems with wall-mounted indoor units
- Two transformers as follows:
 - 1x 630 kVA precinct mains supply transformer – 66 dB(A) Sound Power Level
 - 1x 500 kVA station isolation transformer – 62 dB(A) Sound Power Level.

The anticipated equipment and locations are as shown in Figure 5.

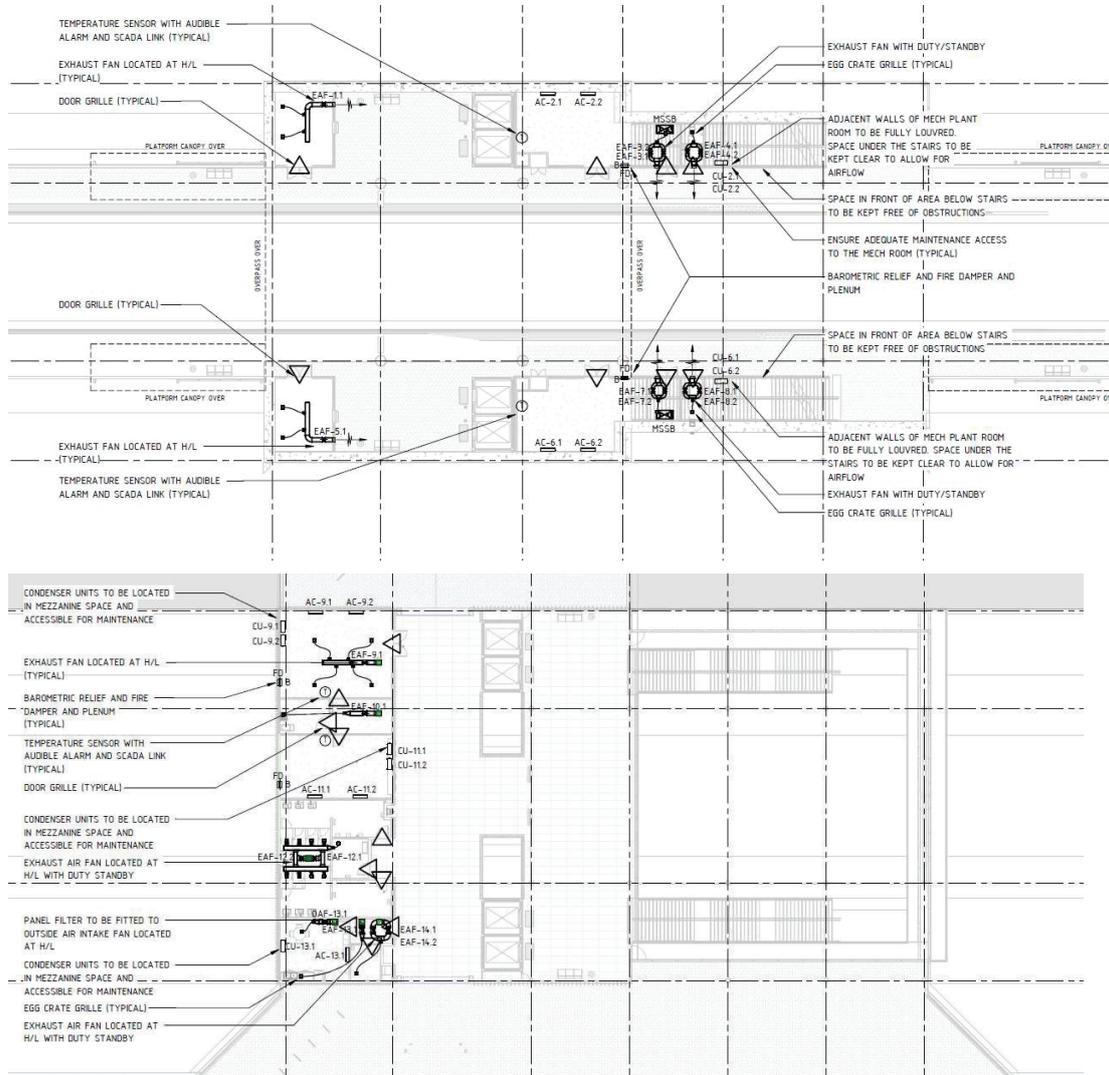


Figure 5: Proposed Eglinton Station building services

It is expected that standard noise control measures will be sufficient to control mechanical services plant noise in order to meet the required environmental noise levels at adjacent noise-sensitive areas. Such measures include:

- Selection of quietest possible equipment
- Internal duct lining (where appropriate)
- Appropriate location of equipment away from adjoining noise-sensitive receivers (including taking advantage of shielding afforded by the station itself)
- Enclosure of transformers
- Enclosure of the transformers.

4.1.2 PUBLIC ADDRESS SYSTEM

The design of the public address system design will be developed during the next stage of the design development to meet the environmental noise criteria outlined in Table 5.

Preliminary calculations suggest that a maximum combined sound power level of all PA speakers of approximately 93 dB(A) would achieve the environmental noise criteria at all noise-sensitive receivers.

4.1.3 CAR PARK

The car parking associated with the Eglinton Station is proposed to have a maximum capacity of over 426 bays. Assuming the car park is full during peak hours (morning and afternoon), the predicted noise levels from the car park alone at the nearest noise-sensitive receptors are as follows:

- South east – school 27 dB(A)
- South west – multi-use residential 28 dB(A)
- North – residential 39 dB(A).

It is noted that these estimated car park noise levels do not take into account any acoustic barriers which the developer may be required to construct as conditioned on the development of the land within the Eglinton precinct. It is unknown at the time of writing as to the location and/or extent and/or heights of any such barriers. The influence of these can be addressed when this is clarified.

Nevertheless, the environmental noise criteria identified in Table 5 are predicted to be achieved without any potential influence from any such barriers, and therefore noise from the Eglinton Station car park is not expected to cause disturbance to the nearby noise-sensitive receivers.

4.1.4 PASSENGER NOISE

The station is anticipated to have around 2,689 passengers per day by 2031. The highest passenger volume is expected during the afternoon peak hour period, with 48 boardings and 960 alightings. For YRE, the peak 15-minute period has 36% of the peak one-hour demand i.e. 18 boardings and 346 alightings. This equates to around 364 passengers on the station platform for a 15-minute period.

On the basis that the gender split is 50%/50%, and that half the passengers would be speaking in normal voices at any one point in time, the predicted noise levels from passengers at the nearest noise-sensitive receptors are as follows:

- South east – school 42 dB(A)
- South west – multi-use residential 35 dB(A)
- North – residential 40 dB(A).

These predicted noise levels are well below the day-time environmental noise criteria, and therefore noise from passengers on the Eglinton Station platform is not expected to cause disturbance to the nearby noise-sensitive receivers.

4.2 ROAD AND BUS MOVEMENT IMPACTS TO SURROUNDING SENSITIVE PREMISES

The connection road between the proposed new car park and Pipidinnny Road, the associated car park vehicles using Pippidinnny Road as well as the bus movements along the internal station area, are required to be assessed against the road traffic requirements of the SPP 5.4.

The following inputs to the road and bus noise assessment have been taken from the transport planning report *NEWest Eglinton Transport Assessment 24-06-20* and the Arup report *190326 Eglinton ACP Transport Assessment_final_rev1_DRAFT*:

- 1,500 – 2,500 vehicles per day into the car park from Pipidinnny Road
- 278 bus movements per day into the station bus interchange

The following assumptions have been made:

- 5% heavy vehicles as per adjoining Marmion Avenue and Pippidiny Road
- Approximately 96% of vehicle movements occur during the daytime period.

On the basis of these movements, the predicted vehicle movement noise levels associated with the station precinct are as follows:

- | | |
|--------------------------------------|---|
| ▪ South east – school | $L_{Aeq}(\text{Day})$ 41 dB(A), $L_{Aeq}(\text{Night})$ 36 dB(A) |
| ▪ South west – multi-use residential | $L_{Aeq}(\text{Day})$ 50 dB(A), $L_{Aeq}(\text{Night})$ 49 dB(A) |
| ▪ North – residential | $L_{Aeq}(\text{Day})$ 61 dB(A), $L_{Aeq}(\text{Night})$ 54 dB(A). |

Therefore the road traffic noise criteria of $L_{Aeq}(\text{Day})$ 55 dB(A) and $L_{Aeq}(\text{Night})$ 50 dB(A) are expected to be achieved at the nearest noise-sensitive receivers to the south east and to the south west, but both day and night road traffic noise criteria are predicted to be exceeded at the nearest proposed residential area to the north (on Pippidiny Road).

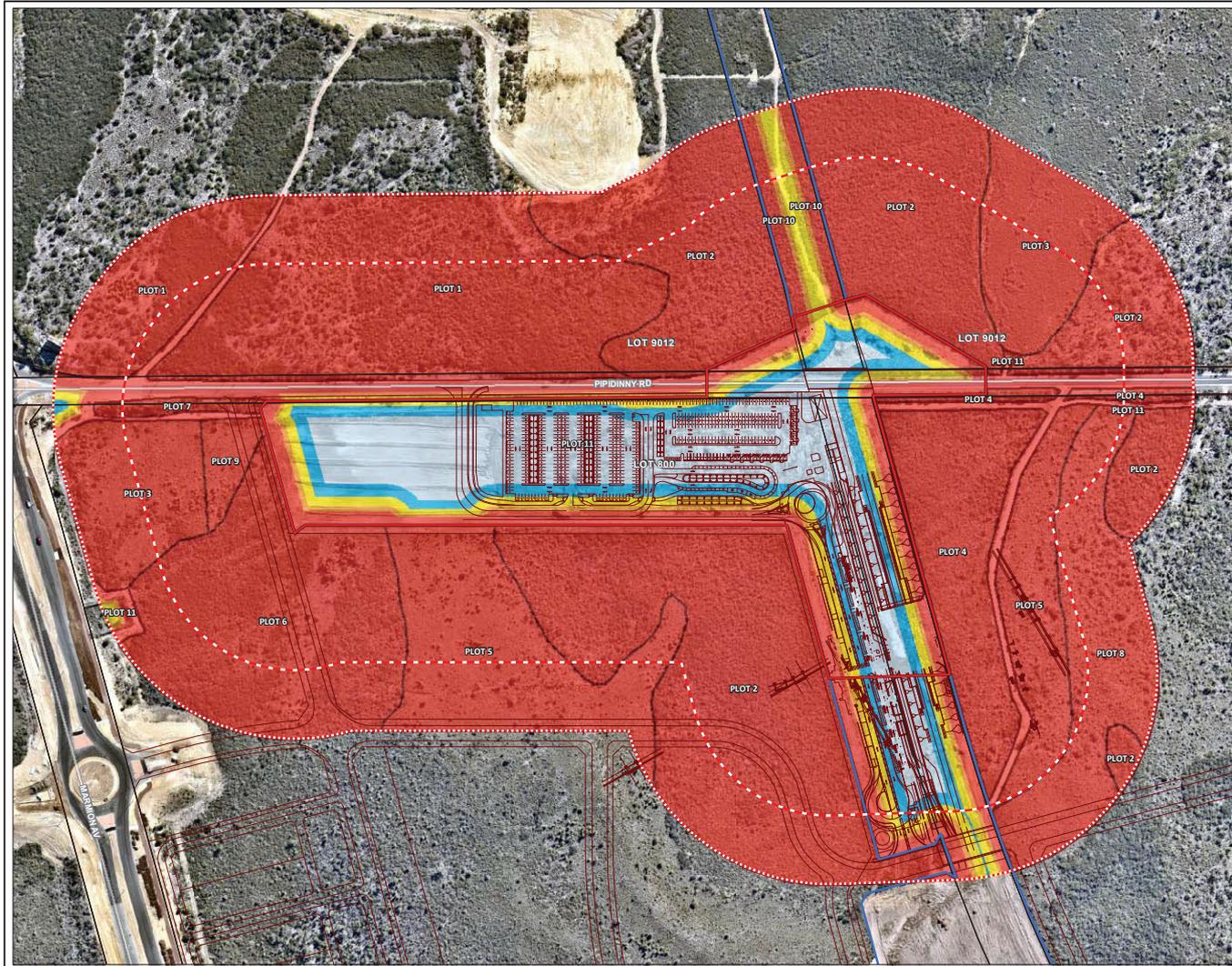
However, for this selected worst-case receiver location (refer Figure 3), it is noted that the following should also be taken into account:

- These traffic noise levels should be considered in the context of the likely traffic noise levels anticipated as a result of the complete traffic noise environment associated with the entire development precinct. With traffic volumes as (shown in Figure 4) of 3,500-4,500 vpd on Pippidiny Road at the location of this receiver, and 3,000-4,000 vpd on the proposed neighbourhood connector road on the eastern side of the proposed railway, traffic noise levels from the station vehicle movements alone is expected to be in the order of 3 dB lower than traffic noise levels from traffic on the wider road network. Therefore, traffic noise associated with the station would be indistinguishable from normal traffic noise in the area.
- The selected worst-case receiver location has been hypothetically set as being immediately adjacent to Pippidiny Road and the railway. It is likely that the development will require some form of offset for those residences nearest to the transport elements, and therefore the actual worst-case receiver location is further from the road than as estimated here.
- It is also noted that modern building constructions (such as identified in Table 3 of the *SPP 5.4 Implementation Guidelines*) would enable an appropriate level of internal noise levels within occupied spaces of such a residence.
- The SWTC Book 3 Part A section 9.1.1.8 states the following:
9.1.1.8 The Alliance must undertake the design and construction of the following structures:...
v. noise wall structures: noise wall design and construction only required where development is already adjacent to the rail corridor...

Therefore, as the land on which this worst-case receiver location is located has not yet been developed, it is the onus of the developer to undertake mitigation measures to ensure appropriate noise levels within its development boundaries.

APPENDIX L

BUSHFIRE ASSESSMENT



- Legend**
- Project area
 - 100m assessment area
 - 150m assessment area
 - Cadastral boundary
 - YRE Development envelope
 - Classified vegetation
 - BAL contours**
 - BAL FZ
 - BAL 40
 - BAL 29
 - BAL 19
 - BAL 12.5
 - Roads (MRWA)



| | |
|-------------------------|-------------------|
| Job No: 59400 | |
| Client: NEWest Alliance | |
| Version: A | Date: 18-Aug-2020 |
| Drawn By: hswllivan | Checked By: CT |
| Scale 1:2,500 at A3 | |
| | |

Coord. Sys. GDA 1994 MGA Zone 50

Lot 800 and 9012, Pipidiny Rd, Eglinton, City of Wanneroo, WA

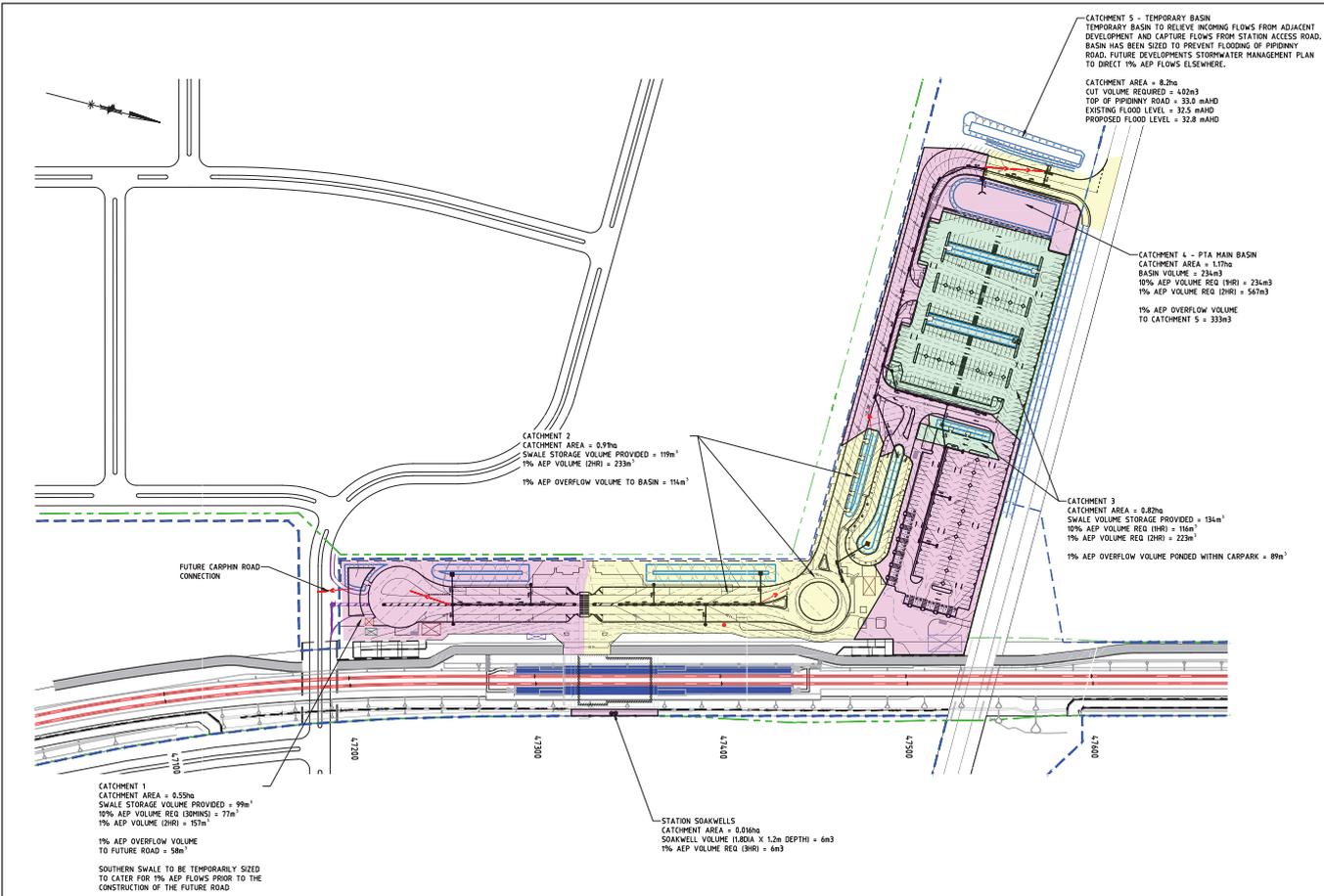
**BAL CONTOUR MAP
EGLINTON STATION**

FIGURE 2

File Name: I:\00\00\00\00\001_jpg_sml.dwg Plot: 11 Client: NEWest Alliance\59400_Yandoo Rat and Thorne Link Busroute Services\GIS\Map\PIR0_Rev_A\59400_02_BALContours_EglintonStation.mxd
Image Reference: www.rearmap.com - Imagery Date: 03 May 2020

APPENDIX M

PRELIMINARY STORMWATER PLAN



NOTES

- ALL DIMENSIONS IN METRES UNLESS NOTED OTHERWISE.
- EARTHWORKS AND RETAINING WALLS BASED ON RAIL EARTHWORKS MODEL DATED 15/07/2019 AND TO BE UPDATED IN THE REFERENCE DESIGN.

LEGEND

- RAIL RESERVE BOUNDARY
- DEVELOPMENT ENVELOPE
- RETAINING WALL
- 38.5m CONTOURS - MAJOR (8.5m)
- CONTOURS - MINOR (8.5m)
- KEBP
- RAIL PSP
- STATION PLATFORM
- NARROW GAUGE
- PASSENGER MAIN

DRAINAGE

- DRAINAGE CHANNEL
- DRAINAGE PIPE
- MAJOR STORM OVERLAND FLOW ROUTE
- EXISTING DRAINAGE PIPE
- EXISTING DRAINAGE PIPE TO BE REMOVED
- MANHOLE
- GULLY GRATE
- PRECAST CONCRETE HEADWALL
- CATCHPIT
- GROSS POLLUTANT TRAP
- SOAKWELL
- ROCK PITTING
- KERB OPENING
- GRATED TRENCH DRAIN

PLAN
SCALE 1:1000

| REV | DATE | AMENDMENT | DSN | DRN | CHKD | APP |
|-----|----------|---|-----|-----|------|-----|
| B | 18.04.20 | ISSUED FOR INFORMATION (85% DESIGN - MPI) | TB | CB | TB | |
| A | 19.04.20 | ISSUED FOR 5% DESIGN | GG | CB | TB | |
| A1 | 15.04.21 | REFERENCE DESIGN ISSUE | | | | |

ORIG. SIZE: 0 10 20 30 40 50 100mm

CAD DRAWING PATHNAME: C:\Users\cody.brown\Documents\Drawings\Printout\TCY-DJV-YSB-CI-DRG-041.dwg

NEWest Alliance

TCY-DJV-YSB-CI-DRG-041

REFERENCES

| | | |
|----|------------------|---------------------------|
| 1 | AS/NZS 1170:2002 | Structural design actions |
| 2 | AS/NZS 1170:2009 | Structural design actions |
| 3 | AS/NZS 1170:2015 | Structural design actions |
| 4 | AS/NZS 1170:2018 | Structural design actions |
| 5 | AS/NZS 1170:2020 | Structural design actions |
| 6 | AS/NZS 1170:2021 | Structural design actions |
| 7 | AS/NZS 1170:2022 | Structural design actions |
| 8 | AS/NZS 1170:2023 | Structural design actions |
| 9 | AS/NZS 1170:2024 | Structural design actions |
| 10 | AS/NZS 1170:2025 | Structural design actions |
| 11 | AS/NZS 1170:2026 | Structural design actions |
| 12 | AS/NZS 1170:2027 | Structural design actions |
| 13 | AS/NZS 1170:2028 | Structural design actions |
| 14 | AS/NZS 1170:2029 | Structural design actions |
| 15 | AS/NZS 1170:2030 | Structural design actions |
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| 82 | AS/NZS 1170:2097 | Structural design actions |
| 83 | AS/NZS 1170:2098 | Structural design actions |
| 84 | AS/NZS 1170:2099 | Structural design actions |
| 85 | AS/NZS 1170:2100 | Structural design actions |

SCALE: 1:1000 (@ A1)

DATUM: PCG20

HORIZONTAL: PCG20

VERTICAL: AHD71

PTA ACCEPTANCE STAMP

DETAILED DESIGN

Government of Western Australia
Public Transport Authority

YANCHEP RAIL EXTENSION

EGLINTON STATION & PRECINCT
DRAINAGE STRATEGY

SHEET 1 OF 1

PTA Drawing No: _____

DESIGNED: GG
DRAWN: CB
CHECKED: TB
APPROVED FOR ISSUE: _____
EXTENSIVE DIRECTOR: _____
DATE: _____

REV: B

APPENDIX N

**SUMMARY OF YRE ENVIRONMENTAL
MANAGEMENT STRATEGIES**

YRE Environmental Strategies Summary Statement for DA Planning Reports

DRAFT 1.0, 12 Aug 20

The new YRE passenger rail line will travel through existing and planned developments, meaning that minimising environmental and community impacts during its construction is a key focus. While a new railway is itself a sustainability initiative, construction of such major public transport infrastructure is overseen by a raft of both environmental and public health requirements - governing hours of work, the management of noise, vibration and dust, and the need to working together with communities in developing measures that will minimise impacts.

Flora and Fauna

As sections of the project footprint is located in greenfield sites, clearing will be required for the new passenger line. As outlined above, all vegetation clearing has received approval under the *Environmental Protection Act 1986*. The design has been optimised to limit the clearing to only that required to safely construct the permanent footprint.

The project footprint has been adjusted where possible to avoid significant ecological communities. Where this could not be achieved, significant areas of offset vegetation have been obtained offsite and funds allocated to manage those environmental offsets in perpetuity.

Prior to clearing, a trapping and relocation program will be undertaken by a qualified ecologist. Native animals will be relocated to nearby suitable habitat, as approved by the Department of Biodiversity, Conservation and Attractions.

To ensure animals free movement across the rail corridor, and to maintain the ecological link and habitat through these areas, the project will build one fauna underpass through the Alkimos Parks and Recreation Reserve. Three fauna bridges will also be constructed in the Ningana Bush Forever area, and will be 30m wide, span 22m, have nearly 1m of soil hosting vegetation similar to surrounding vegetation.

Environmental Controls

There are numerous controls in place throughout different stages of the project to mitigate impact on both flora and fauna. A combination of legislative, planning and construction controls, and monitoring govern the project with the aim to protect the environment through all stages of delivery. These controls include:

- monitoring of dust, noise and vibration during construction
- marking the clearing boundary by surveyors prior to the start of clearing
- fauna trapping and relocation prior to clearing, and the presence of fauna spotters during clearing
- endeavouring to schedule noisy activities at less sensitive times
- barricading and signage to clearly outline 'no-go' areas
- engaging with local stakeholders and the community
- adhering to required regulatory legislative approvals and associated conditions
- environmental monitoring, inspections and audits to confirm compliance with approvals and legislation

- environmental training incorporated into induction for all personnel, subcontractors and visitors to site.

Controls will be inspected regularly throughout the project duration to ensure their ongoing suitability and effectiveness.

Revegetation and Landscaping

All areas disturbed by the construction process that are not part of the permanent infrastructure will be revegetated as part of a landscape design produced by a landscape architect. The landscape design will provide quality landscape and urban design solutions which integrate the rail development and station precincts with the surrounding natural areas.

Revegetation and landscaping measures will include some or all of the following measures:

- reuse of topsoil from clearing during revegetation and landscaping
- maintenance of the required groundwater hydrology where needed to support existing vegetation and habitats in sensitive areas
- application of mulch to revegetated and landscaped areas to improve vegetation success
- stabilise the rail corridor walls with planting of locally species where possible
- retention of vegetation where not impacted by earthworks and not posing a safety risk.

Managing Noise, Vibration and Light

The project is committed to minimising construction noise and vibration along the alignment as much as possible by utilising various controls including limiting noisy works outside of normal working hours, where practicable and using construction techniques and work practices that generate lower noise levels.

Where out of hours works are required, they will be undertaken in accordance with a Noise and Vibration Management Plan approved by the City of Wanneroo. This plan will outline additional controls and community notification requirements.

To minimise impacts on the proposed residential developments nearby, the majority of the YRE line will be built in a cutting, with developers required to have appropriate setbacks from the rail reserve (via road reserves or public open space) and homes in the 'first row' facing the route encouraged to implement 'quiet house design'.

To manage vibration from passing trains, ballast matting (matting that sits in the rail formation) will be installed under the rail where it is located next to existing and future residential developments. This matting absorbs vibrations made by the train.

Noise walls will also be used in existing residential developments to assist with noise mitigation for residents living near to the trainline. The project team is currently confirming the height, materials and location of the noise walls along the alignment.

APPENDIX O

**YRE CONSTRUCTION PROGRAM
SUMMARY**

YRE Construction Program Summary Statement for DA Planning Reports

DRAFT 2.0, 12 Aug 20

Construction Program and Management

Overview of Yanchep Rail Extension

The Yanchep Rail Extension (YRE) is the extension of Public Transport Authority (PTA's) passenger rail network. In conjunction with the state government's METRONET initiative, the 14.5 Kilometre distance is an extension from Butler Station and provides new stations at Alkimos, Eglinton and Yanchep and in addition, nine new road-over-rail bridges.

YRE stations are typically greenfield construction with challenges including:

- Butler Station – removal of existing crossover, future Alkimos Drive inclusive with a bridge construction(s); Santorini Bridge, LWP2 Bridge, Romeo Bridge and Alkimos Drive Bridge.
- Alkimos Station - Alkimos Drive to Pipidinny Road – Bainbridge Ave to the south of Pipidinny road, Pipidinny Road Bridge;
- Eglinton Station - Pipidinny Road to the south of Yanchep Beach Road, the south of Yanchep Beach Road to the existing Yanchep Beach Road, Yanchep Beach Road Bridge; and
- Yanchep Station – delivery to the end of track alignment inclusive of Tokyu 3 Road Bridge, Toropango Ave Bridge.

Construction Management Planning

Each development site will be required to have a Construction Management Plan (CMP) endorsed prior to site mobilisation. The CMP will be supported by a range of other management plans (e.g. Traffic Management Plan), which will be prepared in consultation with the local government and other relevant agencies, based on the range of risks needing to be managed at each development site. Each CMP will provide the overarching framework and direction for all construction related works and activities on site during the station's construction phase. The CMP set outs the NEWest Alliance's construction methodology for this multi-disciplinary project and:

- complies with the PTA's Scope of Works and Technical Criteria (SWTC) and associated Project Specific Requirements (PSRs) and objectives;
- provides appropriate consideration to working in a constrained urban and existing rail environment;
- identifies, mitigates or effectively manages all interfaces and associated risks;
- ensures a respectful and considered approach to construction that minimises disruption to the existing PTA network, community and other stakeholders (e.g. road closures, working after hours, etc.);
- ensures delivery phase activities are undertaken in a clear, structured, methodical manner with 'no surprises';
- achieves desired functionality, safety, quality and program requirements in an environmentally and community sensitive manner; and
- details the management strategies and practices for construction at each site, excluding construction relating to rail and rail systems.

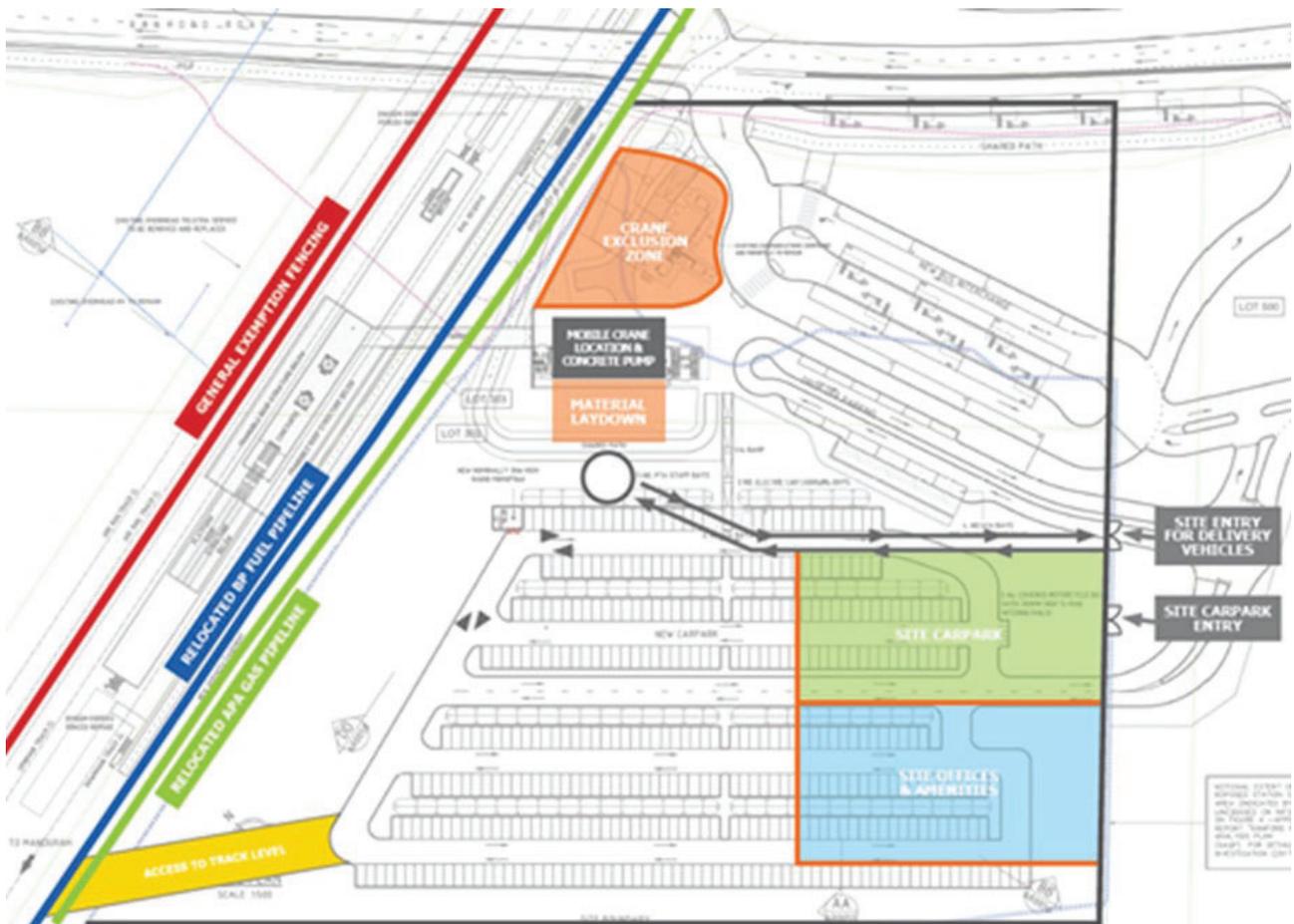
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The preparation of each station development site CMP will be informed by the endorsed Construction Plan YRE document. This provides the overarching framework and direction for all construction related activities and works during the delivery phase of the METRONET Stage 1 Initiatives: Yanchep Rail Extension.

Station Construction Site Layout

The sketch shown in Figure demonstrates the planned approach for site set up at new stations and notes locations for the set-up of mobile cranes and concrete pumps.

Figure ?: Typical site layout for a YRE station development project.



Timeframes for Construction and Day One Operations

The NEWest Alliance has taken a risk based approach on design to ensure accurate and efficient project delivery deadlines. The key construction milestones are as follows:

Table ?: YRE wide key construction milestones.

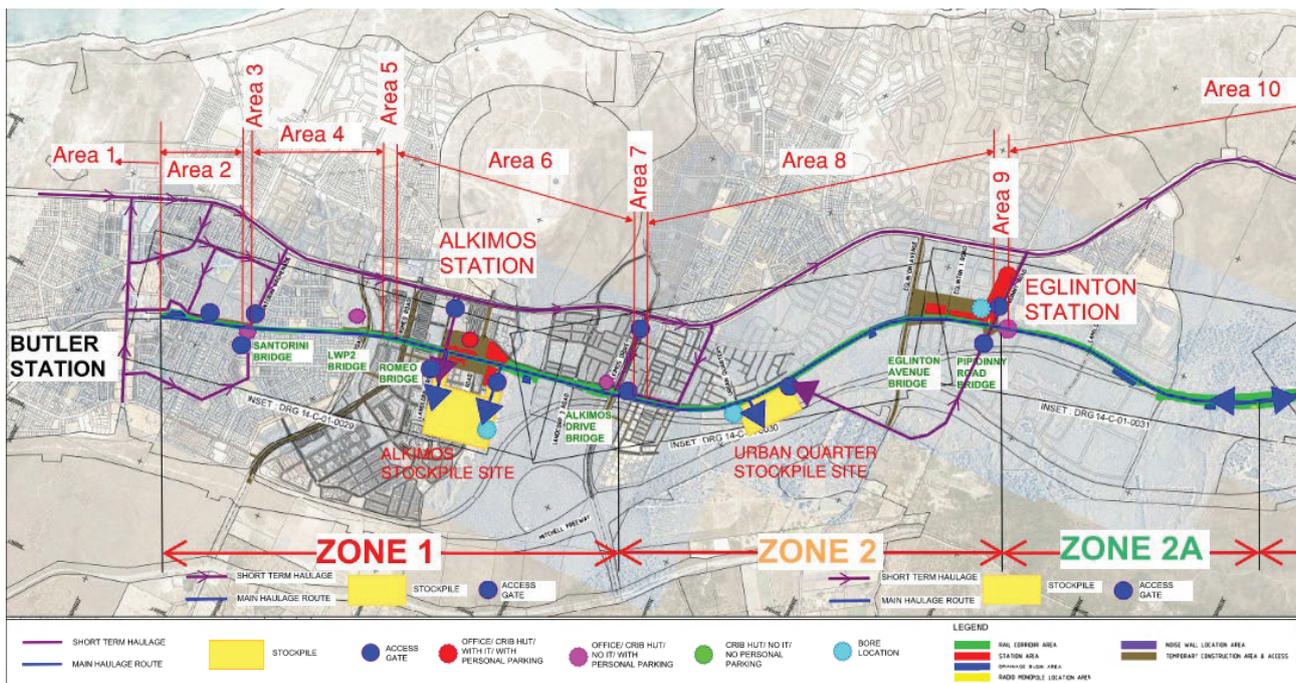
| Milestone | Target Completion Date |
|----------------------|------------------------|
| Design Complete | 06 April 2021 |
| Civil Works Complete | 23 December 2021 |

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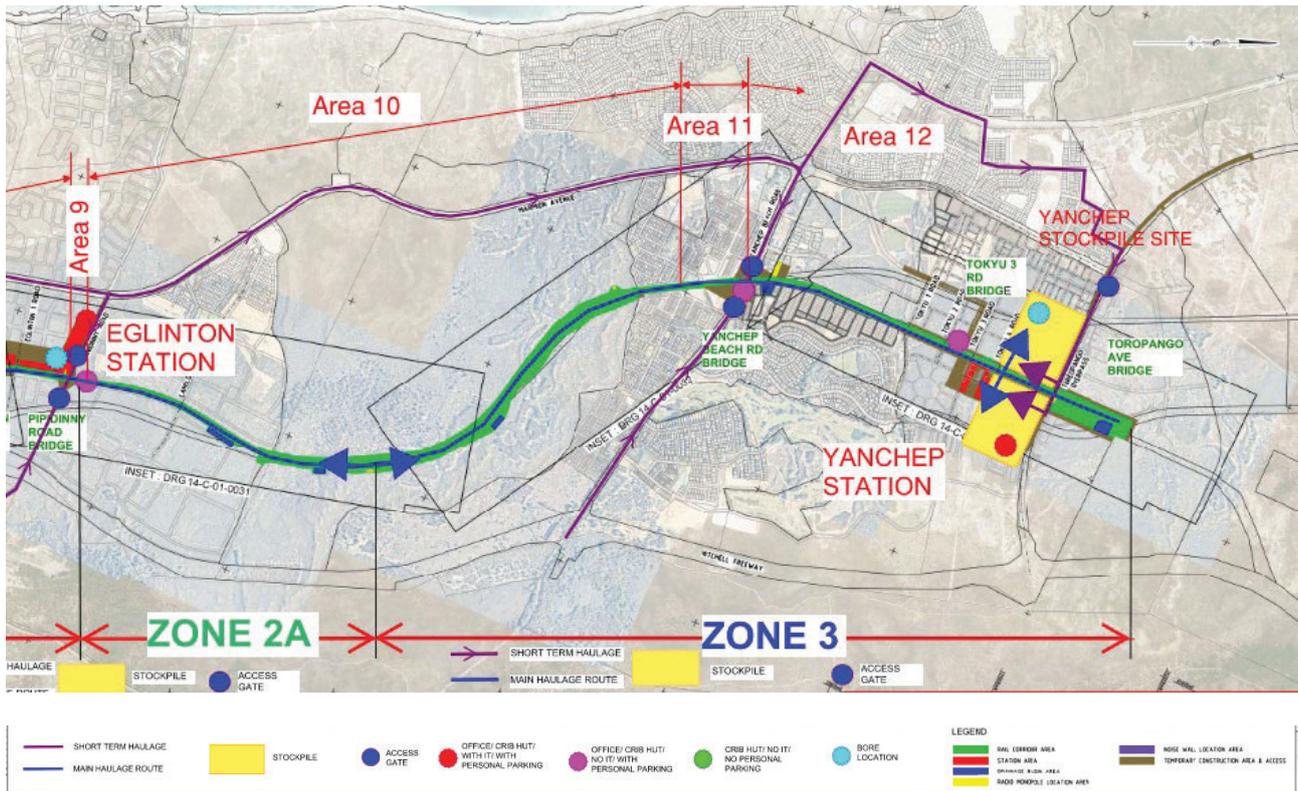
| Milestone | Target Completion Date |
|--|------------------------|
| Bridges Complete | 07 October 2021 |
| Final Commissioning | 13 May 2022 |
| Stations Complete | 19 April 2022 |
| Project Complete | 07 July 2022 |
| Operational Readiness and Drivers Training | 19 May 2022 |
| Removal of the Butler station crossovers 1071 and 1072 | November 2022 |

The YRE project has established three construction zones as shown in Figure ? below for effective and efficient management in terms of program, traffic staging and cost whilst minimising disruptions to stakeholders including train operations and the public.

Figure ? : Project Zone Layout below diagrams for the boundary of each zone.



NEWest Alliance



The program of dates for commencing construction of each YRE station and their anticipated date for commencing the operation of a passenger train services is summarised in the table below.

| Station Project | Date for Construction | Day One Operation Date |
|-----------------|-----------------------|------------------------|
| Alkimos | 11 November 2020 | 19 May 2022 |
| Eglinton | 4 January 2021 | 19 May 2022 |
| Yanchep | 18 December 2020 | 19 May 2022 |

APPENDIX P

**SUMMARY OF OGA AND SDRP
COMMENTS**

YANCHEP STATION – DESIGN REVIEW

DRAFT COMMENTS

| PRINCIPAL NO: | OGA COMMENTS (FEBRUARY 2020) | OGA RECOMMENDATIONS | CAMPS/NEWest RESPONSE | STATION DESIGN REVIEW PANEL REPORT COMMENTS (JUNE 2020) | CAMPS/NEWest RESPONSE |
|------------------------|---|---|---|--|---|
| 1. Context / character | Good design responds to and enhances the distinctive characteristics of a local area, contributing to a sense of place. | <ol style="list-style-type: none"> 1. Consider a precinct and character study to ensure seamless integration of the Station and the greater Activity Centre Plan. 2. Seek design opportunities to strengthen unique Yancheep sense of place for the Station and related infrastructure. | Line-wide character study completed. Context Plan completed. Yancheep sense of place further identified and being incorporated with the Station precinct and related infrastructure. | <ol style="list-style-type: none"> 1. Improve context responsiveness by enhancing built form design, landscape, public art and public realm integration. 2. Seek design opportunities to strengthen unique Yancheep sense of place for the Station and related infrastructure by referencing and incorporating more strongly the east-west green link into the public realm design. | <ol style="list-style-type: none"> 1. Context-responsive design includes adoption of site specific identity (caves, limestone and Banksia) and integration of these design themes with both architectural and landscape architectural materials and finishes. 2. East-west link is being further developed / refined by YBJV and Metronet/Newest designers. |
| a. | The Panel notes the intent to create a consistent design identity for Yancheep and 3 new METRONET Stations on the northern Line. There is merit in ensuring architectural consistency and coherency to successive Stations, however landscape and public art should be employed to bring a specific character and local identity to the individual Stations and their setting. | | Consider Aboriginal Engagement Strategy, structure plan reports and area history. Prepare culture statement that design interpretation can be drawn from. A cultural statement for design interpretation has been prepared referencing the Gnarla Biddi and in liaison with the Noongar Reference Group. | The Panel broadly supports the intent to create a consistent design identity for the 3 new METRONET stations on the northern line. There is merit in ensuring a cohesive architectural approach to successive stations, however the Panel maintains that architectural treatments, landscape and public art should be better employed to bring a specific character and local identity to the individual stations and their setting. | Potential Public Art location have been selected. - Shade structures at the southern entrance. Lazar cut panels to underside of canopy. - Tiled walls to the platforms - Sculpture within busway |
| b. | Whilst this project was initiated prior to METRONET's use of precinct plans and the introduction of Design WA and SPP7.0, there are still expectations for a contextually – appropriate design response. A simple character study could be helpful to better understand the unique Yancheep sense of place. | | PTA to consider Character Study | The Town Centre will take time to develop. As one of the first deliverables, the Station is an opportunity to establish an intermodal transport node that demonstrates high quality landscape, public realm and well-designed station architecture, thereby making a significant civic contribution to a new Strategic Regional Centre. | Agreed, The further development and refinement of the design of Station and precinct and the ties with the town centre is in progress with further liaison ongoing between YBJV and Metronet/Newest designers. |
| c. | The train Station is well placed to establish the public realm benchmark for the greater Regional Centre. To successfully catalyse the new precinct, the Station should contribute to place activation in addition to supporting its transport function. Continued engagement with the landowner / developer in relation to their Activity Centre Plan will help ensure an integrated transport hub, with connected green links and a mixed use public realm. | | PTA to develop Station Precinct integration within Structure plan through Landowners and Newest Team engagement. | Use of a floral motif as the differentiation for the three stations (Melaleuca, Grevillea and Banksia) may have merit but appears somewhat tokenistic at this stage. Consider how this would work with specific Yancheep references, or relevant Indigenous cultural references. | Station identity and the design interpretation adopted for Yancheep Station responds to, - Simplicity - Identity - Sustainability - Amenity - Functional planning fulfilling operational requirements - Public art, colour, landscape. |
| d. | Establish and capitalise on the arrival / departure experience that Yancheep Station should offer to residents, visitors and tourists. | | Exploit visual connections through voids within Station. Develop entry design. | The 'simple elegant box' approach to the Station architecture is a valid whole-of-line strategy as discussed in DR1, however it would have greater impact if a more distinctive transit environment was created for each station, responding to its respective setting, enhancing local character and providing a stronger sense of place. | Alkimos Station facia and façade approach has been considered. It is distinct, identifying, and different to Yancheep and Eglinton. The Yancheep design interpretation will be Developed providing individuality to Yancheep station. |
| e. | Consider Yancheep Station as a gateway to nearby northern beaches and related destinations by providing efficient and well-integrated transit connections and clearly identifiable linkages and references to nearby tourist destinations. | Wayfinding strategy and signage to be further developed to enable legible directions for patrons and tourists. | Develop way finding, digital display integration and promotion opportunities within Station and Precinct. | The east-west green spine running to the south of the Station and in which the Bus Port is integrated, could be more visible within the design of the main public realm space which connects the Station to the Bus Port to deliver a unique point of differentiation for this Station. Currently the lack of | Shade structures with the forecourt are a PTA structure that can assist the activation of the forecourt by others. Liaison between stakeholders including the City of Wanneroo and YBJV is ongoing to provide an enhanced space able to be activated and |

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| | | | activation and unresolved design of the Forecourt, means the benefit of the expensive capping of the rail line is not yet being realised. | programmed. Shade, raised planters and seating, power and water supply and other facilities are being investigated for installation within the space. |
| f. | Consider the long-term context and plan for a compact higher density Regional Centre, which should include a well-positioned multi-level carpark. | PTA to consider with Landowners | Establish and capitalise on the arrival/departure experience that Yanchep Station could offer to residents, visitors and tourists as a main point of arrival to nearby regional destinations, including the mid north-west. | Development of interior spaces colour, public art and material texture of the design interpretation is supported by signage, furniture and movement to establish arrival and departure. Should PTA adopt promotional material within the station it would further support this. |
| 2. Landscape quality | Good design recognises that together landscape and buildings operate as an integrated and substantiate system, within a broader ecological context. | <ol style="list-style-type: none"> 1. Engage a landscape architect as part of the Station design team as soon as possible. 2. Utilise a strong landscaping design to mitigate climate conditions for Station, public realm and related infrastructure and deliver a unique Yanchep sense of identity. 3. Re-configure the Kiss and Ride. | <ol style="list-style-type: none"> 1. Ensure a holistic and integrated landscape design for the Town Centre, which includes all public realm spaces between Bus Port, Kiss and Ride and Station. Demonstrate how the spaces will be used. 2. Optimise the opportunity to better reference Yanchep character in the built form, landscaping and public realm. 3. Integrate WSUD strategies into landscape and urban design. 4. Ensure phasing-out of irrigation will still deliver a high-quality public realm over the long term | <p>The landscape architects continue to present and work closely with Developer. Strengthening of the landscape design and its references to the place's site and cultural qualities is ongoing through the detailed design phase of the project.</p> <p>WSUD strategies are under development with the civil engineer.</p> <p>Irrigation demand is being minimised while balancing the requirements to maintain green, healthy plants.</p> <p>Temporary landscape zones are being rationalised/ minimised</p> |
| a. | Prepare a landscape design proposal. Appropriate landscape character around the Station would benefit this project to ensure public realm within the METRONET remit contributes to a unique setting for the emerging Regional Centre. | The landscape design proposal is being developed that responds to the local setting and that helps to integrate the station with the emerging Regional Centre including elements of place and pedestrian activation, shelter, lighting, flexibility, greening and public safety. | The appointment of the Landscape Architect is welcomed. The Panel acknowledges Landscape design is at 5% design stage. | Noted. The design has now progressed to a "15% Design Stage" development. |
| b. | Provide a district level drawing that clearly places the Station within the Activity Centre Plan so that greater green links can be understood and emphasised. The fundamentals are already strong with the placement of the bus-port perpendicular to the Station within a proposed green link. Supplement with a strong landscape plan that gives the bus-port / new open space a high level of amenity and legibility. | The district level drawing including green links is being prepared as part of the landscape design proposal. | Whilst the Banksia menziesii has the potential to be a useful landscape motif, the powerful topography of the Yanchep locale, adequately referenced in landscape and urban design is not yet visible and should be made more evident! | The landscape architects and architects have refined and strengthened the landscape and architectural place themes adopted for the project at each station. These themes will continue to influence and strengthen the landscape design as it matures through the detailed design phase. |
| c. | Develop a landscape design approach for the Station, entry approaches, urban realm, car parking and bus port that celebrates the unique character of Yanchep. To undertake this work, the Panel recommends engaging a landscape architect as a priority. A well-integrated engaging Station that contributes to identify and streetscape character will be valuable in establishing the Strategic Regional Centre. | A landscape architect has been engaged to design the approach for the Station, entry approaches, urban realm, car parking and bus port that celebrates the unique character of Yanchep. | Further consideration of the microclimate of the Station Forecourt is needed. How can a tree canopy be provided to improve amenity of this large space? The type, scale and intent of tree planting will need to be considered given the 'planting on structure' condition. The location and further detail of selected tree species is required for the next review. | Agreed and the landscape design strives to implement this. |
| d. | Interpret, incorporate and communicate the local indigenous heritage and sensitive ecology to capitalise on the theming opportunities for the Station / public realm based on local elements. | The landscape plan will pursue design themes drawn from the local place including consideration of the interconnected nature of Perth's historic Noongar network and the current rail network. This aligns with the Gnarla Biddi (pathways) Strategy or the way that people travel and connect to places, linked to a shared understanding of Aboriginal history and culture. | The large Forecourt south of the Station will require purpose and programming. Connectivity will be a key objective for that large space. Diagramming and investigation into how this space is to be used, is needed. | |

| | | | | |
|-------------------------------|---|---|--|--|
| e. | Consider design and landscape innovation for the rail culvert north and south of the Station to deliver a point of differentiation and contribute to stronger greening of rail infrastructure, which can assist with habitats for flora and fauna. | The landscape plan will provide guidance to restore and revegetate the slopes of the permanent way and include provision of shade trees along the Principal Shared Path. | Continue work on the landscape corridors between the carpark and Bus Port; this will provide amenity and shelter as support of a wayfinding strategy. | Agreed, however the area between the carpark and the busport is being undertaken by the Developer. The Design team have sought to co-ordinate the station landscaping works with the Developers plans for these areas. |
| f. | Incorporate new trees around the Station and utilise deep root zones wherever possible to provide a strong future urban canopy for this Centre. | The landscape architect will collaborate with the civil engineer to incorporate new trees around the station and comply with SWTC requirements providing for adequate soil root zones. | With the main public space being positioned on the rail capping area, this new urban centre could be dominated by large areas of paving and hardstand. Consider enhancing linkages with nearby proposed east-west green spaces, with the aim of including and restoring lost and damaged ecosystems. | Agreed, the east-west green linkages are outside the PTA development and are part of the overall precinct works undertaken by the Developer. The Design team have sought to co-ordinate the station works with the Developers plans for these areas providing a key linkage East to West across the rail. |
| g. | Better consider the climate conditions (sun, wind, rain) that will impact the landscape and public realm design. | The landscape architect will collaborate with the civil engineer to incorporate new trees around the station and landscape buffer zones to improve or mitigate patrons' exposure to uncomfortable climate conditions (sun, wind, rain). | Utilise the large 1000 bay carpark to create a tree canopy to the north-east quadrant of the urban centre, and to compensate for the limited scope for large trees and deep root zones within the main public space between Bus Port and Station. | The carpark has been further developed to integrate large trees both within the carpark and along the carpark perimeter. |
| h. | Reconsider the on-grade carpark design to deliver a more uniquely Yanhep response, working with existing vegetation and trees to deliver a more organic, responsive and appropriate design, which also enables staging. Include a greater number of trees. | The project design team will collaborate to (where practical) retain vegetation including trees within the car park zone and consider staging that maximises tree retention and landscape buffer retention over the stages of the development cycle. | Incorporate an innovative approach to drainage (consider a system of swales) to maximise the tree canopy within carpark area. What is the timing of these carparks to ensure the landscape investment is not sacrificial over the medium term? | The carparks are to be constructed for Day 1. The |
| i. | The Kiss and Ride green triangle zone in the forecourt is currently locked by roads. Could this be redesigned to provide a green space that is accessible? | Yes. This will be reconsidered. | An integrated landscape proposal to the rail corridor north and south of the decked Station will be important for long term urban tree canopy provision. | Agreed and the landscape design strives to implement this. |
| j. | | | Phasing out irrigation beyond initial establishment is understandable from a sustainability perspective, however the Panel questions the impact this move might have on the delivery of a high-quality urban realm. The next layer of detail in WSUD strategies is also encouraged. | Irrigation demand is being minimised while balancing the requirements to maintain green, healthy plants. WSUD will be utilised where this can provide sustainable benefits to the place. Design Enquiry is ongoing through the design development phase. |
| 3 Built form and scale | Good design ensures that the massing and height of development is appropriate to its setting and successfully negotiates between existing built form and the intended future character of the local area. | <ol style="list-style-type: none"> The planning of the south end of the Station needs reconsideration to retain the power of the simple form and ensure more successfully active edges. Clearly signal entry points and create an overall stronger civic sense to the building. Confirm design and compose essential Station paraphernalia as part of Station design. | <ol style="list-style-type: none"> Provide additional information with respect to Kiss and Ride, where a ring road circumnavigates the future development site. Further refine the Station architecture. Better integration of the awnings, canopies and other features is required. Eliminate blank walls to the Station building where possible and introduce transparency and texture / patterning where appropriate. Prioritise southern elevation of the Station building to strongly and positively address the Forecourt. | |
| a. | In pursuing the 'simple elegant box' approach as the architectural concept for the Station design, extraneous additions and projections to the form should be avoided. Service and other elements at the southern end of the Station should be accommodated within the rectangular plan to maintain the clarity of the formal language. | Develop Station concourse design to achieve a 'simple elegant box' form. Develop Station entry design response to support the Station language. Integrate essential Station paraphernalia within the Design solution. | The Panel strongly supports the sunken rail-line and the location of the Bus Port as part of the linear east-west park. Effectively connecting the Bus Port to the Station will require a well-designed urban Forecourt that provides sun and wind protection. | Noted. The architectural design of the canopies is being further developed in this area. |
| b. | Realistically incorporate the various components that are essential to Station | Coordinate the Landscape within the Station Precinct to manage peripheral functional | The Panel would welcome more information on the proposed 'umbrella' canopies components within | The combination of 3 large shade structures is to scale of the forecourt. The design has been |

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| | operations; signage / bike parking / bins/ other, into the renders. Ensure careful design and composition so that the 'elegant box' architectural approach is maintained. | requirements of the Station including the Transformer compound to remove it from the Station. | the Forecourt. Consider how these elements work with the architecture of the Station so they read as a related suite of components | developed in incorporate raised planting and seating. The columns and struts are clad in an open mesh to allow creeping green cover and seasonal flowing to cover the supporting structure with the public |
| c. | Clarify plant location to confirm uninterrupted roofscape, as the low Station will be overlooked from future commercial and residential towers. | Hide plant over solid building elements within Station under the main roof. | In general, the built form of the Station facility appears well-considered. It is legible, economical and well-organised. The Panel encourages further work to ensure that major formal elements integrate better with each other. This is particularly important for the junction of the main Station canopy element. This will require simple and robust detailing and junctions. The renders and drawings provided are slightly inconsistent regards how the canopy relates and attaches to, the overall built form. | Further consideration within the detailing will include a negative detail between the station façade and the fascia. The columns with the shop front have been moved to be inside the shop front line and the downpipes likewise have been moved to sit inside the shopfront of the station. |
| d. | | | Whilst the Forecourt is generous, it appears unprogrammed and as a remnant space left over after infrastructure has been positioned. Integrate this large area more effectively with the Station and greater precinct to deliver a singular destination. | This is to be further explored with PTA |
| e. | | | The Panel seeks clarification of the new configuration and position of the Kiss and Ride to assist understanding of how development of this site (including servicing) can coexist with PTA requirements. The street-based and urban arrangement for Kiss and Ride could be a worthwhile improvement, if landuse planning and proposed use of the development site was better understood. | Agreed. The landuse for the Development site is not yet confirmed by the developer but is understood to be of mixed use. Servicing of the lot is from the public access road running North-South. |
| f. | | | The combination of glazing for transparency and daylight, and the use of louvred treatments and decorative cladding for the remaining Station walls is supported. Use the solid cladding as an opportunity for place-specific imagery or texture and pattern | Noted |
| g. | | | The façades facing south are an important frontage. Ensure these elevations address the public realm in a more considered and animated way. | Windows to PTA offices and Crib Room have been introduced to the southern façade. The shade structures in front of the façade need to consider as part of the station presentation. |
| h. | | | Reconsider blank walls within the Stations elevations and ensure external treatments better reflect the internal activities of the Station, introducing transparency and visual interest. | Further consideration of the PTA office and staff room transparency within the southern façade will be undertaken with the PTA. |
| 4. Functionality and build quality | Good design meets the needs of users efficiently and effectively, balancing functional requirements to perform well and deliver optimum benefit over the full life-cycle. | <ol style="list-style-type: none"> 1. Consider a staged approach to parking, including confirmed location of multi rise parking at full buildout. 2. Redesign the road system south of the carpark adjacent the development lots. | PTA to respond to Principal 4 comments <ol style="list-style-type: none"> 1. Consider delivering the multi-deck carpark in stage 1 to avoid government investment in a temporary carpark (including landscaping) being sacrificial. 2. Clarify location of peripheral infrastructure and integrate to minimise negative impact on Town Centre. 3. Reconsider the double road arrangement between carpark and development sites to the east of the Station. | |
| a. | The Panel congratulates the project team on the sinking of the rail line for the Yancheep Station, which will help facilitate a good quality public realm befitting the Station's location within a Strategic Regional Centre. | | The Panel broadly supports functional planning and approach for the Station building. | Noted |

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| b. | Ensure that public transport infrastructure is integrated with future surrounding development and has a direct connection with the proposed CBD of the Town Centre. | | What is the timeframe for the temporary carpark to the north-east and when is the multi-deck carpark likely to be delivered? The staging of the carpark will need careful consideration to avoid landscape investments being sacrificial in the medium to long term. | PTA to advise. The Design has been developed to allow a future staged development of the carparks. |
| c. | Can the 1000 bay, 7-10 Ha carpark be staged, including a multi-deck option, in anticipation of a future Town Centre build out, so this strategically located land can be future proofed and given over to more appropriate Regional Centre land-uses? Consider such staging from the outset. | | Peripheral infrastructure items should be identified (substations, bike shelters, other) to better understand their impact on public realm. It is recommended these elements be integrated into built form or landscape wherever possible to ensure holistic consideration of the public realm | Noted, these are shown on the design drawings at locations where they can be integrated or have minimal impact on the public realm |
| d. | Future alternative transport options should be considered, and flexibility built into the precinct plan including carparking area / staging, increasing ride share, autonomous small vehicles provide opportunities for large areas of carparks to be reduced and utilised for more active development and / or green infrastructure. | | Yanhep will be slow to develop. The Station will effectively establish the 'heart' of the Town Centre. People will spend time here daily; commuting, waiting and dwelling. Consider how the Station can contribute activation to assist the development of the Town Centre and act as a destination | PTA to comment, however the surrounding developers plans focus on the station building, given its key transport function as a key instigator to the development of the town centre. |
| e. | In noting the strategic intent to positively influence behaviours around public transport / commuting; the Panel considers it counterintuitive to focus on arrival by car and to provide an oversupply of parking, even if it is sacrificial. Clarify the number of car parking bays required for Day 1. | | The nature of the commercial development of Lot A needs further attention regarding provisions for permeability, safety, lines of sight, and nature of development, including use. The Panel understands that this will need to be progressed jointly with the developer, however there is concern around the viability of any development ringed by a drop-off road | Comment noted however the development lot, along with the ring road has been developed in conjunction with Metronet and the Developer. |
| f. | The configuration of roads adjacent the commercial lots south of the carpark requires redesign to improve access and efficiency and deliver feasible development lots in this location. | | Future provision of decked parking is strongly supported. What is the timing of delivery? Skinning with activated frontage (commercial/retail uses) is encouraged | PTA to advise. The Design has been developed to allow a future staged development of the carparks. |
| g. | Bus layover could be considered out of the city core to avoid bus idling adjacent commercial premises and to improve the environment for bus patrons. | | As highlighted in DR1, the double service roads of the carpark entry and development site service roads is a poor outcome. The Panel understands that there is no agreed context plan available as a reliable reference. Ensure current arrangements do not diminish longer term urban design outcomes. | There are no double service roads to the development. The outcomes of DR1 were taken onboard and a public road access developed. Alongside the carpark and development lots to the South. |
| h. | | | More information is required to interrogate the built form functionality and material choices. | A colour board and materials specification have been developed. |
| 5. Sustainability | Good design optimises the sustainability of the built environment, delivering positive environmental, social and economic outcomes. | <ol style="list-style-type: none"> 1. Commit to an environmental sustainability strategy and / or assessment framework. 2. Ensure the roof design provides a suitable climatic response. | <ol style="list-style-type: none"> 1. Consider submitting the Station design to an environmental assessment framework, 2. Consider sustainable construction methodologies and materials. | |
| a. | Consider submitting the Station design to an environmental assessment framework, optimising renewable energy, stormwater harvesting, water catchment and re-use and other sustainable initiatives. | PTA to consider the inclusion of PV Panels (provision provided for future as per SWTC). We should step through some of the sustainability options presented within the stations reports | The Panel recommends submitting the Station design to an environmental assessment framework. | PTA to confirm. The station has undergone sustainability reviews with PTA and has had environmental assessments undertaken for natural lighting, shade, wind. |
| b. | The Panel express concerns that the roof arrangement does not provide adequate solar protection to large areas of glazed walls facing east and west. Is it possible to treat each elevation more specifically for climate responsiveness? | 2.8m (approximately) wide horizontal fin at 3m AGL between columns introduced to east and west building facades. Integrate free standing structures providing continuous path of patron cover between Bus and Rail station with Stations Southern entrance. | Provision of high-quality public transport infrastructure is a sustainability benefit. Climatic comfort (wind, rain and sun protection) for pedestrians/cycles should also be a priority. A well-considered solution will reduce car parking requirements. As a Strategic Regional Centre, consideration of all modal types is warranted. | A station access strategy has been undertaken considering all modal types and access to the Station. |

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| c. | Climatic comfort (wind, rain and sun protection) for pedestrians / cycles should be a priority. A well-considered solution will reduce car parking requirements. As a Strategic Regional Centre, the provision for electric bikes should be considered – parking, lift size, charging and storage. | Secured bicycle parking is provided, lift can accommodate stretcher, gofer, and bicycle. PTA to advise if charging will be provided (at bike shelters – provision for car bays provided as per SWTC). | Clarify with diagrams, pedestrian and cycle movement patterns in relation to the Station itself and more broadly to the surrounding precinct, so that extent of any covered walkways, umbrella structures can be better considered. | A Pedestrian catchment as well as a Station Access Strategy have been prepared for these stations. Movements through the station precinct and station have been marked on the architectural drawings. |
| d. | Clarify with diagrams, pedestrian and cycle movement patterns in relation to the Station itself and more broadly to the surrounding precinct. | Arch/Civil/LA to co-ordinate and provide | Ensure WSUD for all aspects of landscape and public realm design. | The civil and landscape design are developing utilising WSUD principles. |
| e. | Ensure proposed Station ventilation strategy supports patron comfort and reduces energy use. | HVAC report section with model outcomes to be prepared | More information as to how sustainability has impacted Station design is necessary. | Sustainability aspects have been outlined within the Station Design Report. |
| f. | What is the function of single roof skylight to the Station? To the underground concourses? Will it contribute to building heat gain? With such large areas of glazing, there would appear to be sufficient daylight penetration. | Agreed. Skylights to be removed with PTA approval. | Consider the use of sustainable construction materials and methodologies. | Sustainability aspects have been outlined within the Station Design Report. |
| 6. Amenity | Good design optimises internal and external amenity for occupants, visitors and neighbours, providing environments that are comfortable, productive and healthy. | <ol style="list-style-type: none"> Design to optimise pedestrian experience, particularly in respect of climate. Incorporate landscape to improve the amenity of the public realm and to deliver an attractive healthy and welcoming place. Ensure the Station building provides adequate weather protection for patrons. Support activation and mixed-use opportunities. | <ol style="list-style-type: none"> Prioritise design of the Forecourt to deliver a high-quality public realm. Incorporate activation? Enhance commuter patron experience beyond the Station building. Provide sections and shadow diagrams to effect of heat, wind and rain on the Station environment has been adequately considered. | <ol style="list-style-type: none"> Forecourt design rationalisation and quality enhancements are ongoing as the design progresses through the 85% design phase. Patron experience outside station limits is being enhanced through application of cultural and context-specific landscape architectural design. Sections and environmental analysis and modelling are documented in the 15% Station Design. |
| a. | Sections and shadow diagrams could be helpful in analysing the effect of heat, wind and rain on the Station environment. The Station building edge should be revisited to ensure adequate weather protection for patrons. | Shade analysis will be undertaken within the model. Model Environmental outcomes. Consider design options. Pursue opportunities for pop up activation around station. PTA to confirm | As discussed in Landscape Quality, the landscape and urban design quality of the Forecourt should deliver the highest level of amenity to form the 'heart' of the Yanchep Town Centre. Ensure the landscape plan provides shade, comfort and protection. | Agreed and the landscape design strives to implement this. The Metronet/Newest design team is liaising with the YBJV to ensure that design quality and seamless integration are both prioritised within the Yanchep Town Centre. |
| b. | The bus interchange location is commended. Ensure the connecting public realm space between the bus-port and Station is of the highest quality to improve pedestrian experience. | Develop the canopy structures within the transition space. | The Panel seeks activation of the Station Forecourt and supports the kiosk and other uses continue to be considered to assist with delivering a welcoming, animated and safe public space | To be further developed with PTA. |
| c. | Shaded pedestrian links should be provided through and from carpark, with consideration of links to a future decked parking option. The use of landscaped shade provision should be considered. | The urban greening strategy within the landscape plan will provide for shaded pedestrian links. | Focus on the holistic commuter patron experience, including integration with Town Centre. Ensure amenity for users beyond the Station, including linkages to bus Port, Kiss and Ride and future multi deck carpark. Further clarification is needed on provision of shade, shelter and connections, utilising appropriate access routes that also support the broader Town Centre | Development interfaces are being coordinated with the Developer |
| d. | Whilst the Panel understands the PTA's reluctance to take on the role of landlord, activation of the Station is strongly recommended. Ensuring the kiosk is centrally and appropriately located as an effective activator, particularly in the early | Developed Design responds to comment. | Sections and shadow diagrams would be helpful in analysing the effect of heat, wind and rain on the Station environment. | <ol style="list-style-type: none"> The station is fully enclosed providing shelter from sun, wind and rain. The station is ventilated through high level mesh or two stage louvres. Originally low level canopies provided façade shading. These have been replaced with |

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| | days before the Regional Centre is constructed, is critical. | | | vertical fins and a Stainless Steel mesh façade. 4. A central skylight supplements the natural light through the façades penetrating the concourse through seven voids providing natural light to the platforms. The voids are also required for smoke ventilation in the event of a fire. |
| e. | | Continue to refine Station building canopies to ensure adequate weather protection for patrons. | | The Station canopies are being refined with a focus on weather protection to patrons and solar shading. |
| f. | | The Panel notes that access to daylight and passive ventilation has been considered as part of Station design. | | Noted. |
| 7. Legibility | Good design results in buildings and places that are legible, with clear connections and easily identifiable elements to help people find their way around. | <ol style="list-style-type: none"> 1. Investigate Station specific identity markers as a wayfinding tool for passengers on trains. 2. Revisit the arrangement and clarify entrances. 3. Ensure pedestrian flow around stairs and escalator is optimised. | <ol style="list-style-type: none"> 1. Ensure context integration by considering influences outside of the project site boundary to understand broader movement patterns within a Town Centre setting. 2. Provide a safe, legible and amenable pedestrian access network between all transport infrastructure components. 3. Ensure temporary carpark access is easy to navigate. 4. Provide a clear hierarchy to all public spaces, with Station Forecourt designed to exhibit highest priority. | <ol style="list-style-type: none"> 1. A station access strategy and movement pattern analysis are included in the 15% design. Movement patterns from the Town Centre are being anticipated and designed for. 2. The landscape and civil design provides this linkage. 3. Navigation, DDA access, rest spots and wayfinding are undergoing further design development and refinement. 4. Hierarchy of spaces is being further defined during detailed design. |
| a. | Whilst the last three Stations for this line will read as a suite, it is important that the arrival at each Station is somewhat differentiated for inattentive patrons. Consider public art, landscape or other individual identity indicators for each Station. | The developed cultural statement will provide for individualised design interpretation within the Station and Station Precincts. | Whilst the Panel understands the Station project site has a defined boundary, broader movement patterns and networks need to be clearly understood. Consider also where people are not allowed to go, and how this will be managed through design. What is the nature of the urban furniture that will address this? Are there bollards (or fences or other) and, where are they? | There will be bollards located at strategic locations within the precinct however the general principle is to incorporate landscaping element to limit vehicle entrances into areas where traffic is to be restricted. This is subject to further development in the design. |
| b. | Ensure legibility in wayfinding between Station, carpark and busport with effective public realm design, well considered signage and a strong landscape plan. | Promote intuitive wayfinding within the Station Precinct landscape planning. | Ensure all interstitial spaces between Kiss and Ride, Bus Port and Station have a clear hierarchy. Diagram movement patterns between these spaces and the greater Town Centre precinct to ensure connectivity is well-considered and that the proposal is modified where required. The Forecourt between Station and Bus Port is the highest order public space and its design should reflect this. Currently the Forecourt is a largely empty space with limited appeal | The finishing to the Plaza area is being further developed. Stakeholder liaison and design integration is ongoing. Context-specific design, early community activation by the developer, place making and the needs of users and asset owners are being balanced through a process of design development, coordination and ongoing liaison. This is to be shared space. |
| c. | Provide a perspective for the southside of the building in addition to the ones from north. The south is the activated end of the Station and the elegance and simplicity shown in the render from the north is less important than the southern view. | Will provide additional model views. | Legibility within the Station building is clear with appropriately positioned access points. | Noted |
| d. | The 3 current entry points detract from the simplicity of the building – consider rationalising. Ensure legible entries have a civic sensibility befitting a public transport node. | Station concourse design distilled to a 'simple elegant box' form. Station entry design response to support the Station language. The multiple entries provide for flexibility in the development of the Structure Plan integration. | The wayfinding experience of a commuter needs further attention. Consider scenarios of night time travel, inattentiveness, disorientation and lack of familiarity with destinations | Lighting and wayfinding in the precinct is being further developed to provide a clear and safe access around the station precinct. |
| e. | The provision of movement diagrams both for the Station itself and the broader precinct | Will be developed in design | Reconsider the access to the car parking and kiss and ride circulation system. This is currently a | The Kiss and ride have been developed with Metronet and the Developer. Clear signage into |

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| | will help with understanding the needs for different users. | | single loop and likely to lead to confusion and unnecessary vehicle activity in the Kiss and Ride. | the kiss and ride is to be provided to minimise unnecessary vehicle traffic. |
| f. | The colocation of the Stairs and Escalators with the entrance needs attention. Has pedestrian flow been modelled? The volumes are probably limited initially, but there is a tight turn back from the head of the stair to the fare gates. Will this clash with pedestrian flow from the escalators? Is there sufficient space to prevent crowding? | Pedestrian Modelling to be undertaken for the revised layout. | Wayfinding between commercial development and patron drop-off is unclear. Further analysis of movement patterns is required. | The pedestrian paths and pathways have been modified in this area to provide clearer movement patterns along desire lines. |
| g. | Any Precinct Plan should establish an urban design format that reinforces public realm and identifies connections between the Station, carpark, busport and greater Activity Centre. | The landscape plan for the Station Precinct includes urban design considerations including the establishment of good quality public realm around the station and its interfaces with the surrounding development areas. | | |
| h. | After hours pedestrian / cycle access across the stadium podium / tracks should be prioritised in the interests of the future emerging Centre. | Civil Engineer to consider | | |
| 8. Safety | Good design optimises safety and security, minimising the risk of personal harm and supporting safe behaviour and use. | <ol style="list-style-type: none"> 1. Deliver a safe Station with 24/7 consideration. 2. Reconsider the column numbers and / or placement with respect to potential visibility and mitigation of antisocial behaviour. | <p>Transparent Station Design. Central Station Booth servals' the station interior 360 degrees.</p> <p>Developed Station design modified column positions. Structural Engineer to consider removing the East side columns to the Island Platform.</p> | <ol style="list-style-type: none"> 1. Deliver a safe Station with 24/7 consideration. 2. Consider the safety and surveillance of the Kiss and Ride circulation system at night. |
| a. | Ensure a successful 24/7 experience for the Station. Consider CPTED principles, lighting and pedestrian routes outside of normal working hours. | Business as usual for Station Design and has been incorporated into design. | Provide a safe, legible and amenable pedestrian access network between all infrastructure components. | Pedestrian paths are provided to interconnect with the Station infrastructure and also to join the external planned pathways within the town centre (including the PShP provided to the South of the station along the rail corridor) |
| b. | Optimise safety for users of the Station Precinct. Prioritise active uses and opportunities for passive surveillance (including well designed and positioned kiosks), to reduce reliance on active transit security. | Noted | Ensure safety and surveillance of the Kiss and Ride circulation system at night. | Noted, The Kiss and Ride circulation |
| c. | Additional information is required on columns and potential train derailment loads. Consider reducing the number of columns are optimally placed to facilitate ease of movement and security of passengers. Excessive columns could support antisocial behaviour / blind spots. Consider integrating into stair/ other structural points or align with elevator edges or lift shafts. | <p>The PTA has very specific requirements to ensure robustness and redundancy of station structures in order to limit the risk of disproportionate collapse in the event of train collision with primary structure. One of the critical requirements is to provide alternative loadpaths, such that structural collapse is prevented in the event that any one column is lost (irrespective of the capacity of that column to resist impact).</p> <p>In response to the specifics of the comment:</p> <ul style="list-style-type: none"> - The preferred steel sections typically adopted for lift shaft framing do not have the capacity to resist nominated impact loads, therefore are not suitable for use as primary vertical support elements - The columns at platform level are located to satisfy minimum lateral clearances to track, whilst also providing a level of redundancy to satisfy the previously described requirement (i.e. if a single column line was provided on the island platform, the resulting concourse beam spans in the event of column loss would be unreasonable) | Ensure a successful 24/7 experience for the Station. Consider CPTED principles, lighting and pedestrian routes outside of normal working hours | A CPTED analysis has been undertaken and is outlined in the design report |

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| | | | <p>- Columns are generally offset from lift or stair structures by a minimum amount to limit the opportunity for antisocial behaviour</p> <p>Column positions at the concourse level have been set to eliminate transfers whilst accommodating the function layout</p> | |
| d. | Line of site between drop off and Station entry is essential and is well addressed by the design. | | Noted | |
| e. | A carefully considered urban design, with strong landscape plan is necessary for the immediate surrounds of the Station. Connections, currently generous in scale, should be well lit, legible and inviting and address CPTED principles. | | The landscape plan for the Station Precinct includes urban design considerations including the establishment of good quality public realm around the station and its interfaces with the surrounding development areas. CPTED principles are being applied during the design process to ensure user comfort and safety. | |
| 9. Community | Good design responds to local community needs as well as the wider social context, providing environments that support a diverse range of people and facilitate social interaction. | <ol style="list-style-type: none"> 1. Continue collaboration with the Developer regarding the Town Centre Activity Centre Plan in order to achieve a cohesive response. 2. Support important, early activation with a well located and designed Kiosk. | <ol style="list-style-type: none"> 1. Prioritise urban design outcomes for the Station precinct as a core project objective. 2. Activate the large, currently unprogrammed Forecourt space. Ensure Station Forecourt is well designed and integrated with the greater Yanchep Town Centre. 3. Prioritise pedestrians over cars and buses wherever possible, and as befitting a Town Centre. | <ol style="list-style-type: none"> 1. Metronet has this as a project objective. 2. Refer to comments and responses already made above. 3. Noted and this is being actioned. |
| a. | Design the Station public realm with people in mind, creating opportunities to meet and socialise. Ensure forecourt design includes places for sitting and waiting, with shade and protection. | | The landscape plan for the Station Precinct includes good quality public realm within the forecourt including places for sitting and waiting, shade and protection from strong winds. | <p>Ensure the Station forms part of a carefully considered overall urban design outcome, with a strong landscape plan which integrates and strengthens connections with the future Town Centre. Using the east-west green link would be an effective way to integrate the Station with future urban development.</p> <p>The comment is noted, however activation of the areas and the interconnectivity to future East-West connection is outside PTA control. The designers have engaged with the Developer to integrate with the future planned development and precincts.</p> <p>The Plaza landscaping will be developed further to provide a high quality public space</p> |
| b. | Optimise public art as a means of developing a more unique identity for Yanchep Station. | | Noted | <p>Ensure the Forecourt design is optimised to become the 'heart' of the Yanchep Town Centre. Diagramming pedestrian and cycling access network to better understand links (particularly with respect to the carpark and Bus Port) with the greater Town Centre would be helpful.</p> <p>A Transportation Impact assessment as well as a station access strategy document has been prepared that outlines the</p> |
| c. | The generous Station forecourt public realm is commended but requires more detailed urban and landscape design. It has the potential to be a connector for not just the Station but the greater Regional Centre. | | The landscape plan will be further developed during the detailed design process to further distil its unique identity and place qualities. | <p>Activation of the Station will be improved with the reconfiguration and replanning made with respect to the kiosk being positioned more appropriately. The Panel was disappointed to hear that the design intent for stations is to discourage 'loitering'. Successful public spaces encourage people to 'stay'; increasing safety, activity and amenity.</p> <p>The Plaza area and station precinct are being progressed in the design as public spaces. The design team is working with the PTA to balance operational needs, safety and successful public space outcomes.</p> |
| d. | Continue to test and position the Station design within the greater Activity Centre plan to provide a transit hub that seamlessly integrates with the community it will serve. | | Noted | <p>Ensure pedestrians are prioritised over cars, as required by METRONET's Station Precinct Objectives.</p> <p>Noted, this is as per the current design.</p> |
| e. | Optimise physical connections – pedestrian, cycling and vehicular – to link and attract users from the local catchment to the Station. Have the Station Masterplan / Precinct Plan provide links to surrounding residential areas, nearby beach, future CBD and other local points. | | The project Landscape Architect and Civil Engineer are considering these links and further developing them during the detailed design process to ensure greater connection to surrounding residential areas, nearby beach, future CBD and other local points. | <p>The large Forecourt is currently unprogrammed. Activation and high-quality public space design are essential as part of the rationale for the significant expenditure associated with sinking and capping the railway in this location.</p> <p>The comment is noted, however activation of the areas and the interconnectivity to future East-West connection is outside PTA control. The designers have engaged with the Developer to integrate with the future planned development and precincts.</p> |

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| | | | | It is agreed that the capping is a significant investment that future-proofs the space and avoids severance issues that would be there without the Forecourt. The Plaza landscaping and programming will be developed further (involving stakeholders) to provide a high quality public space |
| f. | Optimise the location and size of the 30m2 kiosk in the Station building, allowing it a more central role within the overall Station design. | Kiosk repositioned | - | |
| 10. Aesthetics | Good design is the product of a skilled, judicious design process that results in attractive and inviting buildings and places that engage the senses. | <ol style="list-style-type: none"> 1. Strive to maintain the integrity of the simple box architectural approach, without loss of environmental performance. 2. Work diligently to design and compose all Station paraphernalia to ensure the highest quality outcome for the Station. 3. Consider the Yanchep identity more thoroughly in order to inform the aesthetic of the Yanchep Station at the next stage of design development. | <ol style="list-style-type: none"> 1. Strive for differentiation and ensure stations contribute to a unique character for each Town Centre. 2. Reconsider canopy design to better respond to overall architectural language, particularly that of the roof form. 3. Simplify column designs and carefully consider a coherent approach to detailing with respect to column, canopy and roof form junctions. 4. Ensure public art integration and design differentiation is rich, sophisticated and specific for each station. | <ol style="list-style-type: none"> 1. Further definition of the Yanchep Context and Character has been undertaken. 2. Canopy design has been rationalised. 3. This has also been addressed 4. The public art will be integrated as first preference. It will be informed by the Context and Character of the place. |
| a. | As the building itself is part of a suite of three Station buildings, consider a design layer for this Station that responds to the unique character of Yanchep and provides a stronger sense of place, reinforcing Yanchep Station as a destination. At this stage in the procurement process, this is best achieved through landscape, urban and integrated public art design. | The developed cultural statement will provide for individualised design interpretation within the Station and Station Precincts. | Changes made to the Station building as a result of DR1, including the removal of extraneous additions and projections have been effective in clarifying the 'simple elegant box' concept. | Noted |
| b. | Success of the 'simple elegant box' approach will depend on preserving concept integrity, and avoiding unnecessary 'add-ons' to the box which could otherwise diminish clarity of this simple but powerful design language. | Station concourse design distilled to a 'simple elegant box' form. Station entry design response to support the Station language. The multiple entries provide for flexibility in the development of the Structure Plan integration. | As part of a suite of three Station buildings, the Panel encourages the next design phase to ensure this Station responds to the unique character of Yanchep and provides a stronger sense of place. At this stage in the delivery process, this is likely best achieved through integrated architectural refinements, landscape, urban and integrated public art design. | Responding to identity. <ul style="list-style-type: none"> - The ceilings of all stations have been developed - Tied patterns to the platform retaining walls developed. Yanchep 400x100 Chevron - Colour - Public Art |
| c. | Ensure the architectural renderings take into account the essential Station paraphernalia. Renderers from the more important southern viewpoint, where the impact of the building will be greatest, are required. | Noted | In progressing differentiation, consider the impact each of these stations will have on establishing a unique character for future Town Centres. | The bus station form has been developed to identify the form with the station and shade structures that interface the bus and train stations. |
| d. | The roof form and minimalist material palette represents quite a stark civic character that may not be entirely appropriate for the Yanchep location. However, the simple box approach can be made to work if a genuine Yanchep character influence from landscaping, urban design and public art can be made visible. | The landscape architect is considering these genuine Yanchep characteristics and developing them into a coherent design scheme for the Station Precinct. | Develop the 'simple elegant box' approach further by simplifying the design of the column heads. A simple unadorned column will work more successfully with the established design language and will ensure the new long canopy can connect to the box simply and directly. Currently the detailing is unclear and appears untidy. Ensure that all columns are of the same 'design family' | Agreed the internal columns will have "the prongs" removed. Design investigation will be undertaken to consider, <ul style="list-style-type: none"> - Unadorned column heads - Cantilevered fascia with no columns and independent low level canopy |
| e. | The simple box should still provide an effective climatic response, including sun protection. | 2.8m (approximately) wide horizontal fin at 3m AGL between columns introduced to east and west building facades. | The design language of the entry canopy (aerofol shaped) doesn't appear to fit the angular form of the roof and is not yet well integrated with the Station | The aerofol form has been changed to a form that reflects the fascia. |

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| | | Shade analysis will be undertaken within the model. Model Environmental outcomes. Consider design options. Environmental modelling will be undertaken, shortcomings addressed within Station simple box Design. | 'box'. Refine this important component, including resolution of attachment to main structure. |
| f. | Redesign the southern end of the building, which is currently dominated by service / plant rooms, which create inactive edges and a lack of transparency. Strive for a strong civic sense of arrival and departure for this building. | Station concourse design distilled to a 'simple elegant box' form. Station entry design response to support the Station language. Transformer compound to be moved away from Station, integrated into Precinct design. | Public art should be considered early and integrated into the built form. The current flower motif, minor differentiation to facades, screens and colours is not yet utilising the potential of a fully integrated public art strategy and will not achieve the sense of identity and differentiation that could otherwise be achieved. |
| g. | The external render shows a 'tree' type column along the east and west side but plain columns on the north, and no indication of the south columns. Ensure consistency for this component unless there is a specific design intent for such diversity. | Agreed. Station designs are being explored at the three locations the column head may be a point of difference between stations. | - |
| h. | Provide further information on plant location, screening and treatment. With the adoption of a simple box approach for architectural language and a strong roof form, the location of plant will be critical. | Hide plant over solid building elements within Station under the main roof. Access to space under roof via fixed ladders to hatch. | - |

