



METRONET Stage 1: Morley-Ellenbrook Line

Malaga Station Development Approval Report

MEL-MLCX-AR-PER-00002

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Acronyms

ACROD: Australian Council for Rehabilitation Of Disabled	MRS: Metropolitan Region Scheme
AEP: Annual Exceedance Probability	PA: Public Access
ASS: Acid Sulphate Soils	PCA: Planning Control Area
BMP: Bushfire Management Plan:	P&D Act: Planning & Development Act 2005
BEEP: Bushfire Emergency Evacuation Plan	PnR: Park and Ride
CBD: Central Business District	PSP: Principle Shared Path
CCTV: Closed Circuit Tele Vision	PTA: Public Transport Authority
CPTED: Crime Prevention Through Environmental Design	PUDO: Pick Up Drop Off
DA: Development Application	SP: Station Precinct
dB: Decibel	SPP: State Planning Policy
DCP: Development Control Policy	SWTC: Scope of Works and Technical Criteria
KnR: Kiss and Ride	TIA: Transport Impact Assessment
LAeq: Equivalent sound level	TOD: Transport Orientated Development
LGA: Local Government Area	VT: Vertical Transport
LPS: Local Planning Scheme	WA: Western Australia
MEL: Morley Ellenbrook Line	USB: Universal Serial Bus
MELConnx: A partnership between Laing O'Rourke and the Public Transport Authority	

1. Executive Summary

Urbis acts as the planning consultant on behalf of the *MELConnx Consortium*, the appointed contractor to deliver the METRONET Morley - Ellenbrook Line on behalf of the Public Transport Authority (the delivery agency for the METRONET program). This development application seeks planning approval for the Malaga Station and associated infrastructure, being one of five new train stations proposed as part of the METRONET Morley Ellenbrook Line project.

The Malaga Station will be located approximately 16km north east of Perth and will be the third station on the MEL line, which extends from Bayswater Station. The Malaga Station follows an 'infrastructure first' model of urban development, where the essential transportation infrastructure is delivered to underpin future development around the station and surrounding areas.

Once operating, the Malaga Station is expected to reduce travel times for passengers, providing a journey time of 21 minutes from the station to the Perth CBD. Malaga Station will provide efficient transport links to Alexander Heights, Ballajura, Malaga and Bennett Springs, connecting thousands of people to the Malaga employment hub.

The Malaga Station is located within the City of Swan municipality, and will be constructed north east of the Tonkin Highway and Marshall Road intersection. The station is designed as a multi-modal interchange station, and will comprise the following:

- Main station building with typical station amenities. The station is designed as an 'up and over' station design, comprising at-grade station entry buildings (north and south of the rail). The at-grade station entry buildings lead to an elevated weather protected pedestrian overpass that provides vertical transport back down to an island platform. The overpass has been designed to enable access across the railway for non-passengers during station operation hours.
- Welcome Place located immediately south of the southern station entry building, providing a meeting place where people can congregate or dwell before proceeding on their journeys. This area is to be developed with high quality landscaping and artworks, and will be the heart of the station precinct and the future Malaga Town Centre.
- Bus interchange which is located south-east of the Malaga main station building, includes 12 active bays and 6 layover bays. A dedicated vehicle access point from Beechboro Road is provided for the bus interchange to minimise interactions between buses and standard vehicles.
- Principal Shared Path (**PSP**) located to the southern side of the railway line, travelling south before turning east and connecting Beechboro Road. This path will ultimately form part of a wider connection running parallel to the MEL track alignment. Inclusion of the SP/PSP will connect existing development to the south to the station as well as connecting north to the Whiteman Park path network and existing SP/PSP network. It also considers future connections to the east and west as the area develops.
- Kiss and Ride bays are located to the south of the station building, with traffic circulation proposed to occur around future commercial buildings.
- Park and Ride bays are located to the south-east of the station building and bus interchange, up to approximately 300m from the station entrance. All vehicle access to the passenger car park is provided via a road connection to Beechboro Road.
- Bicycle parking is provided immediately adjacent to the station and the PSP to provide efficient access for cyclists.
- Connectivity for pedestrians accessing and departing the station has been prioritised with efficient connections, clear sight lines and sheltered walkways. Passenger toilets, seating and universal access considerations also ensure comfort and convenience.

A key objective in the station design is to apply principles which support future transit oriented development, encourage non-private vehicle use for connecting trips, and deliver an appropriate interface and opportunities for interaction with the future Malaga Town Centre. The pragmatic requirement for long-term car parking for a new train station must still be acknowledged and provided for in a way that is safe and does not overly impact these 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 connections between the station building and the future main street, as well as provision of a Principle Shared Path located to the south of the station building, linking to Beechboro Road and the dedication of space for a future PSP aligned parallel to the rail line travelling east.
- Bus service convenience, with the bus interchange being located immediately adjacent to the station. This bus interchange connects transferring passengers to the station via the Welcome Place with a continuous canopy cover provided from the interchange to the station entry.
- Drop-off and pick-up area adjacent the Welcome Place and within a short walk of the station entrance, which provides for on-demand transport options. This design enables patrons to conveniently use the Welcome Place and also avoids potential conflict between pedestrians and vehicles.
- All day commuter parking is provided to the south east of the station beyond the bus interchange. The parking layout has been configured to enable future development between the car park and drop-off and pick up area. The layout also considers future development of the wider area and fits within a preliminary Masterplan that has been prepared.

This hierarchy encourages patrons to consider private car alternatives by delivering these as a more convenient mode of transport with a highly positive user experience, as well as sleeving the visual impact of large areas of at grade parking from the future main street.

This report considers the planning context and merit of the proposed development, including an overall explanation of the station and key design drivers. This includes an assessment of the application against the relevant planning framework, including the requirements of State Planning Policy No. 7 – Design of the Built Environment and the METRONET Station Precinct Design Guide. As demonstrated through this report, the thorough technical reporting, stakeholder consultation and careful design consideration have all come together through the Malaga Station design to produce a transformative asset for the region.

Acknowledgement of Country

MELconnx acknowledges the Whadjuk People of the Noongar Nation as the Traditional Custodians of the land and waters on which the Morley-Ellenbrook Line Project is located. We pay our respect to their Elders, both past and present and thank them for their continuing connection to the country, culture and community.

2. Project overview

2.1 Morley Ellenbrook Line Background

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

The Morley Ellenbrook Line (MEL) project will deliver 21km of rail line spurring from the Bayswater Station to Ellenbrook. The project includes the delivery of 5 new stations at Morley, Noranda, Malaga, Whiteman Park and Ellenbrook, as well as future proofing works for a future station at Bennett Springs.

The MEL is part of METRONET Stage 1, with the Public Transport Authority (PTA) being the lead agency delivering the MEL project. The project will design and deliver all rail infrastructure and ancillary works to support operational passenger rail between Bayswater and Ellenbrook, including stations with inter-modal bus and rail, and associated road works at Bayswater, Morley, Noranda, Malaga, Whiteman Park and Ellenbrook stations.

Key works in the project include the following:

- A 21km rail spur from the Midland Line east of the Bayswater Station, travelling north in the Tonkin Highway median, east through land north of Marshall Road and north on the western side of Drumpellier Drive into Ellenbrook
- Stations at Morley, Noranda, Malaga, Whiteman Park and Ellenbrook with future-proofing for a station at Bennett Springs East
- Parking and bus interchanges/facilities at stations
- Significant grade separations at key road crossings
- Tunnels to allow the rail line to enter and exit the Tonkin Highway median
- Shared / Principal Shared Path for walking and cycling access along the rail line
- Track and associated infrastructure to connect to the existing Midland Line
- Road and bridge reconfiguration works

A contextual summary of the MEL extension is illustrated in Figure 1.



2.2 Supporting Works Packages

Recognising the complexity of delivering the transport infrastructure for the MEL, the overall project works have been divided into three broad programs of work which make up the Ellenbrook Line – Program of Works:

1. New Bayswater Station (Evolve Alliance) – New station at Bayswater (to relocate and replace the existing station), including associated turnback infrastructure to allow the MEL to connect to the Midland Line.
2. Tonkin Gap and Associated Works (Tonkin Gap Alliance) – this project is being delivered by Main Roads and includes significant civil and structural works between Bayswater and Malaga, to prepare the Tonkin Highway median for access to/from and construction of the new rail line and stations.
3. Main MEL Project Works (MELconnx Consortium) – includes all rail systems and infrastructure from Bayswater, all stations and facilities within the Tonkin Highway median and road reserve, and all works north of Malaga to Ellenbrook

This development application only applies to the Malaga Station, which forms part of the Main MEL Project Works.

2.3 METRONET Scope and Requirements

In September 2020, the MELconnx Consortium (Laing O'Rourke Australia Construction) was named as the preferred proponent to design and construct the MEL, including the Malaga Station and associated 'land-side' station infrastructure.

As the MEL 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.

The SWTC for the Malaga Station defines the following design parameters relevant to the scope of this development application:

- The Malaga Station will be designed as a 'Closed Station'; with automatic fare gates controlling access to and from the station platforms.
- Station platforms, with a minimum length of 150m, are designed to suit the operation of six car B and C series rail cars. The station platforms are required to have 70% of the operational platform length under cover. The platforms are required to accommodate dedicated seating, passenger information facilities, staff amenity facilities, station operational facilities and a staff office.
- A one-way movement bus interchange with at least 12 active bus bays (10 standard bays and two articulated bays), as well as 6 bus layover bays including two articulated bays. The active bus bays are to be as close as practically possible to the station entry.
- Bicycle parking facilities, including a secure bicycle parking shelter incorporated within the station building. A further 10 open U-rails adjacent to the station entry building. Provision must also be made for additional secure bicycle parking shelters to be added in the future.
- Landscaping to streets, forecourts and public open space on PTA controlled land.
- Car parking spaces, including a combination of long-term car parking, accessible bays, taxi bays, short term 'kiss-and-ride' bays, loading bays, PTA staff parking and tenant parking.

- A minimum of 20 covered motorcycle 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, with the bus interchange and rail station to be located to the east of Tonkin Highway, north of Marshall Road and west of Beechboro Road North and shall incorporate concourse level and grade separated platform level.
- Station building specifications, including specifications for the paid and unpaid areas of the station. These specifications are:
 - Unpaid Concourse Area: requirement to provide access to the unpaid concourse area of the station. The unpaid concourse area shall include public service facilities (automatic teller machine, vending machine and pay phone), passenger ticketing/information facilities, station administration/office facilities, kiosk and associated stores.
 - Paid Concourse Area: a requirement to provide public toilet facilities (male toilet, female toilet and unisex accessible toilet), staff amenity facilities (crib room, male toilet, female toilet, unisex accessible toilet and staff changing areas), station storage/cleaning facilities (cleaners room and store room), stair and lift access and provision for future installed escalators.
- A specification that the bus interchange includes a continuous canopy shelter between the bus interchange and the station entrance, as well as weather protected seating and passenger information facilities at each bus stand.
- Various measures to ensure high quality landscaping is delivered, including the requirement for landscaping to be designed by a landscape architect.

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 MELconnx Consortium 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 several 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.

3. Site Location and Context

3.1 Lots Subject to this application

The legal details of the lots directly affected by works for the Malaga Station and requiring development approval are detailed in **Table 1** and **Table 2** below.

Certificates of Title are enclosed within this application at **Appendix A**.

Table 1--Affected Lots

Lot	Plan	Vol/Folio	Proprietor
810	P418162	2999/678	Western Australian Planning Commission
11	D046462	1383/103	Metropolitan Region Planning Authority (otherwise known as WAPC)

Table 2--Affected Road Reserves

Land ID and Road Reserve	Proprietor
Land ID: 3878129	Department of Planning Lands and Heritage

Table 3 provides details of any encumbrances registered on the above certificates of title.

Table 3 -- Registered encumbrance(s)

Lot	Encumbrance	Details
810	Easement	Portion of Lot 810 burdened with easement to State Electricity Commission

Figure 2-Cadastre Plan



3.2 Site Context

The Malaga Station will be situated approximately 16km north-east of the Perth CBD in the City of Swan. The station site is bound by Tonkin Highway to the west, Marshall Road to the south and Beechboro Road North to the east.

Whiteman Park is located to the east of Beechboro Road and is a recreation and conservation reserve. Whiteman Park is reserved for parks and recreation under the Metropolitan Region Scheme (**MRS**) and contains approximately 4,000 hectares of natural bushland and leisure facilities.

The residential suburb of Ballajura is located immediately to the west of Tonkin Highway. Ballajura contains around 6,600 dwellings, community facilities and has a population of approximately 18,700 people. This area is generally identified as 'Urban' under the MRS.

The residential suburbs of Bennett Springs and Beechboro are located south of Marshall Road. Collectively, these two suburbs contain around 4,000 dwellings, community facilities and a population of approximately 14,300 people. This area is generally identified as 'Urban' under the MRS.

Malaga industrial area is located to the south-west of the Tonkin Highway and Marshall Road intersection and is the most significant employment centre within the City of Swan. This area contains over 3,000 businesses and employment for approximately 15,500 people. This area is generally identified as 'Industrial' under the MRS.

The site is currently vacant rural land. The site is subject to a high-water table, which provides a swampy character. Located in the distance are two gentle earth mounds covered in low vegetation, which stand out as the area is predominantly flat. The mounds wrap the station precinct and frame the elevated backdrop of the hills in the east.

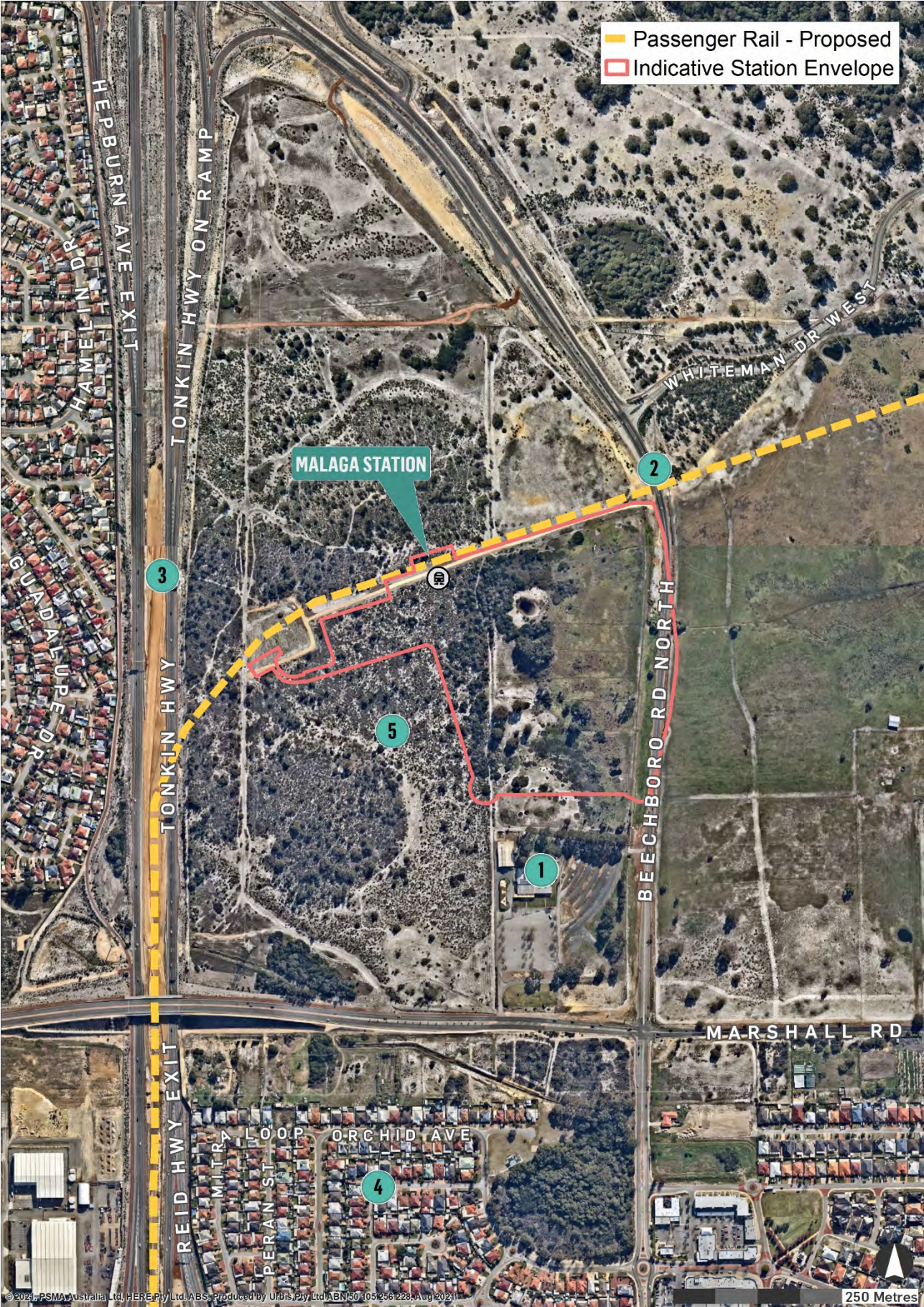
An aerial photograph showing the proposed station (in red) and site context is provided in **Figure 3**.

Figure 3 –Current Aerial Photo



Table 3—Contextual Summary

Contextual Feature	Details
1. The Potter's House Christian Centre	Lots 1103 and 102 directly to the south of the Malaga station are zoned Industrial Development under the City of Swan Local Planning Scheme No. 17 and contain the Potters House Church and carparking respectively. The development is sufficiently setback from the proposed development and will not result in land use conflict.
2. Beechboro Road North	Beechboro Road North is a two-lane Distributor A road running north-south approximately 200m east of the station. It provides access northbound to Tonkin Highway and Hepburn Avenue, and southbound to Marshall Road and the residential areas of Beechboro and Kiara
3. Tonkin Highway	Tonkin Highway is a six-lane Primary Distributor road running north-south to the west of the station. It is identified as a 'Primary Regional Road' within the MRS. Tonkin Highway provides primary access northbound to Ellenbrook and Muchea before becoming Great Northern Highway.
4. Existing Residential Areas	<p>Land to the west and south of Malaga Station comprises primarily residential and industrial development. Malaga is identified within the North-East Sub Regional Planning Framework as a significant industrial and employment area for the region.</p> <p>The establishment of Malaga Station and the MEL will provide the surrounding population with public transport connectivity to the CBD.</p>
5. Immediate Surroundings	Land immediately surrounding the station is primarily vacant and has been identified for planning and future development of a TOD. A masterplan will be required to be prepared for the immediate surrounds, showing how the proposed development and land uses interface with the Malaga Station.



3.3 Environmental Considerations

The following table provides a summary of environmental considerations applicable to the subject site, and proposed actions (where relevant).

Table 4–Summary of Environmental Conditions

Item	Summary
Bushfire Prone Areas	The Malaga Station is identified as being located within a Bushfire Prone Area. A Bushfire Management Plan has been prepared to accompany this development application.
Contamination	The site is <u>not</u> an identified contaminated site.
Acid Sulphate Soils (ASS)	<p>The site and surrounds are identified as moderate to low risk of ASS occurring within 3m of natural soil surface but high to moderate risk of ASS beyond 3m of natural soil surface.</p> <p>Further geotechnical investigations and management will be undertaken as part of the construction management plan.</p>
Aboriginal Heritage	The site does <u>not</u> contain any site specific registered Aboriginal heritage sites.
European Heritage	The site does <u>not</u> contain any European heritage structures.
High Pressure Gas Pipeline	<p>The southern portion of the site is partially located within the ATCO trigger distances, as identified under Draft Development Control Policy No. 4.3 – Planning for High Pressure Gas Pipelines.</p> <p>The proponent will consult with these agencies through the construction process to ensure the proposed works will not obstruct or danger this infrastructure.</p>
Western Power High Voltage Overhead Power Lines	<p>The western portion of Lot 810 is burdened by an easement to the State Electricity Commission (Western Power). The Site Plan illustrates all development will occur outside of the easement, except for a fire pump room and two tanks and an access road that are proposed within the easement area.</p> <p>The proponent will consult with Western Power through the construction process to ensure the proposed works will not obstruct or endanger this infrastructure.</p>

4. Proposed Works and Operating Hours

This development application seeks approval for the Malaga Station, which is a multi-modal station accommodating the main station building and platforms, a bus interchange, car parking areas and pedestrian / cyclists links into the station. As will be detailed in later sections of this report, the majority of supporting infrastructure supporting the station does not require development approval, so does not directly form part of this development application scope.

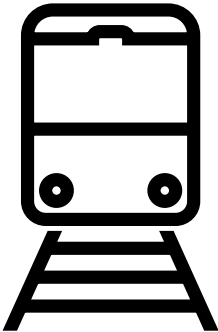
The Malaga Station is proposed to be open for operation in 2024. The Malaga Station building will operate between 4.30am and 12.30am each day of the year, with the station building to be locked outside of these hours to prevent the public from entering the station building.

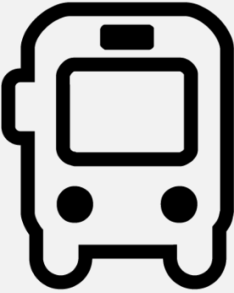


During the peak period of 7am – 9am and 4pm – 6pm, the station will provide five services per hour in each direction, reducing to 4 services per hour during off-peak.

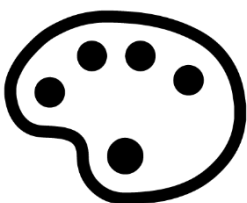
4.1 Station Works Subject to this Application

The following table details the station works subject to this application. Development plans for the station work are provided at **Appendix B** of this report.

Table 5–Station Works Subject to this Application

PROPOSED	DETAILS
<p>Train Station Building</p> 	<p>A Station building including:</p> <ul style="list-style-type: none"> Unpaid Concourse Area which includes: <ul style="list-style-type: none"> public service facilities (automatic teller machine, vending machine and pay phone) passenger ticketing/information facilities station administration/office facilities kiosk and associated stores <u>Paid Concourse Area which includes:</u> <ul style="list-style-type: none"> public toilet facilities (male toilet, female toilet and unisex accessible toilet) staff amenity facilities (crib room, male toilet, female toilet, unisex accessible toilet and staff changing areas) station storage/cleaning facilities (cleaners' room and store room) stair and lift access A station platform of approximately 10 metres wide and 150m in length, accommodating typical station amenities such as seating and ticketing. A Welcome Place public plaza immediately adjacent to the station entry, including high quality landscaping and furniture.

<p>Bus Interchange</p> 	<p>A one-way movement bus interchange with:</p> <ul style="list-style-type: none"> 12 active bus bays (10 standard bays and two articulated bays) 6 bus layover bays including two articulated bays a continuous canopy weather shelter to the bus interchange linking to the station building
<p>Station Parking</p> 	<p>Park and Ride car parking with 1,087 spaces, including:</p> <ul style="list-style-type: none"> 1,044 standard all day bays 15 standard short-term bays 1 tenant bay 21 ACROD bays 2 service/loading bays 4 staff bays <p>Kiss and Ride car parking with 13 spaces, including:</p> <ul style="list-style-type: none"> 11 standard pick-up/drop-off bays (PUDO) 1 Accessible PUDO bay 1 taxi PUDO bay 20 sheltered motorcycle bays <p>Bicycle parking, including;</p> <ul style="list-style-type: none"> Secure bicycle storage shelters, with storage for up to 72 bicycles 12 U-rail bicycle stands within the station precinct
<p>Landscaping</p> 	<p>High quality hard and soft landscaping design for the Malaga Station. The key principles underpinning the landscape design are as follows:</p> <ul style="list-style-type: none"> Practical tree retention, trees being retained or relocated were possible as part of the landscape plan. Use of low maintenance vegetation species. This is achieved by using local natural species (such as Banksia, Eucalyptus and Melaleuca varieties) where possible, supported by exotic species only where specific vegetation characteristics are required. Water reduction through species selection. Species which do not require long-term irrigation have been selected for the majority of the station landscaping. Reduction of heat island effects, specifically: Planting large trees within the station forecourt, with a mix of grouped medium sized trees (500L) and large feature trees (1500L) providing shading and relief to the paved Welcome Place. Planting within central swales in car parking areas and along the periphery of the car parking areas. Paving and road materiality is used to create subtle wayfinding cues and define pedestrian priority areas. This includes the use of high-quality

	<p>pavers around the station forecourt and key area of the 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 key challenge for the station landscaping is maximising canopy coverage whilst also ensuring vegetation does not restrict CCTV coverage. As a result, the landscaping design focuses widespread tree coverage around the periphery of the station precinct, with planting in the station forecourt focussed on quality feature planting.</p> <p>The landscape plan is provided at Appendix C of this report.</p>
<p>Public Art</p> 	<p>Public art within the station will be delivered in accordance with the requirements of the WA State Government Percent for Art.</p> <p>This artwork will be delivered as part of the 'METRONET Public Art Strategy', with the thematic framework strongly built around the Gnarla Biddi story of 'Our Pathways'.</p> <p>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.</p> <p>A detailed public art plan including themes and opportunities for the MEL alignment and Malaga Station is provided at Appendix H of this report.</p>

5. Design Principles

5.1 Architectural Design Statement

The scope of works set by the projects SWTC includes a number of qualitative design measures which must be met in the station's architectural design. These requirements have been interpreted and applied by the project architects Woods Bagot, which has resulted in common line-wide architectural themes and a site specific interpretation for Malaga Station. These themes and design drivers are best summarised as follows.

Line wide Architecture Overview

The design approach for the Morley-Ellenbrook Line is to create a family of buildings tied together through a common design language to establish a line-wide identity. The approach is to have a degree of commonality between the five stations while also allowing the stations to have unique elements to convey their own local identity and speak to the community in which they located. A 'kit-of-parts' approach has been taken to identify standardisation of components (where appropriate) to maximise efficiency of construction and maintain similar elements that informed the shared language across all the stations. Thus, Malaga Station shares line-wide consistencies with the other stations on the Morley-Ellenbrook Line in terms of the simple roof geometries, materiality, geometric form, kit of parts assembly and modular designs.

Malaga Station Architecture

The Malaga Station is located to the east of Tonkin Highway, north of Marshall Road and west of Beechboro Road in the suburb of Malaga. It is designed to allow for future development around the station and station precinct. The urban design takes into consideration the station building, the surrounding natural environment and the future masterplan. The design of the precinct also references the greater surrounding context including

Whiteman Park, Lightning Swamp and the banksia bushlands and is designed to be “a station within a park”, with the forecourt or ‘Welcome Place’ being at the centre connecting everything. The station will provide links to the surrounding suburbs of Landsdale, Alexander Heights, Ballajura, Bennett Springs and the nearby industrial centre of Malaga.



The Malaga station is unique in that it will be the first sizable building on the site; therefore, the architecture will have a strong influence on the design of future buildings and set the context and become the central core for the forthcoming Town Centre. The Station and Welcome Place have been configured to have a direct and strong relationship with the future ‘Main Street’ that will provide a compelling local presence to promote activation, energy, and a sense of community, while also providing good accessibility to the station and other modes of transport linked to the station precinct. The design follows station functional planning and urban design principles to ensure the massing and height of the development is appropriate in its setting, and that the built form compliments the scale of the future planned developments, offering a positive public realm that interacts with the urban centre planned for around the station.

The architectural design of Malaga Station considers a holistic approach, whereby the station building forms an integral part of the precinct and the surrounding context. The approach to design has considered the project’s functional requirements, the need to deliver a sustainable, efficient, and cost-effective design, and the desire to create a built environment that is sensitive to the local culture and context. Of significance, is the consideration of how people will experience the station and the associated precinct in their day-to-day lives. Malaga station precinct will be delivered as a place that feels occupied and ‘owned’ by the community it services. This requires a sense of place with an authentic character that reflects its context and the local community’s aspirations, making the place cared for, safer and activated.



Overall, Malaga Station and the surrounding precinct have been designed to provide an engaging, comfortable, safe, and functional public realm. The station architecture reinforces a coherent local identity through its response to local landform characteristics.

The architectural character of the station seeks to compliment the nearby built form and aesthetic of the suburb of Malaga. The station will have a unique identity in its overall form, scale and presence while still maintaining the line wide narrative of architectural elements and the 'kit of parts' approach.

The station architecture expresses a clear hierarchy of forms. The main triangulated roof is reminiscent of the local banksia plant leaves, with a simple hipped geometry that 'floats' above the station, providing natural light and cross ventilation. The station's triangulated geometries, metal cladding surfaces and timber-look soffits also reflect the suburban and industrial roof profiles and character of Malaga architecture. The V-shaped steel columns supporting the main roof are expressed in the cladding along the concourse perimeter creating a sense of rhythm along the rail corridor.

Station Approach from Welcome Place



The Station Entry Building is accessible from the leafy, attractive Welcome Place which forms the heart of the precinct. This forecourt is a place where people converge and make decisions on transferring to the various modes of transport and utilises intuitive wayfinding, while providing flexible shaded meeting points within an urban landscape setting. There is clear access to the Station Entryway with the architectural scale of the two-storey built structure with its open 'verandah' style, that will help people to establish their location at the heart of the precinct. The Entry Building provides connectivity between the precinct level and raised concourse level. Access is available via lifts and stairs to the south of the station, and provision for future escalators has been considered. Perforated facade materials with potential art integration allows visibility to the transport modes within the structure and allude to the vertical transport strategy connecting the ground plane to the concourse level. An additional VT connection is provided to the Northern side, to cater for future urban development to the north of the station.

The elevated concourse allows the platform area to meet operational requirements and rail reserve clearances. Upon entering the main station building, visitors and staff will find accommodation units organised around a central pedestrian circulation foyer that provides access between the unpaid and paid zones and the at-grade platform paid zone. For operational purposes, the unpaid concourse area includes public service facilities such as

vending machines, pay phone, kiosk store, passenger ticketing, information modules and other services. Following through the fare gates and into the paid area, the accommodation wings are located on either side of the circulation zone, for efficiency of movement and access. The Station concourse features well-illuminated, generous spaces and a heightened elevated form above the precinct.

Station Approach from Main Street

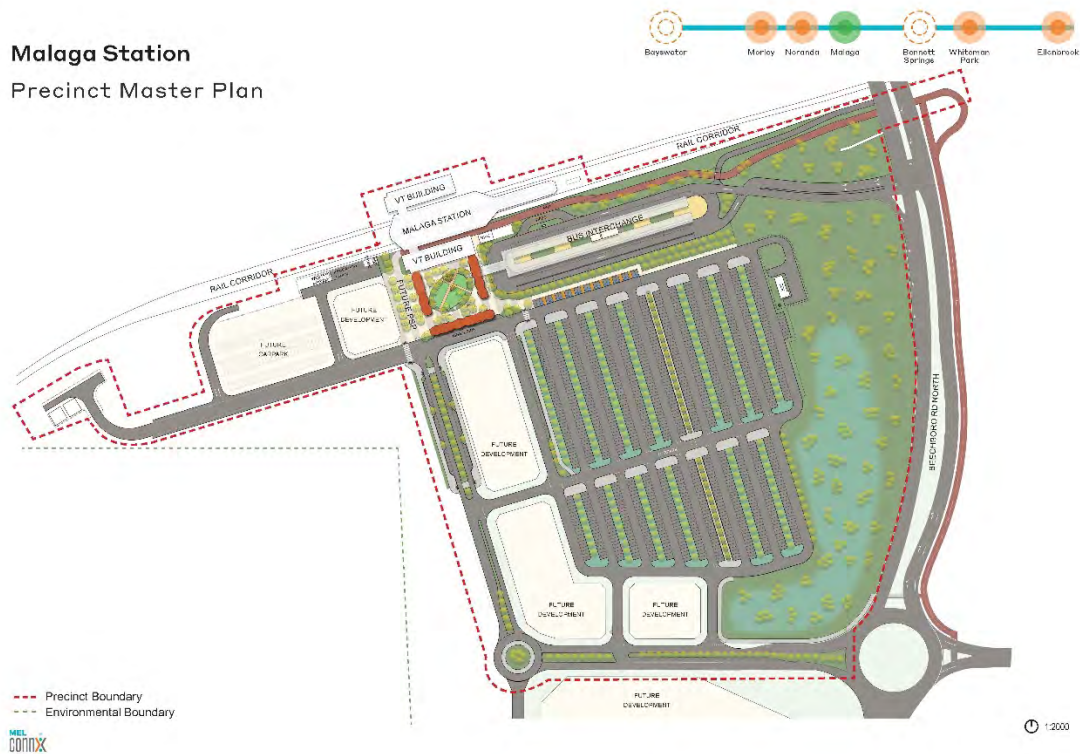


The island platform is 10m wide by 150m long and located down at rail level. The spine of the roof structure follows the vertical transport pathways to the paved platform and enhances natural light access while providing continuity in architectural language of the station. The platform area is naturally ventilated and has a minimum of 70% under canopy cover providing weather protection to station visitors. Within this platform space there is a passenger safe zone, seating, information facilities, staff amenities and station operational facilities.

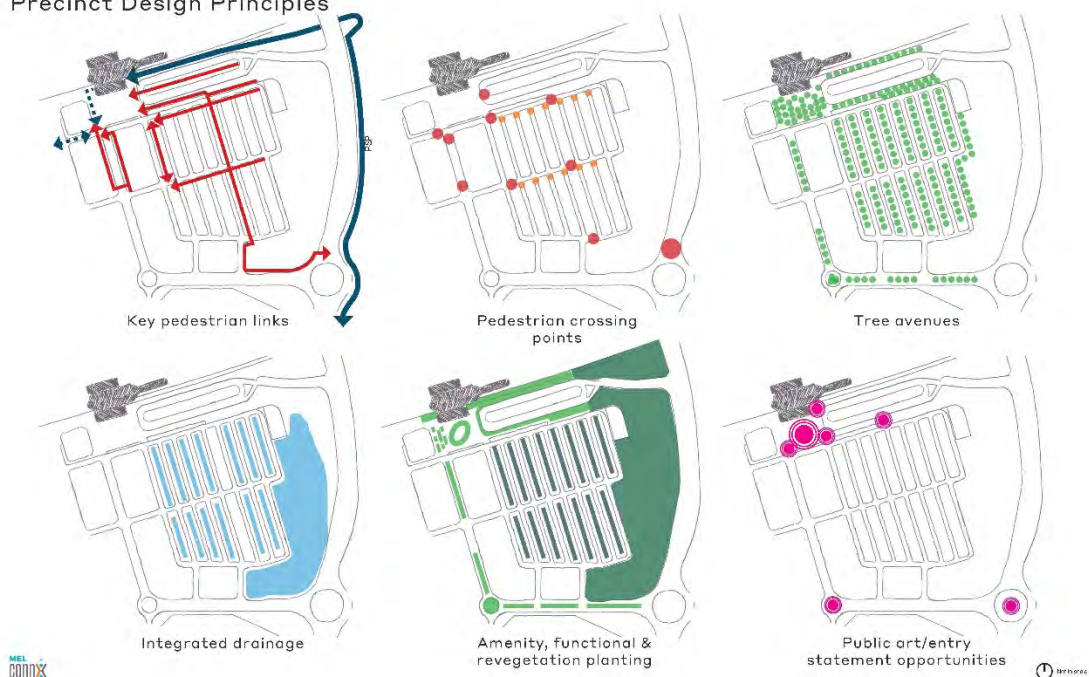
5.2 Station Precinct Design Principles

The architectural themes and design drivers outlined above underpin the functionality of the station precinct.

Section 5.3 provides detailed information on how these qualitative design measures have been interpreted and applied to the wider functional elements of the Malaga Station design.



Malaga Station Precinct Design Principles



5.3 SPP 7.0 – Assessment of Good Design

MELconnx have referenced the 10 Principles of Good Design, outlined under, 'State Planning Policy 7.0 Design of the Built Environment, to develop an appropriate design response and sense of place for the station design. The following sections provide detailed information illustrating the measures incorporated to achieve a high quality design and built form outcome.

5.3.1 Context and Character

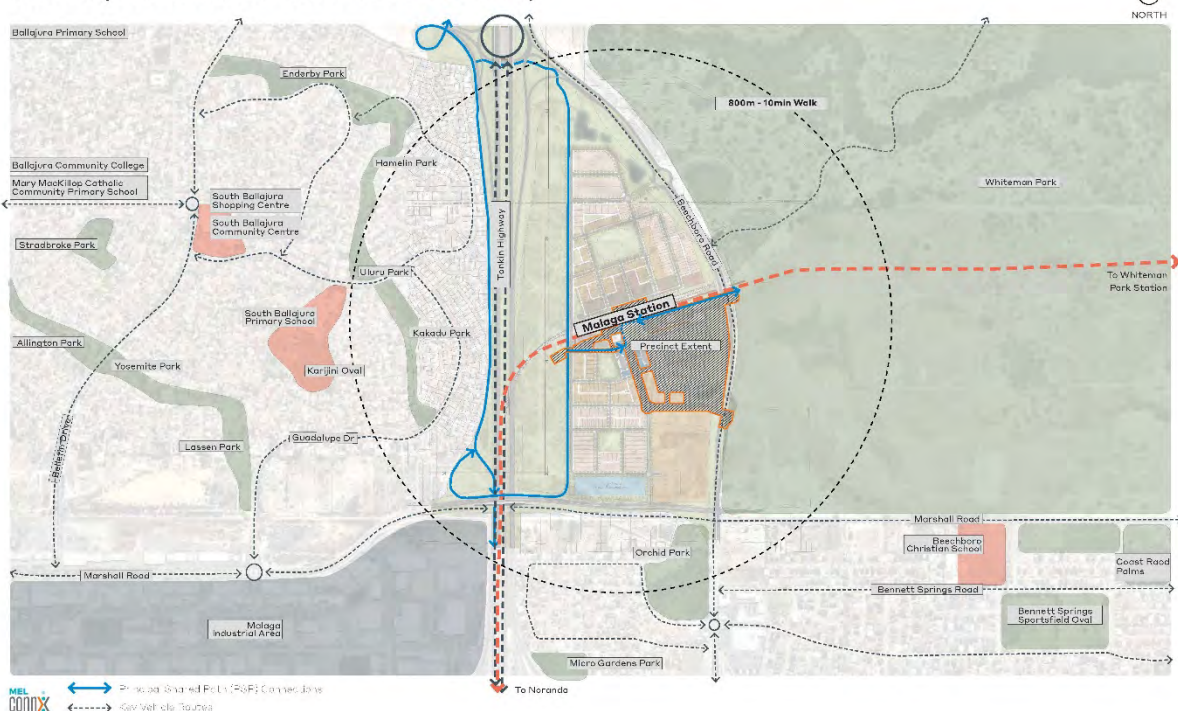
Design Principle Statement: *Good design responds to and enhances the distinctive characteristics of a local area, contributing to a sense of place*

Inclusion of distinctive characteristics, prominent natural and built features, local civic gestures and distinctiveness, intended future character and civic identity. Engagement undertaken with Whadjuk Noongar culture and the Gnarla Biddi has informed the station design and integrated into the public art strategy and landscape design.

Station architecture has been inspired by the landscapes of the Swan Coastal Plain with a focus on the detail of natural patterns such as wind and water on sand and rock formations. Station canopies for example utilise geometric patterns interpreted from nature animated by the movement of sunlight throughout the rhythm of the daily cycle. These geometric patterns give the Stations a sense of identity and character.

Malaga Station

Masterplan and PSP Connection Overlay



5.3.2 Landscape Quality

Design Principle Statement: *Good design recognises that together landscape and buildings operate as an integrated and sustainable system, within a broader ecological context*

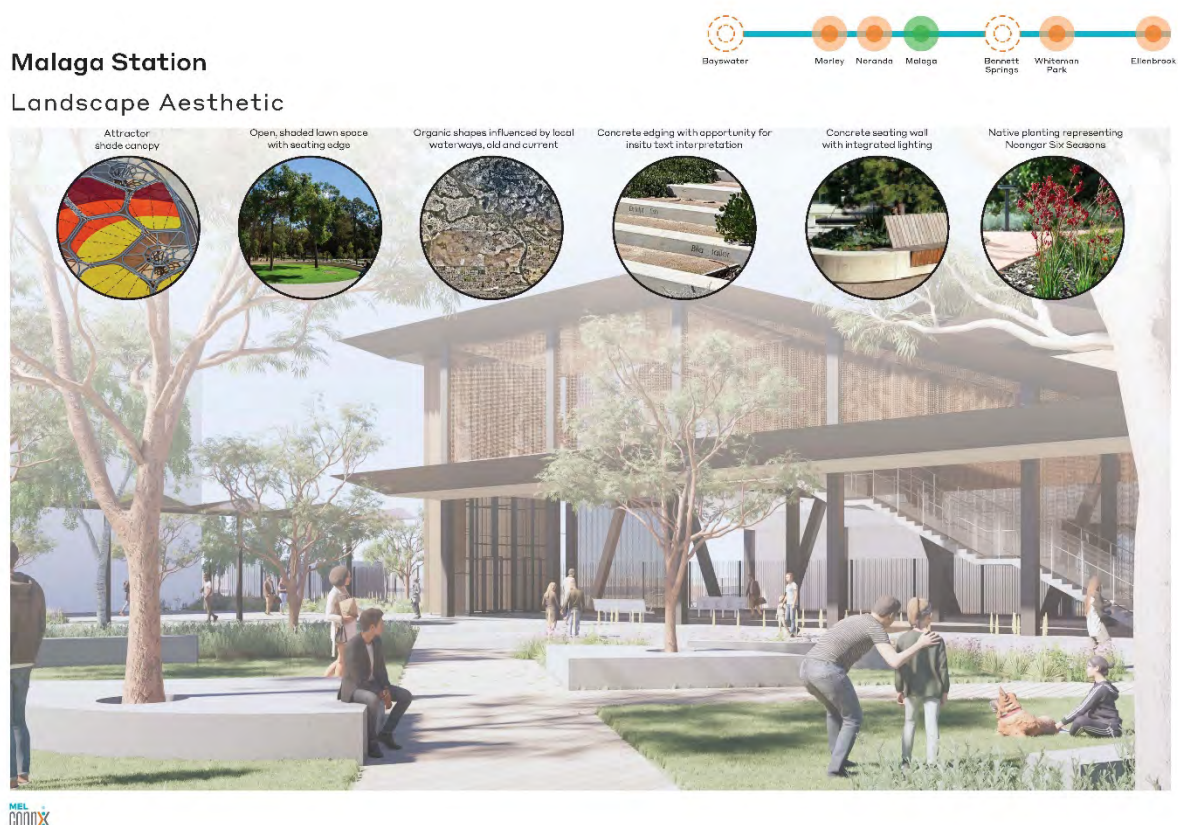
Emulating the station's proximity to Whiteman Park is a selection of native planting held in places by curved seating edges encouraging impromptu rest point and gathering nodes. A central oval turf is shaded by tree canopy and slopes up to the edge of a seating wall, also acting as an informal seating zone. A large canopy structure hugs the edge of the Welcome Place and Kiss & Ride interface, with the opportunity to integrate art into the design to develop a large-scale wayfinding and shade device.

The precinct has six planting types that are each uniquely located to reflect the different areas within the site. The intention of this approach is to achieve specific functions such as drainage and rehabilitation zones, to create an inviting 'Welcome Place' for Station users, develop the station and precinct narrative through the incorporation of design themes such as the Main Roads Wildflower Capital Initiative and instilling a sense of place by selecting species reflective of the Noongar Six Seasons in order to develop the understanding of the cultural significance of the site.

The proposed trees reflect the immediate and surrounding natural landscape of the Swan Coastal Plain, Darling Scarp and the rugged Perth coastline. The species will provide significant shady canopies, year round flower displays, habitat for native birds and insects, a celebration of cultural significance and the Noongar Six Seasons, important drainage and rehabilitation functions in addition to a hierarchical arrangement within the public realm.

Malaga Station

Landscape Aesthetic



5.3.3 Built Form and Scale

Design Principle Statement: *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.*

The individuality of the station shines through in its reflection of the local geographical conditions. Materials convey a narrative of the surrounding natural patterns, as well as the local residential and industrial identity.

This has resulted in a warm toned, folded station form with clear connections for wayfinding. Banksia plants have informed the roof structure. Surrounding bush and parklands have informed the timber-look soffits of the bus interchange and station accommodation. Moreover, triangulated geometries, folded roof canopies and metal cladding reflect the suburban and industrial roof profiles and character of Malaga architecture. Together, these material elements informed by the site narrative, endeavour to create an inviting, detailed development that feels comforting and comfortable.

The façade of the concourse accommodation incorporates shadow groves to break up the form and accentuate the angled structural columns. Further detailing of the materiality, panel break up and colour selection will be refined at the next stage of design. Windows have been provided to the staff Crib and Customer Service Office where structural members allow for a window placement, but as most of this wall element mainly conceals services rooms such as fire rated electrical and comms rooms, further window integration is prohibitive to the functional space behind.

Malaga Station

Station Approach from Main Street





Malaga Station

Station Approach from Welcome Place



5.3.4 Functionality and Build Quality

Design Principle Statement: *Good design meets the needs of users efficiently and effectively, balancing functional requirements to perform well and deliver optimum benefit over the full lifecycle.*

The Station concourse boasts well-illuminated, generous spaces and a heightened elevated form above the precinct. The placing of all furniture, including lights and signage poles, does not intrude into the pathways for pedestrians. There is a minimum obstacle-free width consistent with the footpath before and after concourse furniture.



Station functionality at concourse level



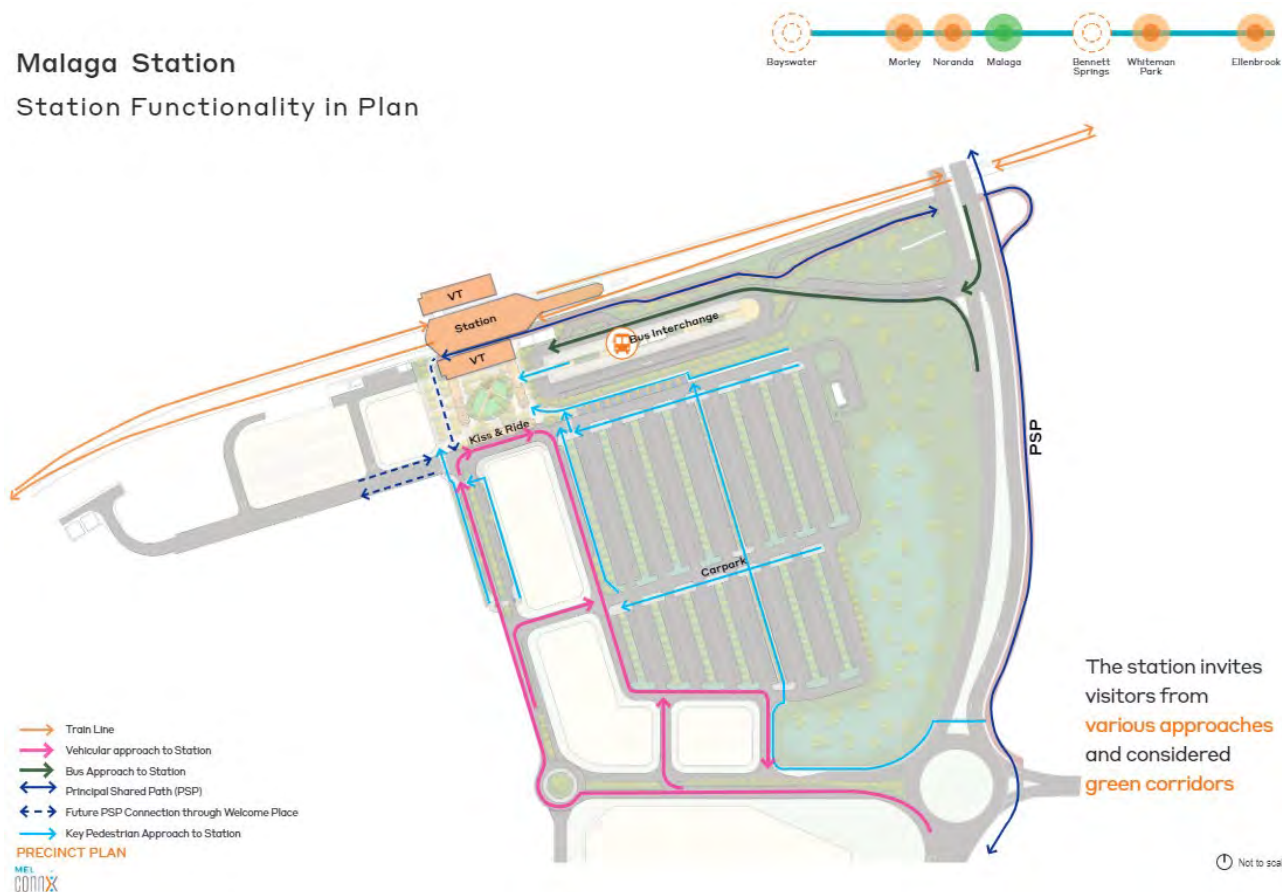
Station functionality at platform level

The train station platform is free-standing and occupied by standard PTA stainless steel seating with adjacent options for wheel chairs. The spine of the roof structure follows the vertical transport pathways down to platform level and enhances natural light and ventilation strategies.

The station concourse facilitates future connectivity to the area north of the rail line via a mirrored vertical transport structure. Voids are incorporated into the Station design to enable the provision of escalators to accommodate future patronage. Materiality and finishes selections are ongoing and will be made with regards to suitability, taking into account durability, maintenance, cost and overall design character of the station.

Malaga Station

Station Functionality in Plan



5.3.5 Sustainability

Design Principle Statement: Good design provides successful places that offer a variety of uses and activities while optimising internal and external amenity for occupants, visitors and neighbours, providing environments that are comfortable, productive and healthy.

The principles of the Metronet sustainability strategy have been incorporated in the design, including social sustainability by providing connectivity, amenity, resilience and adaptability. It is also a sensitively designed environment that considers biodiversity, water and the local climatic conditions providing optimal shading and natural vegetation.

The WSUD principles, include the swales and drainage conditions in the carpark. Investigations regarding whether green infrastructure measures can be used to manage all stormwater runoff from the carpark will occur through the detailed design process, to reduce reliance on grey infrastructure.

The required Green-star benchmarks will be assessed to maximise points value and alignment with broader station performance and operational requirements. This element of the Sustainability strategy will be developed in close consultation with the PTA to draw on the PTA's expertise and to ensure consistency with established policies and strategies.

Malaga Station

Safety Strategy - CPTED



Lighting

Provide adequate illumination of a space both during the day and at night, with one or two people to see and be seen.

Integrated initiatives

- Lighting standards & levels
- Spacing
- Type
- Siting and location



Signage

Provide a clear display of the immediate and surrounding surroundings by creating an unobscured view through the space.

Integrated initiatives

- Natural or artificial
- Directional signage



Overlooks

Create a sense of ownership among all users and users of a space, to encourage people to take responsibility for that space and its well-being.

Integrated initiatives

- Clear garden cultivation
- Landscaping, trees
- The public realm
- Management and maintenance



Clearance

Avoid obstructions, clutter and any adjacent or peripheral elements that could impede or hinder a person's path or a clear view.

Integrated initiatives

- Minimise obstructions
- Limit clutter and peripheral elements



Movement and routes

A well-designed and unobstructed route, both direct and indirect, to pedestrians.

Integrated initiatives

- Minimise movement predictor routes
- Provide access to alternative routes



Wayfinding

Enable the environment to convey a sense of place and provide orientation and direction, including indication of safe spaces and routes.

Integrated initiatives

- Signage
- Legibility
- Facilities



Landscaping

Increase the safety of a space by transforming the overall enclosure through the use of vegetation.

Integrated initiatives

- Selection of plants
- Green roof trees with lifted canopies
- Low maintenance planting
- Landscape planting with low species richness



Adaptation

Modelling a range of land use, a space is designed to have an appropriate mix of activities occurring in the environment.

Integrated initiatives

- Gathering areas
- Commercial and cultural use of space

5.3.6 Amenity

Design Principle Statement: Good design provides successful places that offer a variety of uses and activities while optimising internal and external amenity for occupants, visitors and neighbours, providing environments that are comfortable, productive and healthy.

Spaces have been designed to be welcoming and comfortable, universally accessible with good levels of natural daylight and natural ventilation. The inclusion of trees alongside the majority of the PSP length provides shade for pedestrians and cyclists.

The canopy linking the bus interchange to the station entrance provides appropriate shade and weather protection and creates cooler spaces for user. The Welcome Place incorporates a range of furniture items as well as power and water (to allow for activation through markets and events), USB charging stations and seating walls. Additional amenity from the basketball court, fitness nodes, flexible lawn space provide opportunities for further activation of the Welcome Place.

Malaga Station

Welcome Place Amenity and Activation Strategy

The Welcome Place Amenity and Activation Strategy takes into account requirements from the Place Plan and SWTC, as well as the general goal to provide a welcoming space for all.

Amenities included in the SWTC requirements are the furniture items as well as power and water (to allow for activation through markets and events), USB charging stations and seating walls.

Provision of shade through trees and built canopies creates a cooler space for users.

The design of the Welcome Place provides a hierarchy for the amenity provision by providing a strong grid that the proposed trees are set on which also sets a grid for items such as the individual seating benches, bins and other items where shown. The central turf space and cyclical six seasons planting arrangement also provides a hierarchy separate to the linear grid for seating walls, charging stations, power and water outlets to follow the curved forms.

The central spine, that is the path dissecting the turf area creates an integration with the linear grid and the cyclical turf and six seasons space.

- Amenities included as a part of SWTC requirements:
- Power points
 - Water points
 - Free standing seating
 - Drinking fountains
 - Bike racks
 - Refuse & recycle bin stores
 - Seat Walls
 - Light poles



5.3.7 Legibility

Design Principle Statement: *Good design results in buildings and places that are legible, with clear connections and easily identifiable elements to help people find their way around.*

The primary station entrance is legible from the Welcome Place and will facilitate the successful future transition of the Welcome Place to a public square within a new residential precinct. The station building features a unique entrance, which invites visitors through a significant architectural gesture. The design incorporates good sightlines and movement paths from the bus interchange to the station entry.

Beyond the entry zone, the station features strong sightlines from the station entry to the end of the platform. The station concourse offers clear wayfinding, which is supported by a linear skylight above that aligns with the direction of travel.



5.3.8 Safety

Design Principle Statement: Good design optimises safety and security, minimising the risk of personal harm and supporting safe behaviour and use.

Safety is an important consideration for this station, given that it will be isolated from more populous and activated areas prior to the surrounding precinct being developed. The fundamentals of CPTED have been integrated into the design, including lighting, clear sightlines, clear ownership and boundaries, elimination of entrapment spots, elimination of movement predictors, legible wayfinding, landscaping, and activation.

CPTED issues are considered, ensuring clear sightlines in all areas between 700mm and 2000mm above pavement level. Linear planning of the concourse provides good passive surveillance, and the customer service office has reasonable sightlines across the concourse.

Further consideration to lighting and sightlines associated with the PSP underpass proposed to the north-eastern corner of the site will be undertaken through the detailed design process.

In addition, the precinct is monitored by 24/7 CCTV surveillance. CCTV viewsheds have been modelled to assess impacts of tree development over time to ensure sufficient surveillance coverage.



5.3.9 Community

Design Principle Statement: 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.

The station precinct has been designed to provide opportunities to develop the beginnings of a community with temporary and events focused activation. Space can be allocated within the Welcome Place to accommodate temporary installations from local communities, as well as market stalls and small coffee carts. The open lawn, basketball court and fitness nodes provide other opportunities for activation, and feature lighting will also play a role in creating a welcoming space.

As the Malaga masterplan begins to take shape and develop, so will the community focus of the Malaga Station Precinct. Opportunity to utilise space in the carpark for developments, as well as the space currently holding the basketball court, will bring locals closer to the station itself. The use of the shade canopy can in parts be re-purposed to hold more permanent markets/food stalls, and the open lawn will remain as a useful active zone.

The Malaga Station and Welcome Place and its surrounds shall be activated as a community grounds for seating, play and recreation for locals and visitors.

5.3.10 Aesthetics

Design Principle Statement: Good design is the product of a skilled, judicious design process that results in attractive and inviting buildings and places that engage the senses.

The design aims to be an attractive and inviting station and precinct with elegant and coherent design that is unique to Malaga. Public art, aboriginal culture, articulation of place and character integrated into the architecture and landscape giving it a clear sense of place and character.

In and around Malaga Station, existing landscapes are augmented and enriched to create shady and comfortable public spaces. The attractor piece, being an elegant arbour structure wrapping around the station Welcome place, draws people into the Station through its defining form. The design of the attractor piece breaks the edge of the carpark zone and softens the entry into Malaga. In the evening the attractor piece may act as a guiding light beacon to aid with wayfinding and safety.

Malaga Station

Public Art Integration Strategy

The themes specific to Malaga Station include:

- Water
- The Yockan (the Turtle story)

The linewide themes include:

- The Six Seasons
- Interpretation/stories from cultural context
- Dual Naming

These themes can be presented in many ways, through language, art & design, and lighting. Elements such as sculpture, murals, wall art, cultural mapping and functional elements can all be utilised as a part of the Public Art Strategy.

Specific components that represent these themes could include natural elements such as tiles, glass, metal, screening, landscape, and small scale interventions.



6. Technical Reports

6.1 Acoustic Report

A Malaga Station Acoustic Design Report is provided at **Appendix D** of this report. The key points identified within the Acoustic Report are noted below.

- Overall environmental rail noise levels, when assessed at nearby potential noise sensitive premises are expected to comply with applicable state noise regulations and planning policy. Rail vibration levels are expected to be compliant with recommended levels.
- Noise from car parking areas, local vehicle traffic and bus movements will increase significantly in the area from current conditions but are expected to remain compliant with relevant state policies.
- Car parking areas should avoid the use of speed humps, loose laid road coverings or smooth concrete surfaces to minimise noise emissions.
- Design of the station plant and facilities such as mechanical services, public address and crowding areas to meet applicable environmental noise regulations may be achieved through conventional / industry standard design approaches and therefore is not anticipated to require specialist design input.

Stations on the Morley Ellenbrook Line (MEL) Project are required to meet the following acoustic requirements:

- Environmental Protection (Noise) Regulations 1997
- Green Star Design and As-built Requirements for Railway Stations (v1.1) Credit 14.

The above key requirements will formulate the basis for detailed acoustic design to ensure that Malaga Station arrives at an acceptable and compliant acoustic outcome. Importantly, the acoustic design of the station office spaces, concourses and platforms should sufficiently address the project requirements. This will involve:

- Sound absorption within offices, cribs and tea rooms.
- Sound insulation between spaces.
- Control of noise associated with services and other fixed infrastructure.
- Maintain desired reverberation levels and careful speaker positioning to retain speech intelligibility of the Public Address (PA) system.

Specific construction advice in line with the architectural intent will be provided during the design and coordinated with other technical disciplines to ensure compliance with SPP 5.4 – Road and Rail Noise.

6.2 Transport Impact Assessment

A Transport Impact Assessment (**TIA**) is provided at **Appendix E** of this report. This TIA considers the Malaga Stations impact on the wider transport networks, including consideration on the areas existing and future transport context, changes to the transport network and integration of surrounding land uses.

Initially the station's forecast patronage is relatively low, however as the area surrounding the Malaga Station Precinct is planned as a significant development area by the state of Western Australia –patronage for the station is expected to grow rapidly in the medium term.

Given the existing site is largely undeveloped, the introduction of a transit node connecting the surrounding area to high capacity public transport creates a crucial need for significant transport infrastructure upgrades. In order to facilitate safe and efficient access to support the station, a comprehensive upgrade to the existing active transport and road network, including feeder public transport services, is needed.

Major changes to support the site include the realignment of Beechboro Road North to include a new access road into the station precinct, along with a bus only entrance for the bus interchange. These roads will support access for vehicles to the station's PnR and KnR facilities and a number of new bus services to the bus interchange. A new PSP will also be constructed, including a number of new shared paths to connect the precinct to the wider active transport network.

The incorporation of access points to and from Malaga Station within the road network, together with future projects anticipated by Main Roads (along Beechboro Road North and Marshall Road) will result in changes to the layout of the surrounding road network. These changes include:

- Beechboro Road North upgraded to dual carriageway north of Marshall Road to the Tonkin Highway Interchange, connecting with Hepburn Avenue to the west
- Upgrade of Marshall Road to dual carriageway in the vicinity of the Malaga precinct (i.e. east of Beechboro Road North to Drumpellier Drive)
- Addition of a new signalised intersection on Beechboro Road North, approximately 670 metres north of Marshall Road. The TIA refers to this intersection as 'Beechboro Road North/ Bus Interchange Access' which will provide access for buses accessing and egressing the bus interchange. This access will only be utilised by Transperth buses, emergency vehicles and other authorised Transperth vehicles.
- Addition of a new dual-lane roundabout on Beechboro Road North, approximately 315 metres north of Marshall Road. The TIA refers to this intersection as 'Beechboro Road North/ Park n Ride/ Kiss n Ride Access' which will provide access for vehicles associated with the Malaga Station Park n Ride facility

Specifically, the following notable outcomes are drawn from the assessment:

- Both the Beechboro Road North/ Bus Interchange Access signalised intersection and the Beechboro Road North/ Park n Ride/ Kiss n Ride Access roundabout will operate well within capacity during the project-case scenario years. However, the existing Beechboro Road North/ Marshall Road intersection is forecast to reach capacity during the 2029 AM peak, with a LOS E and DOS of 96.6% in the project case.
- The station is to be reasonably well serviced by both the existing and proposed surrounding transport network, facilitating safe and adequate access for pedestrians, cyclists, buses and general vehicles.

6.3 Stormwater Considerations

A preliminary stormwater design is provided at **Appendix F** of this report. The key principles underpinning this design are as follows:

- Stormwater runoff from the station precinct is captured, conveyed and discharged into sub-catchments, designed to detain the 10% AEP storm event.
- Stormwater collected from the bus interchange will be captured in a traditional pit and pipe network that drains into an infiltration basin on the south eastern side of the area, Basin 1. Basin 1 includes an overflow weir connecting to a downstream basin, Basin 2.
- Stormwater collected from the carpark north and kiss and ride road will be captured in a central median bioretention swale. As the swale is too narrow to accommodate and infiltrate the resulting design flow, catchpits are proposed within the swale to direct flow to the carpark area, continuing along the central access road in the carpark towards Basin 2 on the eastern side of the Precinct. Basin 2 is equipped with an overflow weir to Basin 3.
- Stormwater collected from the carpark south will be directed to a series of swales proposed between each parking lane, with overflow proposed to be captured in a raised catchpit at the lower end of the swales. The catchpits are connected to a pipe network linking through to Basin 4. Basin 4 also receives runoff from the pick-up and drop-off south, access road and roundabout. An overflow weir is designed for the major runoff release from Basin 4.
- Stormwater collected from the station building will be captured and conveyed into discharge locations south of the station building (subject to further detailed design).
- The runoff resulting on the development lots have not been included in the design and have been assumed to be managed on site when developed.

The preliminary stormwater design is provided to indicatively demonstrate water management design principles. The final stormwater design is expected to be delivered as a condition of approval, similar to previous METRONET station projects. Specifically, the following condition has generally been applied to previous METRONET station development approvals:

A Drainage Management Plan shall be submitted and approved by the Western Australian Planning Commission, on the advice of the Department of Water and Environmental Regulation and the City of Swan, prior to the commencement of relevant building works. Once approved, the plan is to be implemented in its entirety.

7. Exemptions Legislation and Considerations

The nature of this project will require a substantial component of infrastructure to support the functional operation of the station. For the Malaga Station, this will require a number of supporting road connections / upgrades and rail related infrastructure. The majority of this infrastructure supporting the Malaga Station is considered exempt from the requirement for planning approval, and is therefore outside the scope of this development application. The following sections outline the head of power which underpins these exemptions.

7.1 Section 6 Public Works

Section 6 of the *Planning and Development Act 2005* 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 meets the definition of 'public work' as defined by the *Public Works Act 1902*.

The PTA is considered an 'Agent of the Crown', and the MELconnx 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 Malaga Station works are included within the scope of the METRONET Act enabling legislation, the proposed works also meet this second test.

The Malaga Station works will thereby meet the Section 6 exemption and does not require approval under the City's local planning scheme.

7.2 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 MEL. 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 MRS. 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.

'METRONET Works' defined as follows:

means works for the purpose of, or in connection with, a METRONET railway but does not 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;

[emphasis added]

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 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.

7.3 Metropolitan Region Scheme (MRS) Exemptions

The site is zoned 'Urban deferred' under the MRS. For zoned land, exemptions available under the MRS are provided through Clause 24 of the MRS.

However, 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.

Importantly, for this METRONET project, the enabling legislation of the METRONET Act re-instates the majority, but not all, of these exemptions.

7.4 Supporting Works Exempt from Approval

The following table outlines these supporting works relevant to the Malaga Station, but which are not in the scope of the development application.

In the case of Malaga Station, as the future station land is not zoned 'Railways' under the MRS, the key legislation guiding exemptions is the METRONET Act. The below table provides a summary of how the exemptions have been applied to the station.

Table 6–Supporting Works Outside of Scope

Works	Summary
Rail track	The rail track extension is considered operational and does not provide vehicle or pedestrian access to the station. Accordingly, the rail track is exempt from development approval through the METRONET Act.
Beechboro Road Refer Figure 4	<p>The rail track travelling from Malaga Station to Ellenbrook Station will dissect the existing alignment of Beechboro Road. The MEL scope of works therefore include the construction of a grade separated crossing, allowing Beechboro Road to travel over the future rail line.</p> <p>As this road construction occurs as a direct result of the MEL track alignment (and not the station itself), these works are considered exempt from approval through the METRONET Act.</p>
Shared / Principal Shared Path outside of the subject site	The MEL scope of works will generally fill gaps in the existing Shared / Principal Shared Path network. These connections are considered exempt from planning approval where they are outside of the 'subject site' as this is considered the point where the pathway does not provide 'direct' access to the station.
Traction Power Sub-Station (TPSS)	A Western Power traction power sub-station will be built by MELconnx south of the Malaga Station for the purposes of electrifying the Morley-

Works	Summary
Refer Figure 5	Ellenbrook Line. Consultation between the PTA and METRONET occurring prior to lodgement of this application has confirmed this infrastructure is included within the METRONET Act Exemptions.
All operational infrastructure	All operational infrastructure is directly associated with rail operations are considered exempt from approval under the METRONET Act. For example, access tracks, monopoles, telecommunication towers, signalling structures, rail monopoles etc.

Figure 4 - Western Power Sub-Station



Figure 5 - Western Power Traction Power Sub-Station



8. Planning Considerations

8.1 State Planning Assessment

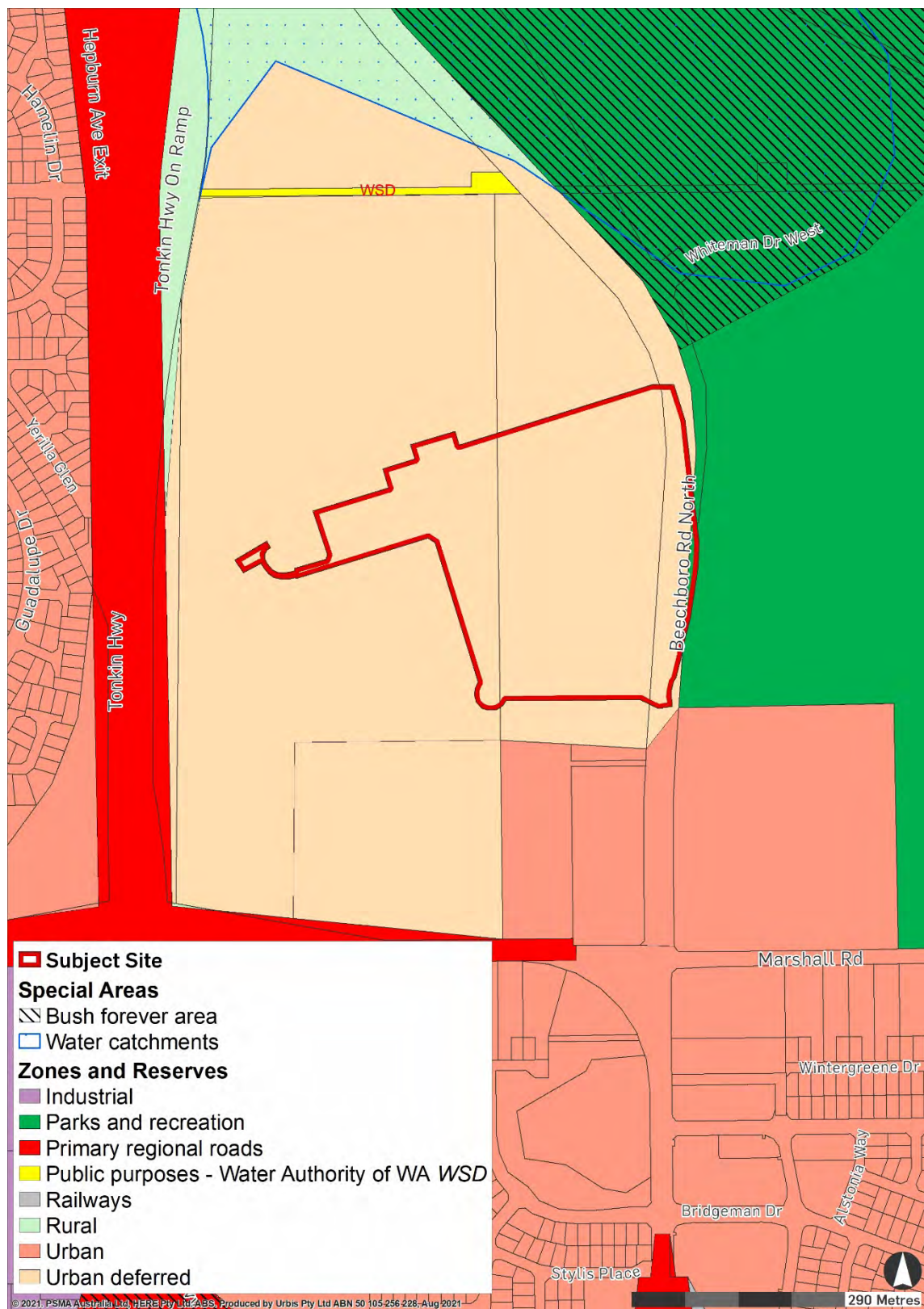
Table 7–Summary of State Planning Assessment

Item	Summary
MRS	<p>The site is zoned 'Urban Deferred' under the MRS. The Urban Deferred zone is intended to accommodate future urban development.</p> <p>It is however noted that the 'Urban Deferred' land requires resolution on environmental and planning requirements prior to the land being rezoned to Urban. Importantly, delivering the Malaga Station ahead of major urban development occurring in this area ensures all future development is underpinned by transport oriented development principles.</p>
State Planning Policy No. 3.7 – Planning in Bushfire Prone Areas (SPP 3.7)	<p>The project area has been designated as bushfire prone in accordance with the Department of Fire and Emergency Services Map of Bushfire Prone Areas. On this basis, a Bushfire Management Plan (BMP) has been prepared to address requirements under Policy Measures 6.2 and 6.5 of <i>State Planning Policy 3.7 Planning in Bushfire-Prone Areas</i>.</p> <p>The proposed development is considered to be a vulnerable land use which triggers additional requirements under Policy Measure 6.6 of SPP 3.7. In accordance with Policy Measure 6.6.1 and Section 5.5 of the Guidelines, development applications for vulnerable land uses require a Bushfire Emergency Evacuation Plan (BEEP) detailing the emergency management provisions for the facility, accompanies the BMP.</p> <p>For this project, it is proposed that a BEEP is not prepared at this time, but is included as a future implementation measure within the BMP and conditioned as part of the DA approval.</p> <p>The BMP confirms that with appropriate implementation actions, the proposed development is able to conform to the relevant provisions of SPP 3.7.</p> <p>A copy of the BMP is provided at Appendix I.</p>
SPP 5.4–Road and Rail Noise	<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 Malaga Station.</p> <p>Sensitive land uses within 100m of Malaga Station such as future residential development to the immediate north and west may require 'quiet house' design standards being applied. Managing the existing and future sensitive land uses around Malaga Station is a key consideration for the PTA in the delivery of Malaga Station.</p>

Item	Summary
DCP 1.6—Planning to Support Transit Use and TOD	<p>The key objective of DCP1.6 is to encourage the co-location of development and transportation. This is intended to serve the mutual benefit of increasing patronage on the public transport system, as well as decreasing reliance on the private vehicle.</p> <p>Malaga Station strongly supports transport orientated development principles, given it provides a multi-modal station surrounded by vacant land identified for a future master planned development.</p> <p>Although the detailed designs for the station and master planned development is yet to be finalised, ensuring compliance with TOD remains an important component of the development.</p> <p>In summary, the following design components of the Malaga Station support TOD principles:</p> <ul style="list-style-type: none"> • The co-location of the bus interchange and station building, combined with a comprehensive future bus network makes multi-modal trips more desirable for passengers. • The location of the station within the Planning Control Area 145 and within proximity to the Malaga Industrial Area and suburbs of Bennet Springs and South Ballajura, allows for synergies between the major bus, road and rail node and service provisions. • The location of the carpark to the south-east of the station building provides sufficient space for the planning and future development of a TOD to the south, west and north of Malaga Station. <p>Combined, these supporting measures expand the reach of TOD beyond simply development in proximity to the station and create genuine opportunities to decrease car dependence.</p>

The project is committed to further assessment of potential railway noise and vibration mitigation measures associated with a future TOD surrounding Malaga Station, to ensure outcomes are consistent with stakeholder expectations. While railway infrastructure and system works are excluded from the development approvals process and as such this application, design of these elements will further consider and where necessary seek to reduce noise and vibration outcomes associated with the railway. The project will also continue to work closely with the METRONET Office and other key stakeholders in planning for the adjacent precinct, with a view to achieving best practice outcomes from an integrated transport and land use planning perspective.

Figure 6 - MRS Map



8.1.1 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 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 MEL stations given the surrounding centres are in a state of transition, and the ultimate activity centre station design may vary as the supporting activity centre development evolves.

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.

The Preliminary Place Plan & Indicative Layout Response prepared for the Malaga Station has identified the station starts as a Transit Node (SP6) and Neighbourhood (SP5) type station precinct. In the future, with the development of the urban density around the station, the area will grow into a Town Centre (SP4) type station precinct.

The respective descriptions of these station typologies are as follows:

Transit Node

Transit node precincts primary role is to provide access to stations for a wide catchment with the provision of park and ride and/or transit interchange from other services.

Neighbourhood

Neighbourhood station precincts are primarily residential communities with good transit accessibility and support a basic mix of uses to meet the needs of local residents.

Town Centre




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.

Many of these 'critical elements' are most applicable to future development surrounding the station and is beyond the scope of the Malaga station development. However, the applicable aspects are:

- 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 critical elements to the proposed Malaga station design.

Table 8--Station Critical Element

STATION CRITICAL ELEMENT	DETAILS
Critical Element 4: Intersection and Crossings	
<p><i>Preferred: controlled four way intersection, no splitter lanes.</i></p> <p><i>Considered: Micro roundabout</i></p>	<p>All intersections within the PTA car park and busway are sign-controlled intersections with no splitter lanes. The busway service roads are designed to the required swept path (noting that this area will accommodate over-sized articulated buses).</p>
Critical Element 5a: Transit Integration - Rail	
<p><i>Preferred:</i></p> <div>  <p>Underground Tunnel</p> </div> <div>  <p>Cut and Cover</p> </div> <div>  <p>Open cut</p> </div>	<p>The Malaga Station is designed as an 'at-grade' station with an elevated concourse providing access to the station platforms.</p> <p>This is best described as an 'at-grade' station form, which is a contemplated form of station for Neighbourhood Centres and Transit Note station types.</p> <p>Whilst this is not a preferred design for the station typology, it is a suitable station design, and allows the station to integrate well with the planned future development of a TOD. Malaga Station was previously considered as a station in a cutting, however, the high groundwater table in this area made this a very expensive option. Furthermore, there are a number of advantages to an at-grade station in a future town centre, including:</p> <ul style="list-style-type: none"> - Ability to provide prominent architecture that creates a civic space; - Limited segregation as road crossings can be provided beyond the station; and - Good integration with the centre and bus interchange.
Critical Element 5b: Transit Integration – Bus	
<p><i>Preferred: on street.</i></p> <p><i>Integrated/stacked interchange loop at grade</i></p>	<p>The Malaga station provides an at grade bus interchange immediately adjacent to the station building. This is consistent with the preferred approach.</p>
Critical Element 6: Station Type	
<p><i>Preferred: integrated station, underground station.</i></p>	<p>The following design elements demonstrate that the Malaga Station is best classified as an integrated station, consistent with the 'preferred' approach for a Transport Node / Neighbourhood / 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 includes the integration of the station building with the adjacent Welcome Place, and opportunities for future development adjoining the station. The</p>

STATION CRITICAL ELEMENT	DETAILS
	<p>direct connection between the station building and the future main street also provides a logical connection between the station and future town centre.</p> <p><u>Streetscape to be dedicated for entry ways to the station</u></p> <p>The entrance experience for the Malaga Station is enhanced by the use of a high quality arbour, Welcome Place and open space area. Combined, these areas create clear wayfinding cues to the station entrance, as well as creating a pleasant entrance experience.</p>
Critical Element 7a: Station Dedicated Parking	
<p><i>Preferred (Core): no park'n'ride</i></p> <p><i>Considered (Core): limited park'n'ride (stacked/decked)</i></p>	<p>The Malaga Station provides at grade parking for passengers. This is recognised as a considered form of parking for a transit node / neighbourhood / town centre station precinct type.</p> <p>Providing some degree of parking is a requirement of the SWTC, and is therefore politically a necessary component of delivering the train station. This is particularly important for the Malaga Station, given the surrounding development will likely be a medium-term option.</p> <p>The focus is therefore delivering this parking with the least impact on station amenity, whilst also reducing the barrier to the potential redevelopment and re-use of the car parking areas. As at-grade parking requires the least structural investment, this form of parking is more conducive to urban redevelopment, as compared to stacked or decked parking.</p> <p>Further to the above, stacked/decked parking should be considered only when it is viable to construct it as part of transit oriented development adjacent to the station. Otherwise, the scale of the parking would detract from the amenity of the station and surrounds.</p> <p>In terms of integration with the surrounding areas, the car parking layout is deliberately contained within one single cell to the south-east of the station building, to enable planning and future development of a TOD to the south, west and north of Malaga Station. This parking area is set out with space for future development cells between the parking and main street, which will assist in sleeving the car parking area.</p>

Critical Element 8: Public Realm and Public Open Space

Preferred: people streets
plaza/square, playspace urban
park

The Malaga Station provides a 'Welcome Place' plaza located immediately south of the station building entrance, providing a meeting place where people can congregate or dwell before proceeding on their journeys, as well as increasing the opportunities for mutual passive surveillance. This area is to be developed with high quality landscaping and artworks, and will be the heart of the station precinct and the new Malaga Town Centre.

8.1.2 Planning Control Area No. 145 (PCA 145)

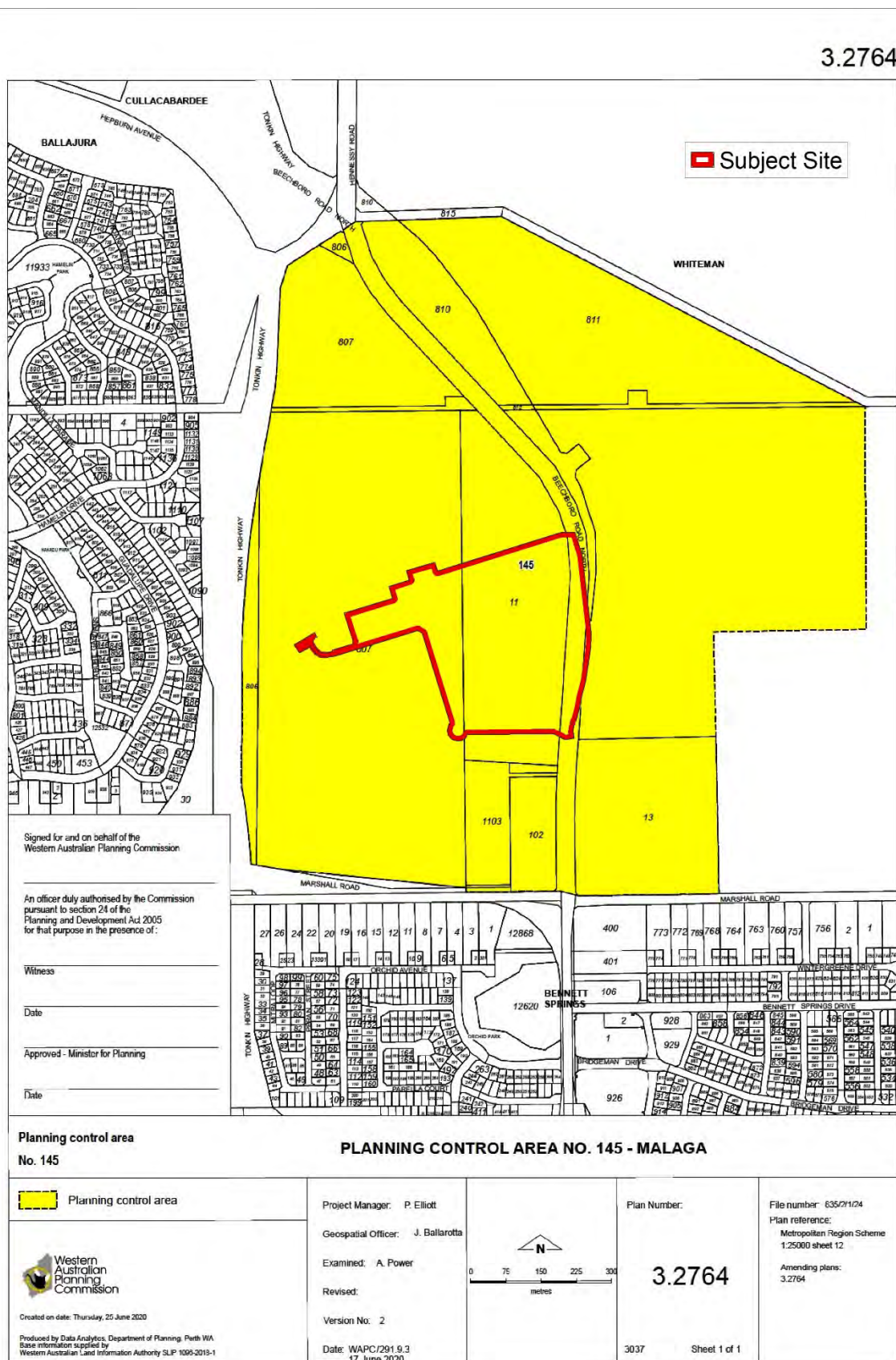
The proposed Malaga Train Station works are wholly located within PCA145, which has been established for the purpose of facilitating the development of the land for the purpose of railways and other related road widening purposes.

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 City of Swan. 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).
- The Commission must then make a decision within 60 days of receiving the forwarded application (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 7-PCA 145



8.2 Local Planning Framework

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 Malaga Station and surrounding Malaga Industrial and Employment Centre is an essential consideration in the successful station planning design, and the driving principles and objectives of the have been considered for this application.

8.2.1 City of Swan Local Planning Scheme No. 17

The City of Swan Local Planning Scheme No. 17 (LPS 17) sets out the local government's planning aims and intentions for the Scheme area. The site is zoned General Rural under LPS 17.

Clause 9.1.2 (note 3b) acknowledges that applications for planning approval for land zoned under the MRS and within a declared Planning Control Area are to be referred by the local government to the Commission in accordance with the requirements of the MRS.

8.2.2 City of Swan Local Planning Strategy

The City of Swan Local Planning Strategy sets out the long-term planning and development direction of the City, with consideration to the State Government's long term growth strategy Perth and Peel @3.5 million.

The Local Planning Strategy acknowledges and plans for a new passenger rail line from the existing Midland Line to the Ellenbrook town centre with additional stations at Morley, Malaga and Ellenbrook. The Strategy identifies opportunities for future urban expansion surrounding the Malaga Station, as illustrated in **Figure 8**.

The Strategy acknowledges the City will take an integrated approach to transport and land use planning, through its land use decision making processes and seeks to increase residential densities near centres of employment shopping and high frequency public transport routes.

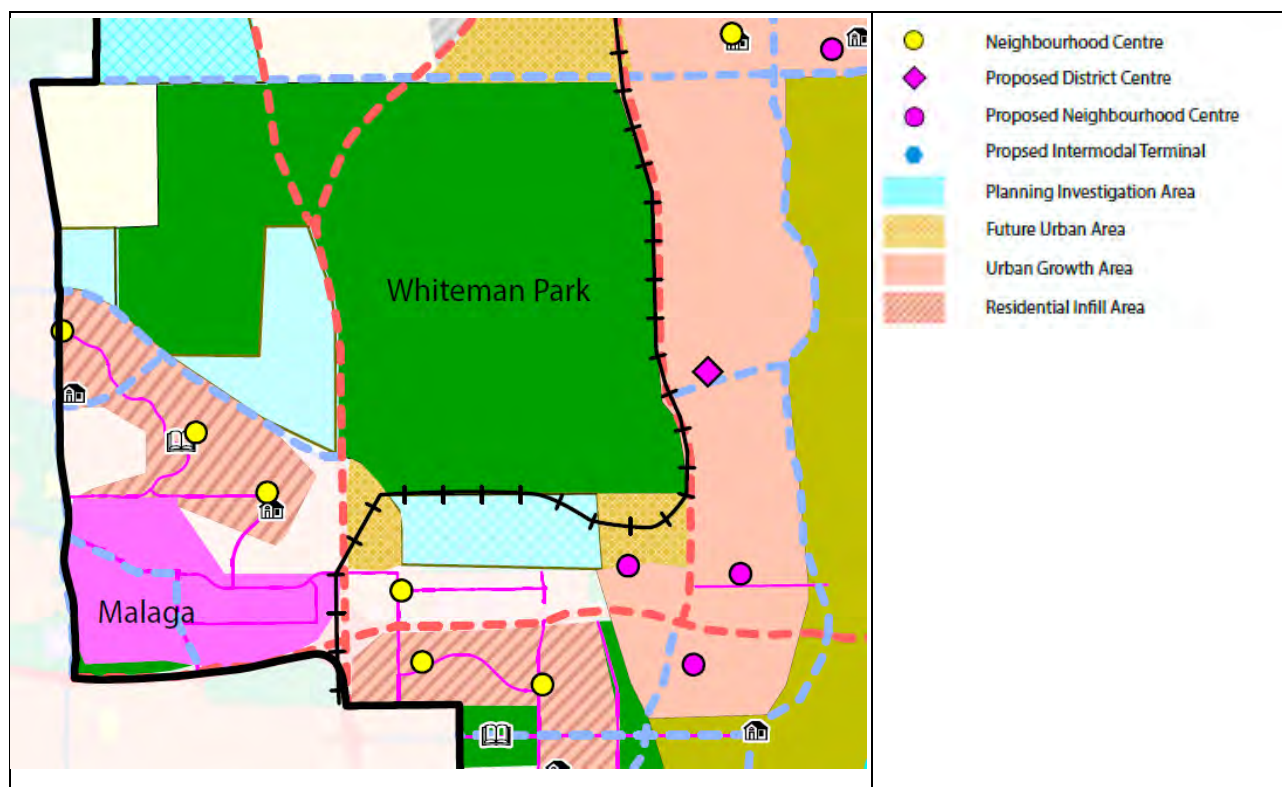


Figure 8 -Extract of the City of Swan Local Planning Strategy Map 1

8.2.3 Perth and Peel @ 3.5 million

Perth and Peel @ 3.5 million guides the future growth of the Perth and Peel regions as a compact consolidated and connected city that can accommodate a population of 3.5 million by 2050.

Perth and Peel @3.5 million and the North-East Sub Regional Planning Framework identify Malaga as a key growth sector for the Perth Metropolitan Area. Malaga is identified as a 'Industrial and Employment Centre' with significant expansions to construction, social assistance, manufacturing and transport, distribution and warehousing, and retail anticipated to service the local and surrounding populations.

These high-level strategic policies directly identify the MEL alignment with a station at Malaga and terminus at Ellenbrook Station. The MEL METRONET initiative is noted as an integral part of service provision within the north east corridor to provide greater connection with the surrounding areas as well as the Perth CBD.

Malaga Station is therefore entirely consistent with the overarching strategic framework. The Station will formulate an integral component of the Malaga Industrial Centre and will assist with the service provision for the emerging population of the sub- region.

Malaga Station is located within the North-East Sub-region with the population predicted to more than double by 2050 – growing from 209,000 people in 2011 to over 450,000 people by 2050. It is expected that this population growth will predominately occur within the City of Swan with an additional 73,450 dwellings required in the City over the next 30 years.

In additions to future development of a town centre immediately adjacent to the Malaga Station, planning investigation areas are identified to the south, east and north-east of the Station to accommodate future development.

Malaga Station provides a critical piece of transport infrastructure underpinning future urban expansion of the North-East Sub-region.

9. Supporting Approvals and Management Plans

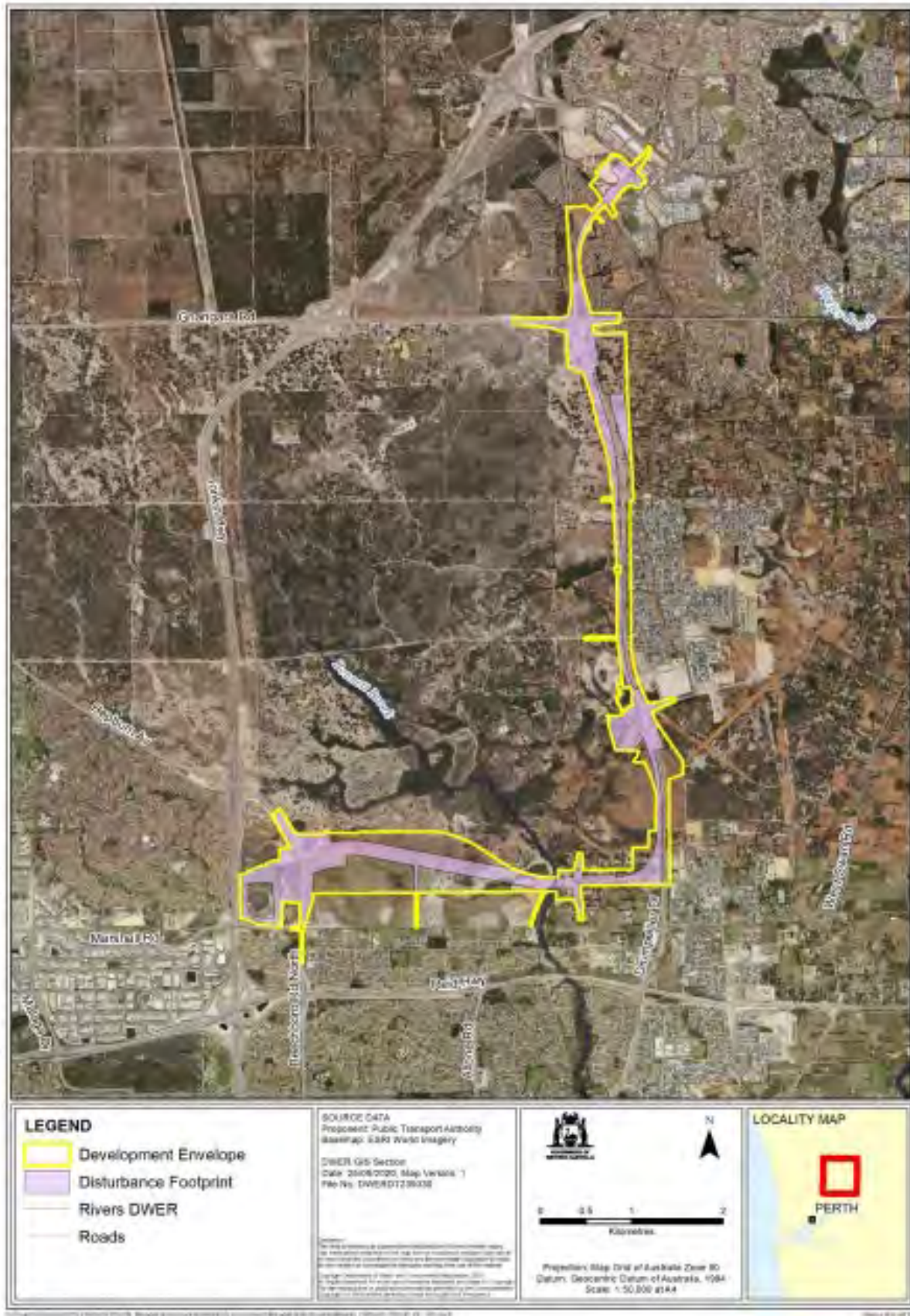
The following table provides a summary of those approvals.

Table 9–Summary of Supporting Approvals and Management Measures

CONSIDERATION	DETAIL
Environmental Approvals	<p>The Morley to Ellenbrook Line clearing works were granted approval by the EPA in December 2020 (Ministerial Statement No. 1156). This approval included the clearing required to:</p> <p><i>Construct and operate a new 13 kilometre railway line between Malaga and Ellenbrook in the City of Swan. The proposal includes the construction of new train stations and associated facilities at Malaga, Whiteman Park and Ellenbrook, and a potential future station at Bennett Springs.</i></p> <p>Approval was granted for the clearing and disturbance if no more than 249ha (of which 152.1ha is native vegetation) for the alignment. Figure 9 below outlines the approved disturbance footprint for this alignment.</p> <p>This clearing approval was subject to a number of notable conditions, including the requirement to establish offsets and management plans to mitigate the environmental impacts of clearing.</p> <p>The Ministerial Statement No. 1156 is provided at Appendix G of this report, and outlines these measures in detail.</p>
Noise Monitoring Program	<p>A noise monitoring program will be implemented within three months of the opening of the MEL 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 MEL operations.</p>
Out of Hours Work	<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 Swan 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 does not restrict these out of hours works (subject to acceptance of the Construction Noise and Vibration Management Plan).</p>

CONSIDERATION	DETAIL
Construction Management	MELConnx's Construction Management Plan has been approved by the PTA and issued for use.
Dilapidation survey	A dilapidation survey, prior to demolition and excavation works commencing on site, will be commissioned 100m beyond the works area to document existing conditions of adjoining properties and infrastructure. A re-inspection post project completion will also be commissioned to assess conditions against those reported before works commenced.
Access and approvals	The Project Alliance will obtain permission for site access to all work areas from the relevant stakeholders prior to commencing construction works. All environmental, LGA and rail authority approvals shall be gained prior to construction works commencing onsite.
Traffic Management Plan	<p>The Project Traffic Management Plan will ensure:</p> <ul style="list-style-type: none"> Existing paths are maintained or alternative sealed pathways are provided. Temporary paths where required will have secure fencing and appropriate lighting Height clearances for roads is not reduced to less than 5.3m where possible. Approval to be sort should this not be possible Ensure security to adjacent properties Construction personnel will be encouraged to use public transport where possible <p>Construction personnel's vehicles or construction vehicles are to park only in designated parking bays within the construction site.</p> <p>It is expected that the delivery of a traffic management plan will be a condition of development approval.</p>
Subdivision Approval	<p>The internal main street connecting to Beechboro Road will ultimately be created as a public road through a subdivision approval. The scope of this development application will include the physical construction of the road, but the subdivision to legally create the road will be completed as a separate process.</p> <p>Importantly, the intent is to have this land dedicated as a public road prior to operation of the Malaga Station.</p>

Figure 9 –Malaga to Ellenbrook Approved Development Envelope



10. Conclusion

The METRONET Morley Ellenbrook Line from Bayswater to Ellenbrook seeks to implement best practice urban design and transport planning principles to the emerging north-east corridor of Perth. The Malaga Station is an exceptional example of this approach, which by placing the Malaga multi-modal station within the future Malaga town centre will establish the opportunities for future development which does not rely solely on private vehicle travel.

The station design has been well thought out, with careful consideration to ensure the station building and its supporting facilities interface appropriately with the future planned main street and development sites around the station. This has included careful consideration to matters including desire lines, road hierarchy, potential future land uses, pedestrian movements and their interface with the station building and supporting infrastructure.

This report concludes that the Malaga Station achieves these essential pillars of a contemporary station, as evidenced through the following:

- A pedestrian first approach to the station building design, which provides for logical and direct links to the future main street and open spaces.
- The co-location of the bus interchange and station building to reduce the total journey time for multi-modal trips, making bus-to-train transport a more practical and feasible option for patrons. The inclusion of a continuous canopy, linking the bus interchange to the station building, provides an improved quality of connection for transferring passengers.
- Providing essential pedestrian connecting infrastructure, including an extension of the existing shared path network to the Malaga Station.
- Recognising the need for park-and-ride facilities for a train station in an emerging urban setting, the station design accommodates car parking in a manner which is sleeved by future development sites.
- Development of the Welcome Place is proposed to create an attractive and usable space within the immediate vicinity of the station and provides a connection to the shared path and future town centre.

Whilst the development application is for 'public works' and has limited statutory assessment controls under the local government framework, this has in no way resulted in a compromised design outcome for the Malaga 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 Malaga Station is designed to be fit for purpose and will be the catalyst for further supporting high quality development within the future Malaga town centre and surrounding areas.

Disclaimer

This report is dated 26 August 2021 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 MELConnx / Public Transport Authority (**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).

In preparing this report, Urbis was required to make judgements which may be affected by unforeseen future events, the likelihood and effects of which are not capable of precise assessment.

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.

In preparing this report, Urbis may rely on or refer to documents in a language other than English, which Urbis may arrange to be translated. Urbis is not responsible for the accuracy or completeness of such translations and disclaims any liability for any statement or opinion made in this report being inaccurate or incomplete arising from such translations.

Whilst Urbis has made all reasonable inquiries it believes necessary in preparing this report, it is not responsible for determining the completeness or accuracy of information provided to it. Urbis (including its officers and personnel) is not liable for any errors or omissions, including in information provided by the Instructing Party or another person or upon which Urbis relies, provided that such errors or omissions are not made by Urbis recklessly or in bad faith.

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-Certificates of Title

WESTERN



AUSTRALIA

REGISTER NUMBER

810/DP418162DUPLICATE
EDITION**1**

DATE DUPLICATE ISSUED

17/3/2021

RECORD OF CERTIFICATE OF TITLE

UNDER THE TRANSFER OF LAND ACT 1893

VOLUME
2999FOLIO
678

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.

BGRoberts
REGISTRAR OF TITLES

**LAND DESCRIPTION:**

LOT 810 ON DEPOSITED PLAN 418162

REGISTERED PROPRIETOR:
 (FIRST SCHEDULE)

WESTERN AUSTRALIAN PLANNING COMMISSION OF 140 WILLIAM STREET PERTH WA 6000
 (AF O643858) REGISTERED 16/2/2021

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

1. EXCEPT AND RESERVING METALS, MINERALS, GEMS AND MINERAL OIL SPECIFIED IN TRANSFER 428/1908. AS TO PORTION ONLY SEE DEPOSITED PLAN 31416.
2. E663238 EASEMENT TO STATE ENERGY COMMISSION OF WA FOR ELECTRICITY PURPOSES - SEE DEPOSITED PLAN 407965. REGISTERED 26/7/1991.

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:	DP418162
PREVIOUS TITLE:	2925-217
PROPERTY STREET ADDRESS:	NO STREET ADDRESS INFORMATION AVAILABLE.
LOCAL GOVERNMENT AUTHORITY:	CITY OF SWAN
RESPONSIBLE AGENCY:	WESTERN AUSTRALIAN PLANNING COMMISSION



Application A842954

WESTERN



AUSTRALIA

Volume 531 Folio 70A

1383 103

CERTIFICATE OF TITLE

UNDER THE "TRANSFER OF LAND ACT, 1893" AS AMENDED

DEPOSITED PLAN 407958
LODGED. (SUNDAY ROL.
N351752)

I certify that the person described in the First Schedule hereto is the registered proprietor of the undermentioned estate in the undermentioned land subject to the easements and encumbrances shown in the Second Schedule hereto.

DATED 28th June, 1974

REGISTRAR OF TITLES

ESTATE AND LAND REFERRED TO

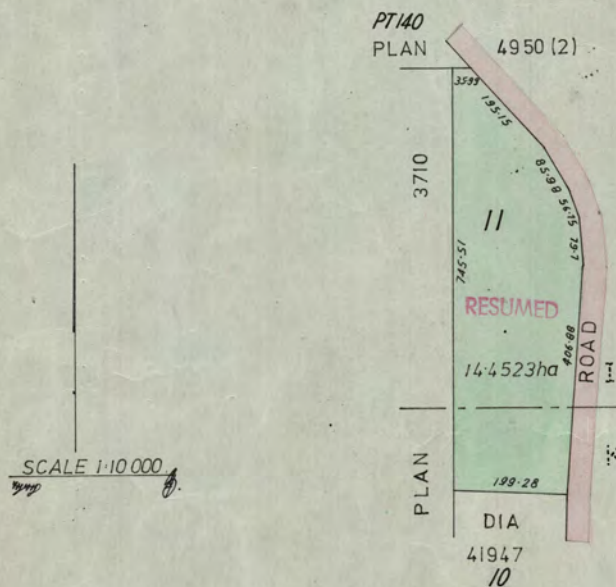
Estate in fee simple in portion of each of Swan Locations I and K and being Lot 11 on Diagram 46462, delineated and coloured green on the map in the Third Schedule hereto.

FIRST SCHEDULE (continued overleaf)L. D. Marshall Holding Co. Pty. Ltd., of care of L.B. McDonald & Associates, 8 The Esplanade, PerthSECOND SCHEDULE (continued overleaf)

1. CAVEAT A842956. Lodged 28.6.74 at 2.260'e.

Madwards

REGISTRAR OF TITLES

THIRD SCHEDULE

PUBLIC WORKS ACT 1902-1953

R.D. 47-79

Gaz. 20-7-79

Plan

Whole resumed and vested in
Metropolitan Region Planning Authority*Limbrough*
Registrar of Titles

PUBLIC WORKS ACT 1902-1953

In the portion resumed Gaz. 20-7-79

the right to mines of coal or other
minerals is resumed and re-vested in Her
Majesty as of her former estate.*Limbrough*
Registrar of TitlesNOTE: RULING THROUGH AND SEALING WITH THE OFFICE SEAL INDICATES THAT AN ENTRY NO LONGER HAS EFFECT.
ENTRIES NOT RULED THROUGH MAY BE AFFECTED BY SUBSEQUENT ENDORSEMENTS.

30267/8/73-30M-O/SOL

PERSONS ARE CAUTIONED AGAINST ALTERING OR ADDING TO THIS CERTIFICATE OR ANY NOTIFICATION HEREON

FIRST SCHEDULE (continued)

NOTE: RULING THROUGH AND SEALING WITH THE OFFICE SEAL INDICATES THAT AN ENTRY NO LONGER HAS EFFECT.
ENTRIES NOT RULED THROUGH MAY BE AFFECTED BY SUBSEQUENT ENDORSEMENTS.

REGISTERED PROPRIETOR	INSTRUMENT		REGISTERED	TIME	SEAL	INITIALS
	NATURE	NUMBER				
Glenda Joyce Ruchby of 1 Malsbury Street, Bioton, Secretary.	Transfer	4842955	28.6.74	2.26		B
The correct name and addition of the proprietor is Glenda Joyce Sommerville of 80 Fremantle Road, Mandurah, Married Woman.	Application	B352606	14.7.77	10.16		A
Lidia Gurgone, of 46 Farley Way, Bayswater, Married Woman, one undivided eighth share, Salvatore Gurgone, of 46 Farley Way, Bayswater, Taxi Proprietor, three undivided eighth shares, and Carmelo Ioppolo, of 10 1/2 Mile Peg, Wanneroo, Real Estate Salesman, four undivided eighth shares, as tenants in common.	Transfer	B352607	14.6.77	10.16		M

SECOND SCHEDULE (continued)

NOTE: RULING THROUGH AND SEALING WITH THE OFFICE SEAL INDICATES THAT AN ENTRY NO LONGER HAS EFFECT.
ENTRIES NOT RULED THROUGH MAY BE AFFECTED BY SUBSEQUENT ENDORSEMENTS.

INSTRUMENT	NATURE	NUMBER	PARTICULARS		REGISTERED	TIME	SEAL	INITIALS	CANCELLATION	NUMBER	REGISTERED OR LODGED	SEAL	INITIALS
Mortgage		A879952	to Myrtle Marshall of West Swan Road, West Swan, Married Woman.		1.10.74	9.31		P	Discharged	B352604	14.6.77		M
Mortgage		A918488	to The National Bank of Australasia Limited.		30.1.75	9.59		P	Discharged	B352605	14.6.77		M
Memorial		B228580	Section 46 of Land Tax Assessment Act 1976 as amended.		12.10.76	2.19		P	Certificate	B352603	14.6.77		M
Mortgage		B352609	to Myrtle Marshall, of 78 West Swan Road, West Swan, Married Woman.		14.6.77	10.16		M					
Mortgage		B352608	to Glenda Joyce Sommerville, of 80 Fremantle Road, Mandurah, Married Woman.		14.6.77	10.16		M					
Caveat		B422997	As to the interest of Carmelo Ioppolo only.					P					
Caveat		B445510	Lodged 8.12.77 at 2.51 o'clock.					P					
Re Mortgage		B529944	Fourteen days notice sent on Caveats A842956, B422997 and B446510. on 29.5.78 Limit 13.6.78.					P					
Transfer		B624046	of Mortgage B352608 to Charles Henry Attwood, Farmer and Rose Fletcher Attwood, Married Woman both of Capel, as tenants in common. (Dup title not prod.)					P	Withdrawn	B626298	27.11.78		M
Caveat		B645426	Lodged 8.1.79 at 1.53 o'clock.		22.11.78	2.41		P					

CERTIFICATE OF TITLE VOL.

1383 103

Appendix B - Development Plans



MORLEY ELLENBROOK LINE (MEL)
MALAGA STATION
ARCHITECTURE

PRELIMINARY ONLY
NOT FOR CONSTRUCTION

REFERENCE DESIGN

B02	13/08/21	DA Issue		TP	ES	CT	
B01	06/08/21	Draft DA Issue for MELconnx Review		TP	TA	CT	
A	07/06/21	REFERENCE DESIGN		TP	TA	CT	MA
A02	29/04/21	Issued for RD - IDC		TP	TA	CT	
A01	26/03/21	50% Reference Design		TP	TA	CT	
REV	DATE	AMENDMENT		DSN	DRN	CHK	APP
ORIG SIZE							
A1							



REFERENCES	SCALE	DESIGNED	T.PRIEST
	(@ A1)	DRAWN	E.SIMPSON
		CHECKED	C.TESTA
	DATUM	APPROVED	M.ARAVIND
	HORIZONTAL: PCG2020	DATE	06/08/21
	VERTICAL: AHD71		

	MORLEY ELLENBROOK LINE
MALAGA STATION - ARCHITECTURE	
COVER PAGE	
SHEET 01	
PTA Drawing No: 25-A-287-AR0001	Rev: B02

Drawing Number Sheet Title

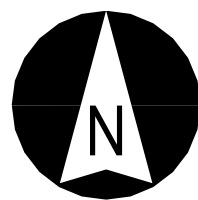
Revision

25-A-287-AR0022 BUS INTERCHANGE - REFLECTED CEILING PLAN
25-A-287-AR0049 GENERAL ARRANGEMENT FLOOR PLAN - CONCOURSE ACCOMMODATION - ROOF LEVEL - SHEET 1
25-A-287-AR0050 GENERAL ARRANGEMENT FLOOR PLAN - CONCOURSE ACCOMMODATION - ROOF LEVEL - SHEET 2
25-A-287-AR0051 GENERAL ARRANGEMENT FLOOR PLAN - ROOF LEVEL - SHEET 1
25-A-287-AR0052 GENERAL ARRANGEMENT FLOOR PLAN - ROOF LEVEL - SHEET 2
25-A-287-AR0053 GENERAL ARRANGEMENT FLOOR PLAN - ROOF LEVEL - SHEET 3
25-A-287-AR0084 REFLECTED CEILING PLAN - PLATFORM LEVEL - SHEET 1
25-A-287-AR0085 REFLECTED CEILING PLAN - PLATFORM LEVEL - SHEET 2
25-A-287-AR0086 REFLECTED CEILING PLAN - PLATFORM LEVEL - SHEET 3
25-A-287-AR0087 REFLECTED CEILING PLAN - CONCOURSE ACCOMMODATION LEVEL - SHEET 1
25-A-287-AR0088 REFLECTED CEILING PLAN - CONCOURSE ACCOMMODATION LEVEL - SHEET 2
25-A-287-AR0089 REFLECTED CEILING PLAN - CONCOURSE LEVEL - SHEET 1
25-A-287-AR0090 REFLECTED CEILING PLAN - CONCOURSE LEVEL - SHEET 2
25-A-287-AR0102 ENLARGED PLANS - CONCOURSE ACCOMMODATION
25-A-287-AR0106 ENLARGED PLANS - WET AREAS - PLATFORM
25-A-287-AR0107 ENLARGED PLANS - WET AREAS - CONCOURSE
25-A-287-AR0109 ENLARGED PLANS - BUS INTERCHANGE AND ASSOCIATED STAFF FACILITIES
25-A-287-AR0113 ENLARGED PLANS - DETAIL PLAN - VT LIFT
25-A-287-AR0114 ENLARGED PLANS - DETAIL PLAN - VT LIFT
25-A-287-AR0115 ENLARGED PLANS - DETAIL PLAN - CONCOURSE LIFT
25-A-287-AR0116 ENLARGED PLANS - DETAIL PLAN - CONCOURSE LIFT
25-A-287-AR0117 DETAILS - MAIN CANOPY DETAILS - SHEET 01
25-A-287-AR0118 DETAILS - MAIN CANOPY DETAILS - SHEET 02
25-A-287-AR0119 DETAILS - SKYLIGHT - SHEET 1
25-A-287-AR0120 DETAILS - SKYLIGHT - SHEET 2
25-A-287-AR0121 DETAILS - STATION COLUMN AND WALL DETAILS - SHEET 01
25-A-287-AR0122 DETAILS - BUILDING JUNCTIONS
25-A-287-AR0123 VERTICAL TRANSPORTATION - CONCOURSE STAIR
25-A-287-AR0124 VERTICAL TRANSPORTATION - PLATFORM STAIR
25-A-287-AR0126 OVERALL SECTIONS - STATION - SHEET 02
25-A-287-AR0129 OVERALL SECTIONS - STATION - SHEET 03
25-A-287-AR0130 OVERALL SECTIONS - STATION - SHEET 04
25-A-287-AR0132 OVERALL SECTIONS - STATION - SHEET 06
25-A-287-AR0133 OVERALL SECTIONS - STATION - SHEET 07
25-A-287-AR0134 DETAILED SECTIONS - MAIN CANOPY
25-A-287-AR0135 DETAILED SECTIONS - VT BUILDING - SHEET 1
25-A-287-AR0136 DETAILED SECTIONS - VT BUILDING - SHEET 2
25-A-287-AR0137 DETAILED SECTIONS - CONCOURSE LEVEL - SHEET 1
25-A-287-AR0139 DETAILED SECTIONS - CONCOURSE LEVEL - SHEET 2
25-A-287-AR0140 DETAILED SECTIONS - PLAN - LIFT DETAIL
25-A-287-AR0141 VERTICAL TRANSPORTATION - BALUSTRADE

NOT FOR CONSTRUCTION

REFERENCE DESIGN

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PRELIMINARY ONLY
NOT FOR CONSTRUCTION

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B01	06/08/21	Draft DA Issue for MELconnx Review		TP	TA	CT			
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REV	DATE			DSN	DRN	CHK		APP	
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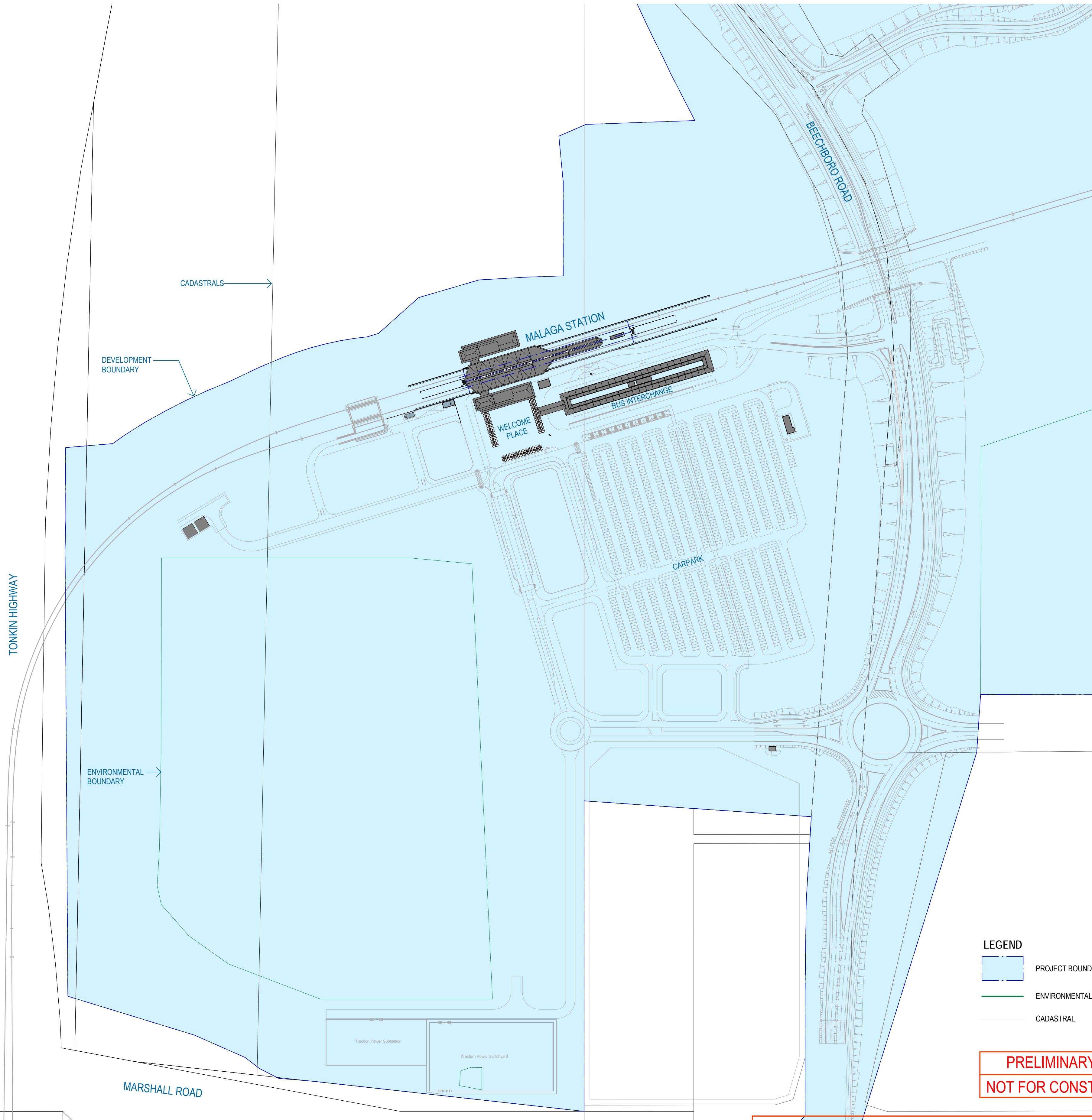
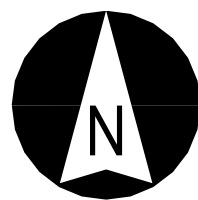
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		M.ARAVIND
		DATE
		06/08/21

DATUM

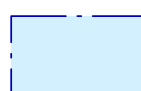

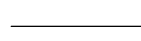
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VERTICAL: AHD71

	MORLEY ELLENBROOK LINE
MALAGA STATION - ARCHITECTURE	
OVERALL PLANS	
LOCATION PLAN	
PTA Drawing No: 25-A-287-AR0012	Rev: B02



LEGEND

-  PROJECT BOUNDARY
-  ENVIRONMENTAL BOUNDARY
-  CADASTRAL

PRELIMINARY ONLY
NOT FOR CONSTRUCTION

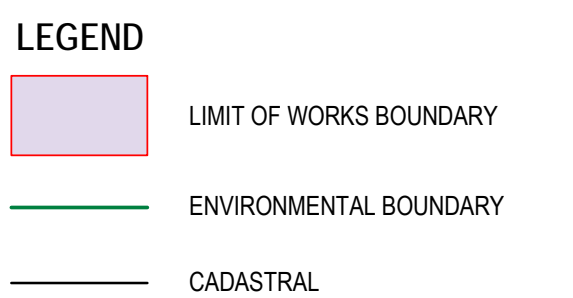
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		DRAWN E.SIMPSON
		CHECKED C.TESTA
		APPROVED M.ARAVIND
		DATE 06/08/21

	MORLEY ELLENBROOK LINE
MALAGA STATION - ARCHITECTURE	
OVERALL PLANS	
LAND OWNERSHIP PLAN	
PTA Drawing No: 25-A-287-AR0013	Rev: B02



REFERENCE DESIGN



 Government of Western Australia Public Transport Authority		MORLEY ELLENBROOK LINE	
MALAGA STATION - ARCHITECTURAL			
OVERALL PLANS			
LIMIT OF WORKS PLAN			
PTA Drawing No: 25-A-287-AR0014			Rev: B02

CAD DRAWING PATHNAME BIM 360://160729 Metronet Morley Ellenbrook Line/25-B-287-AR0001.rvt




-
- The site plan illustrates the Malaga Station and its immediate surroundings. Key features include:
- Malaga Station:** The central building complex, with an entry level paving area of 800m².
 - Bus Interchange:** Located to the right of the station, featuring bus interchange accommodation and a bicycle shelter (future provision shown dashed).
 - Carpark:** A large parking area to the right of the bus interchange, with a reference to civil and landscape plans.
 - Future Development Lot:** Several areas designated for future development, including a lot adjacent to the station and a larger lot to the south.
 - Services Road:** A road running along the left side of the station.
 - Infrastructure:** Includes a bulk bin store (15m²), a transformer (30m²), an irrigation tank (7m x 25m), a western power substation (25m²) and switchboard, and a future carpark (indicative only).
 - Other Features:** A motorcycle canopy for 20 bays, parking machines (1 x smart parker, 1 x pay by plate), a radio mast, and a ring main unit.
- The plan also shows various roads, including Kiss N Ride, and specific coordinates for key points of interest.

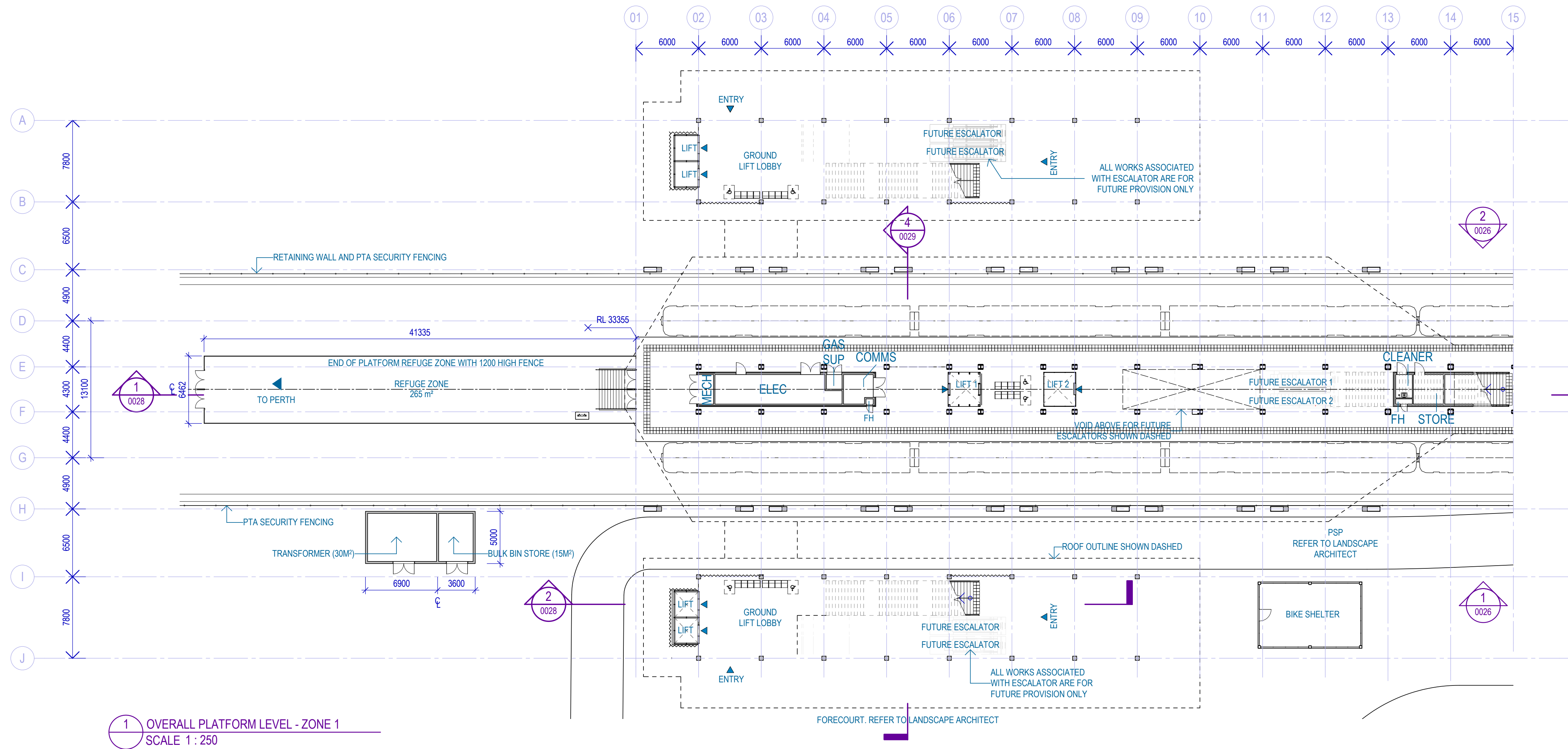
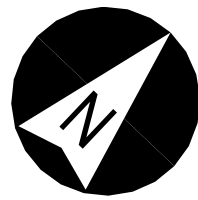
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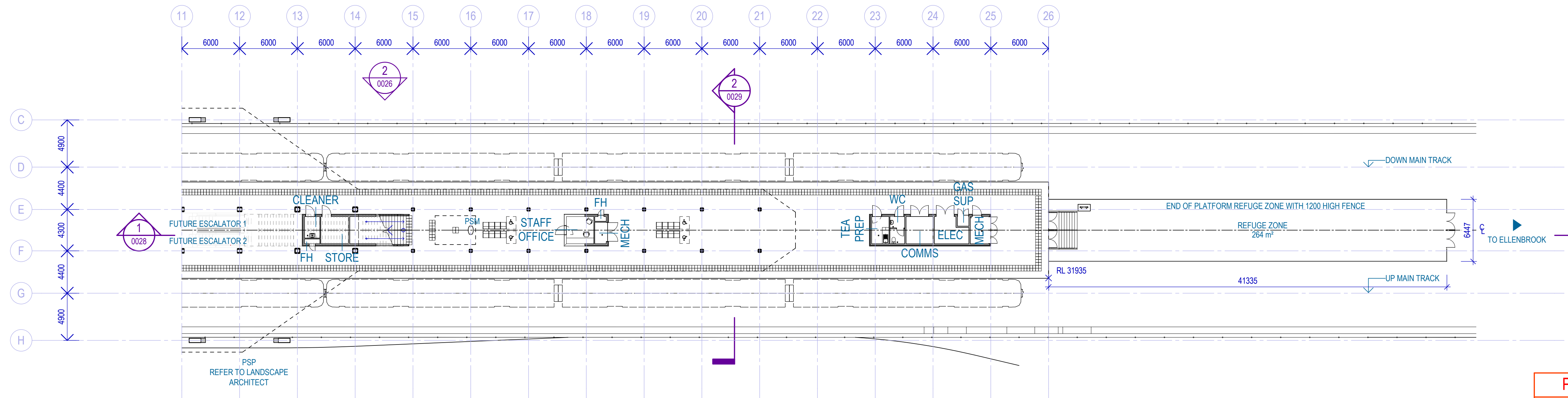
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	Government of Western Australia Public Transport Authority		MORLEY ELLENBROOK LINE	
	MALAGA STATION - ARCHITECTURE			
	OVERALL PLANS			
	SITE PLAN & GRID SETOUT			
	PTA Drawing No: 25-A-287-AR0015			Rev: B02

CAD DRAWING PATHNAME BIM 360://160729 Metronet Morley Ellenbrook Line/25-B-287-AR0001.rvt



1 OVERALL PLATFORM LEVEL - ZONE 1
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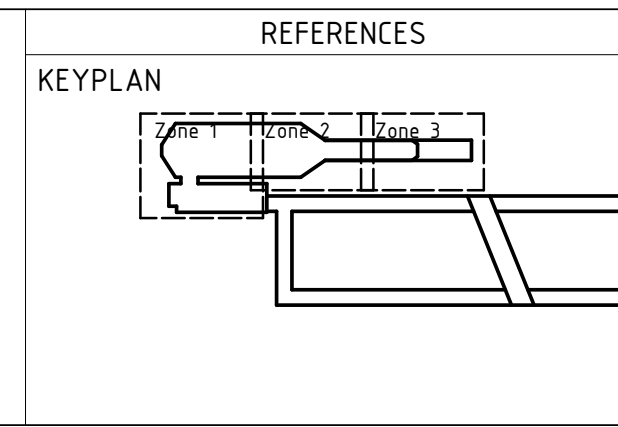
2 OVERALL PLATFORM LEVEL - ZONE 2
SCALE 1 : 250

PRELIMINARY ONLY
NOT FOR CONSTRUCTION

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B01	06/08/21	Draft DA Issue for MELconnx Review	TP	TA	CT	
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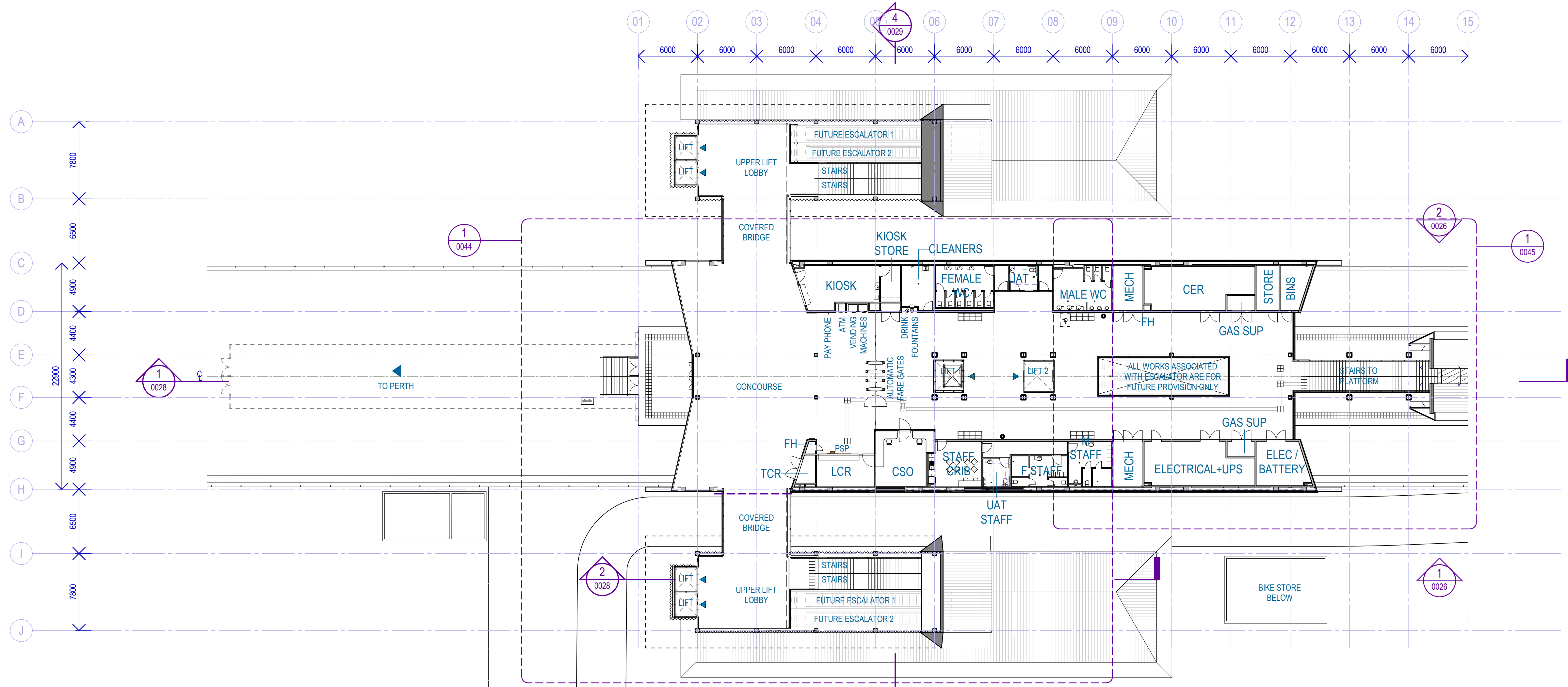


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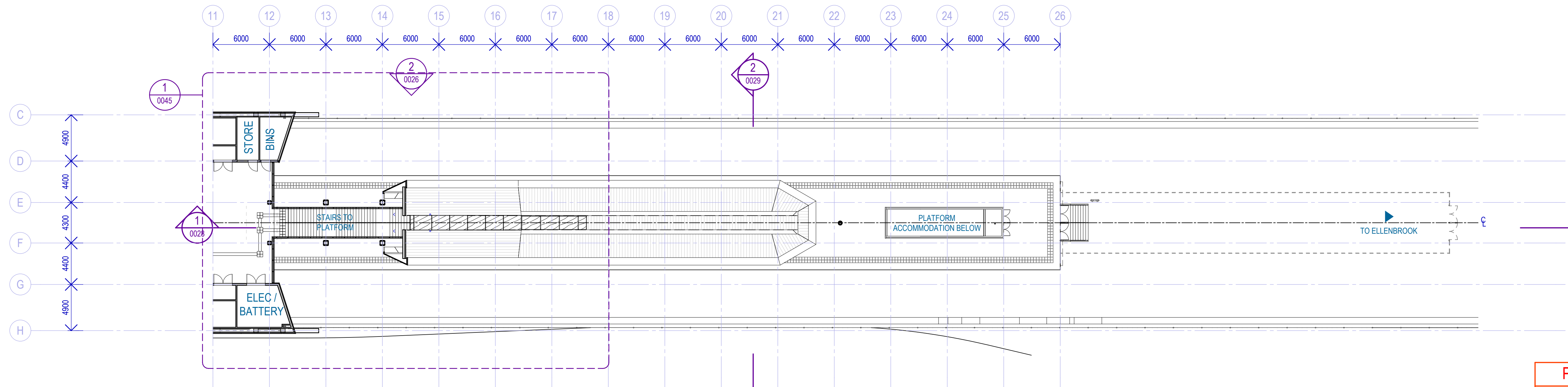
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DESIGNED T.PRIEST
DRAWN E.SIMPSON
CHECKED C.TESTA
APPROVED M.ARAVIND
DATE 06/08/21

	MORLEY ELLENBROOK LINE
MALAGA STATION - ARCHITECTURE	
STATION OVERALL PLAN	
PLATFORM LEVEL	
PTA Drawing No: 25-A-287-AR0017	Rev: B02



1 OVERALL STATION CONCOURSE - ZONE 1
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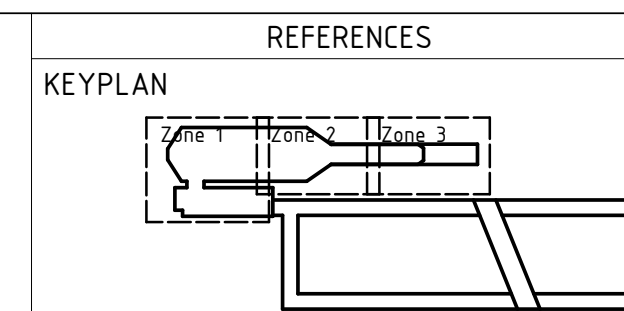


2 OVERALL STATION CONCOURSE - ZONE 2
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PRELIMINARY ONLY
NOT FOR CONSTRUCTION

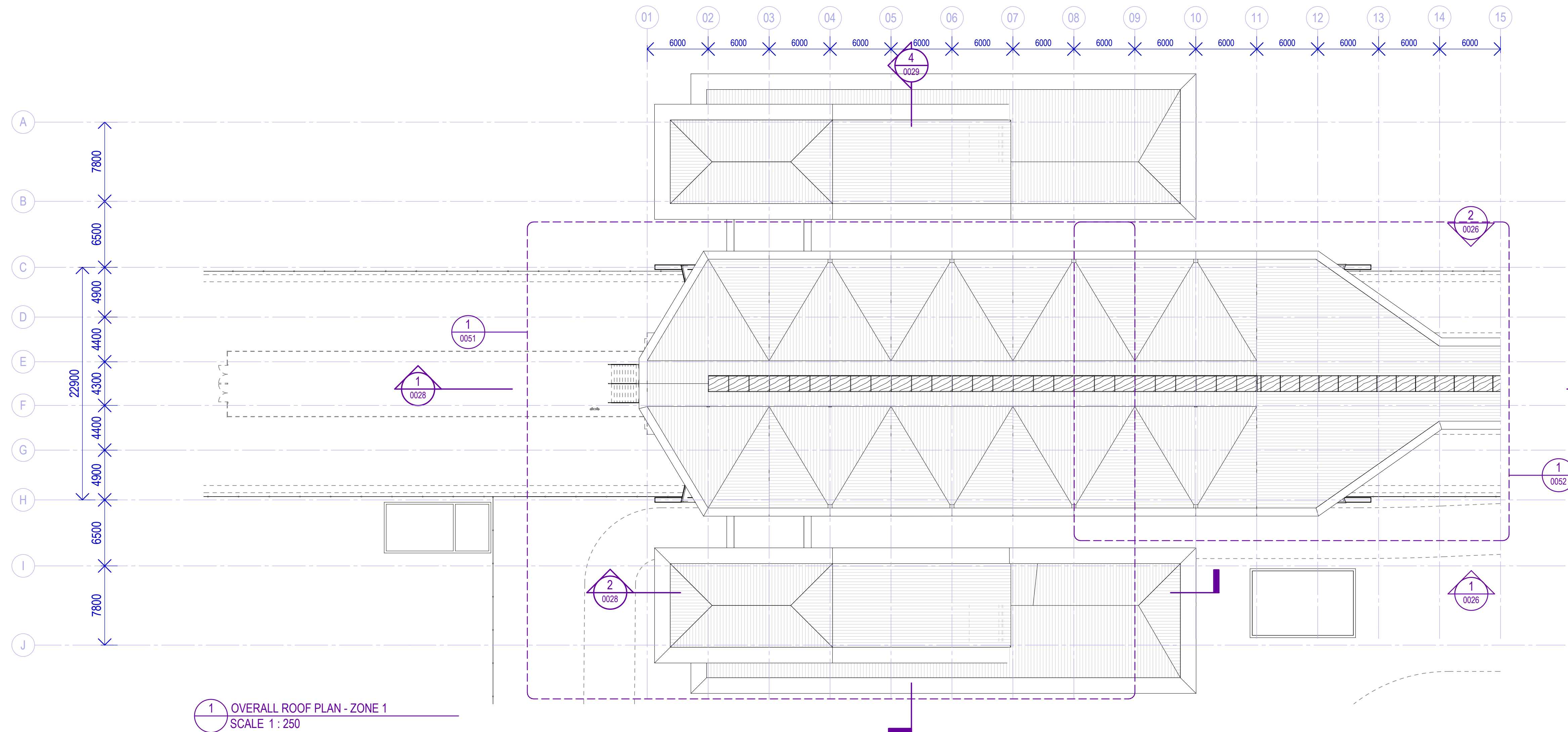
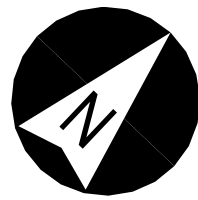
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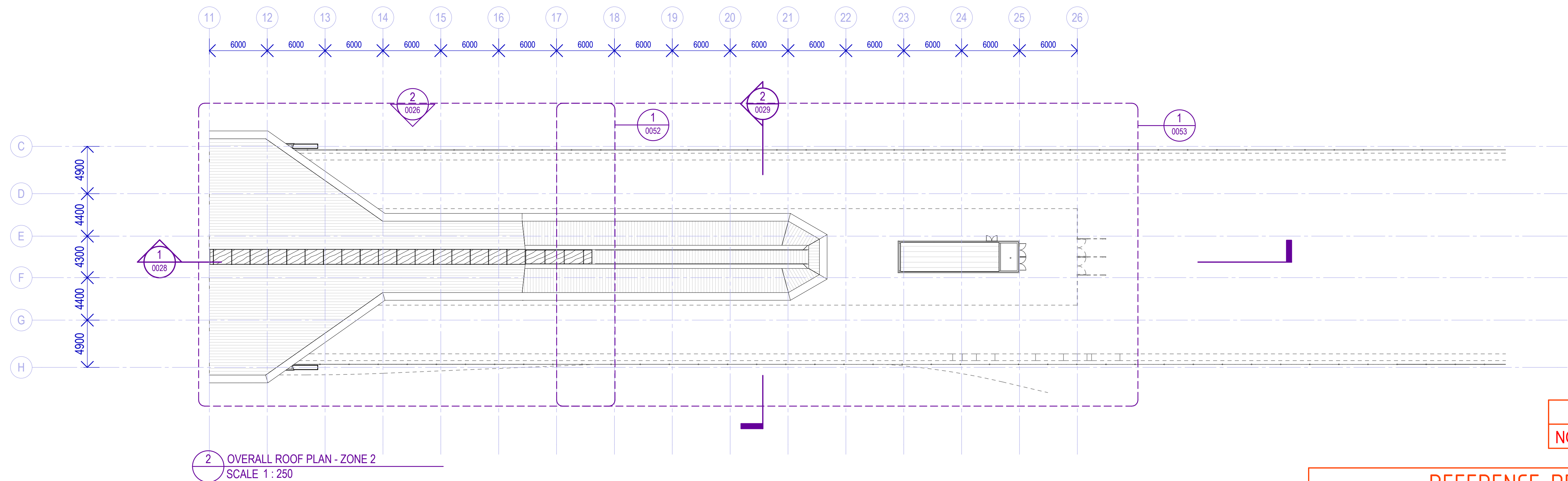


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DRAWN	E.SIMPSON	
CHECKED	C.TESTA	
APPROVED	M.ARAVIND	
DATE	06/08/21	

	MORLEY ELLENBROOK LINE
MALAGA STATION - ARCHITECTURE	
STATION OVERALL PLAN	
CONCOURSE LEVEL	
PTA Drawing No: 25-A-287-AR0018	Rev: B02



1 OVERALL ROOF PLAN - ZONE 1
SCALE 1 : 250



2 OVERALL ROOF PLAN - ZONE 2
SCALE 1 : 250

PRELIMINARY ONLY
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REFERENCE DESIGN

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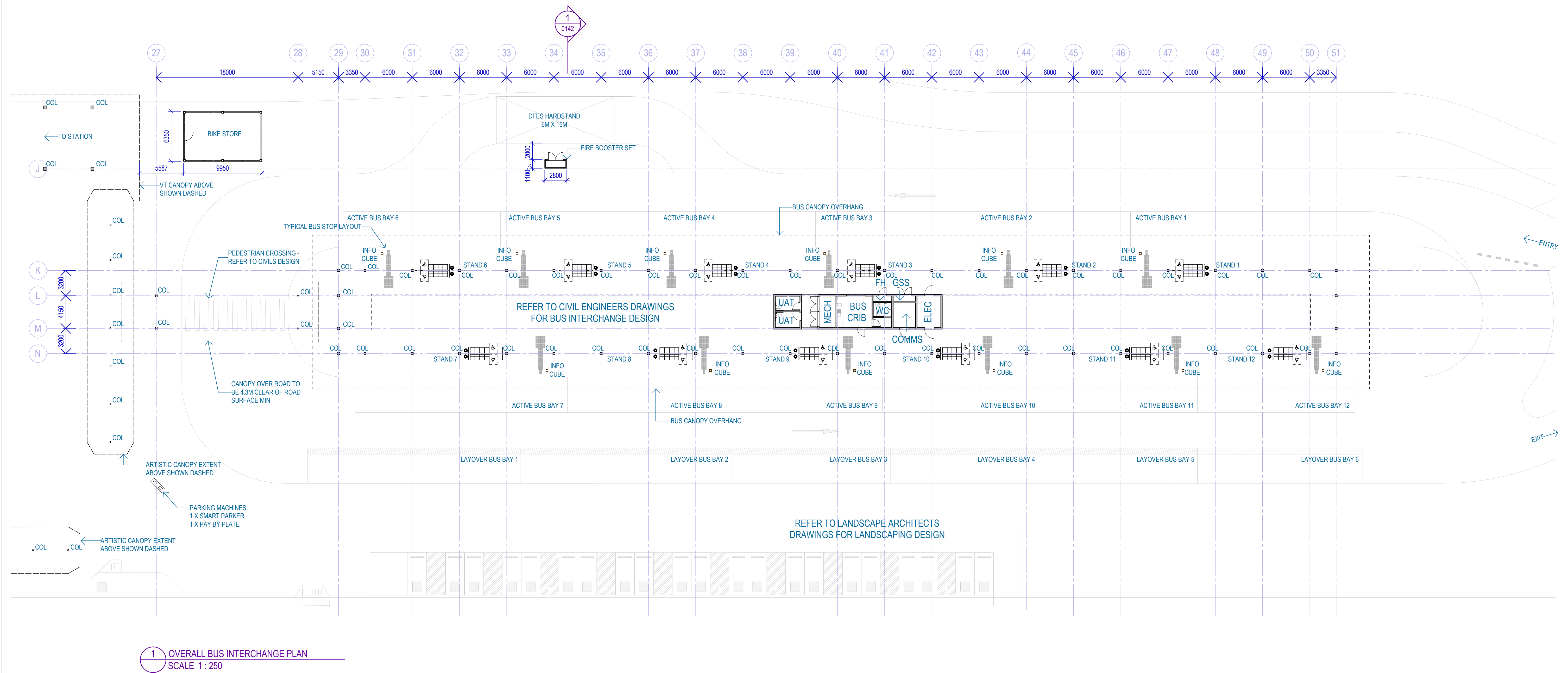
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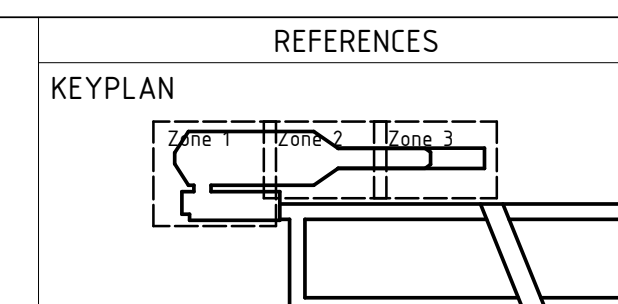
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DRAWN	E.SIMPSON
CHECKED	C.TESTA
APPROVED	M.ARAVIND
DATE	06/08/21

	MORLEY ELLENBROOK LINE
MALAGA STATION - ARCHITECTURE	
STATION OVERALL PLAN	
ROOF	
PTA Drawing No: 25-A-287-AR0019	Rev: B02



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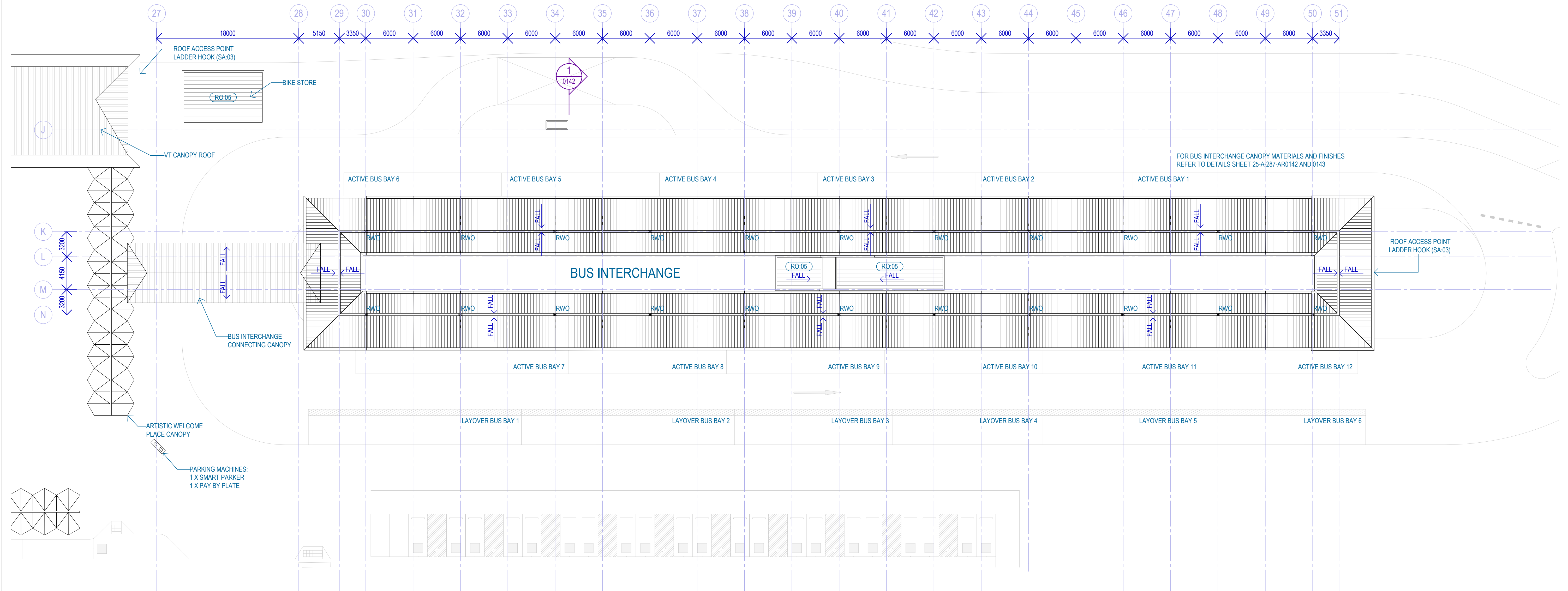
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APPROVED	M.ARAVIND
DATE	06/08/21

Government of Western Australia
Public Transport Authority

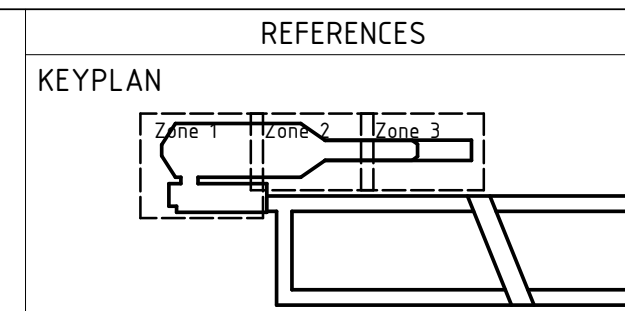
MORLEY ELLENBROOK LINE

MALAGA STATION - ARCHITECTURE
BUS INTERCHANGE
PLAN

PTA Drawing No: 25-A-287-AR0020	Rev: B02
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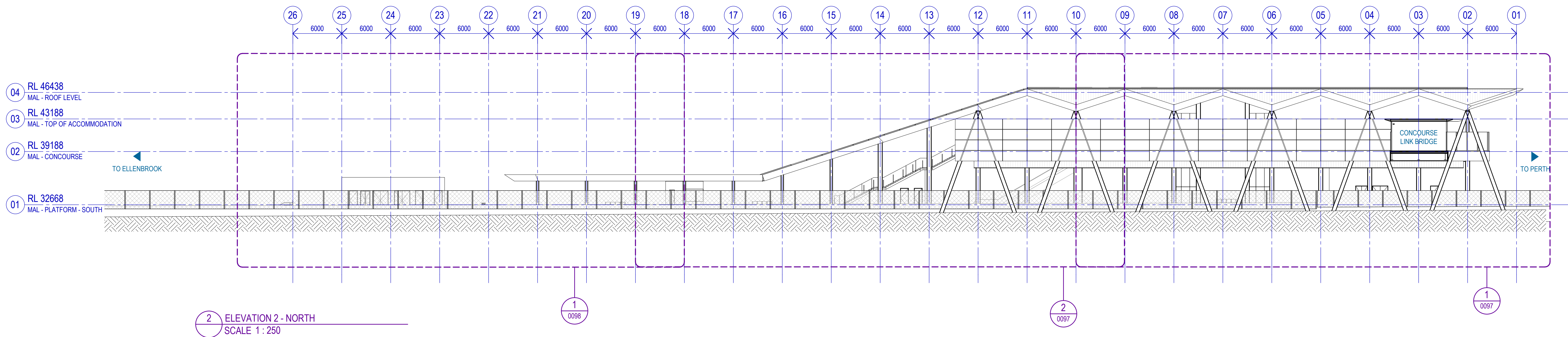
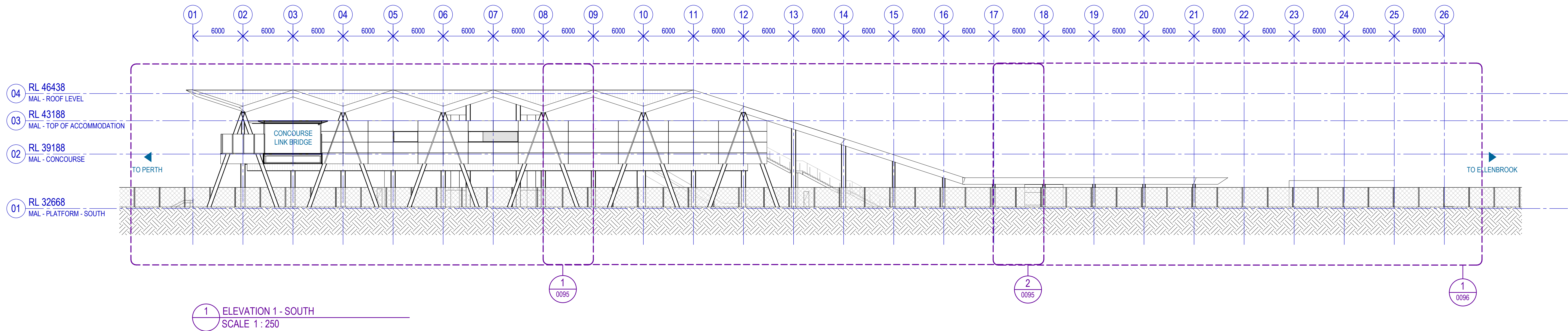


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 Government of Western Australia Public Transport Authority	MORLEY ELLENBROOK LINE	
	MALAGA STATION - ARCHITECTURE	
	BUS INTERCHANGE	
	ROOF PLAN	
PTA Drawing No: 25-A-287-AR0021		Rev: B02



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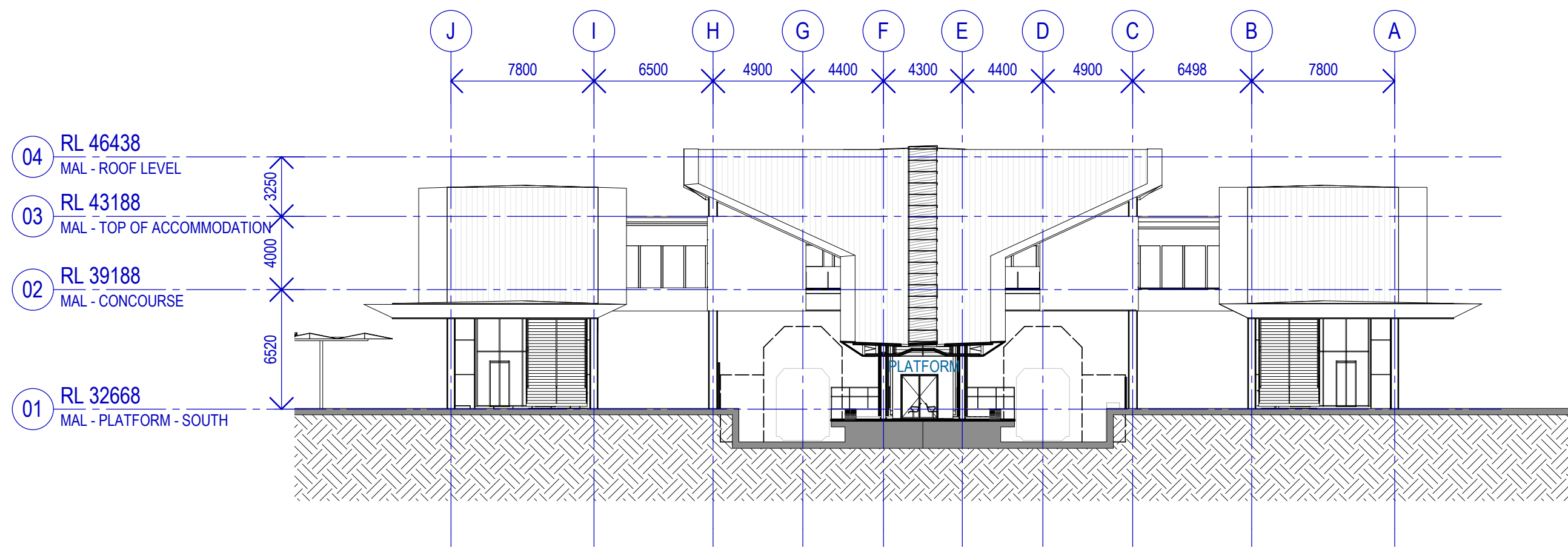


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		DATE 06/08/21

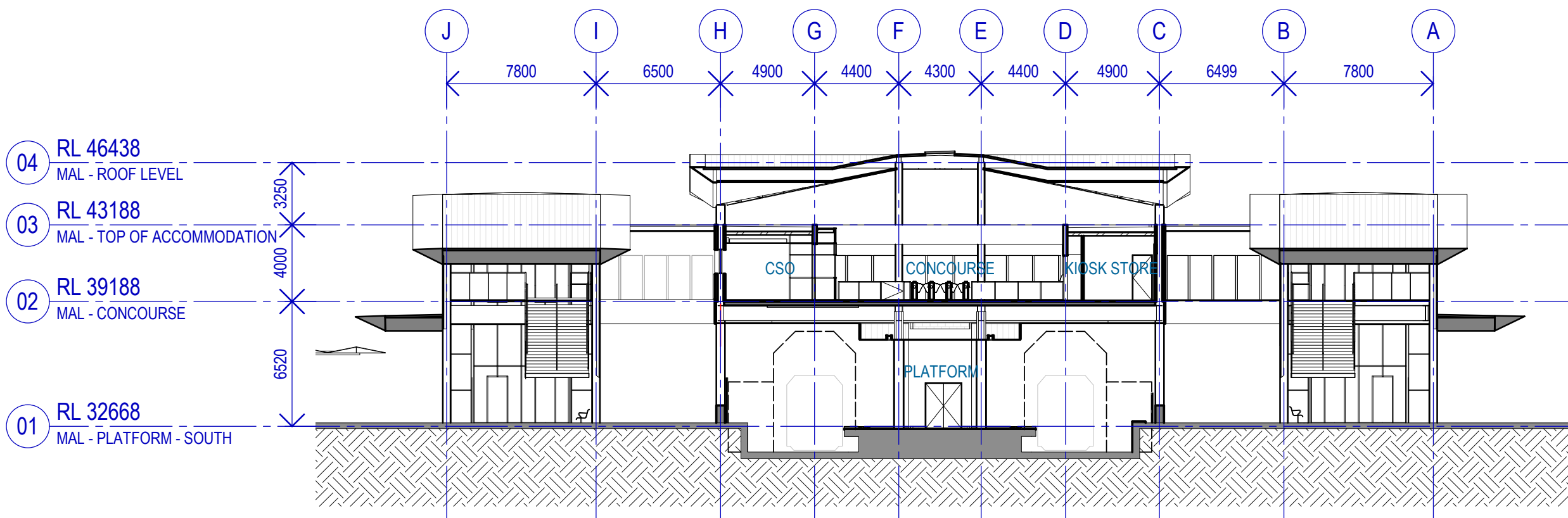
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MALAGA STATION - ARCHITECTURE	
OVERALL ELEVATIONS	
STATION ELEVATION - SHEET 1	
PTA Drawing No: 25-A-287-AR0026	Rev: B02



 Government of Western Australia Public Transport Authority		MORLEY ELLENBROOK LINE	
MALAGA STATION – ARCHITECTURE			
OVERALL SECTIONS			
SECTIONS – SHEET 1			
PTA Drawing No: 25-A-287-AR0028			Rev: B02




2 SECTION 3
SCALE 1 : 250



4 SECTION 5
SCALE 1 : 250

PRELIMINARY ONLY
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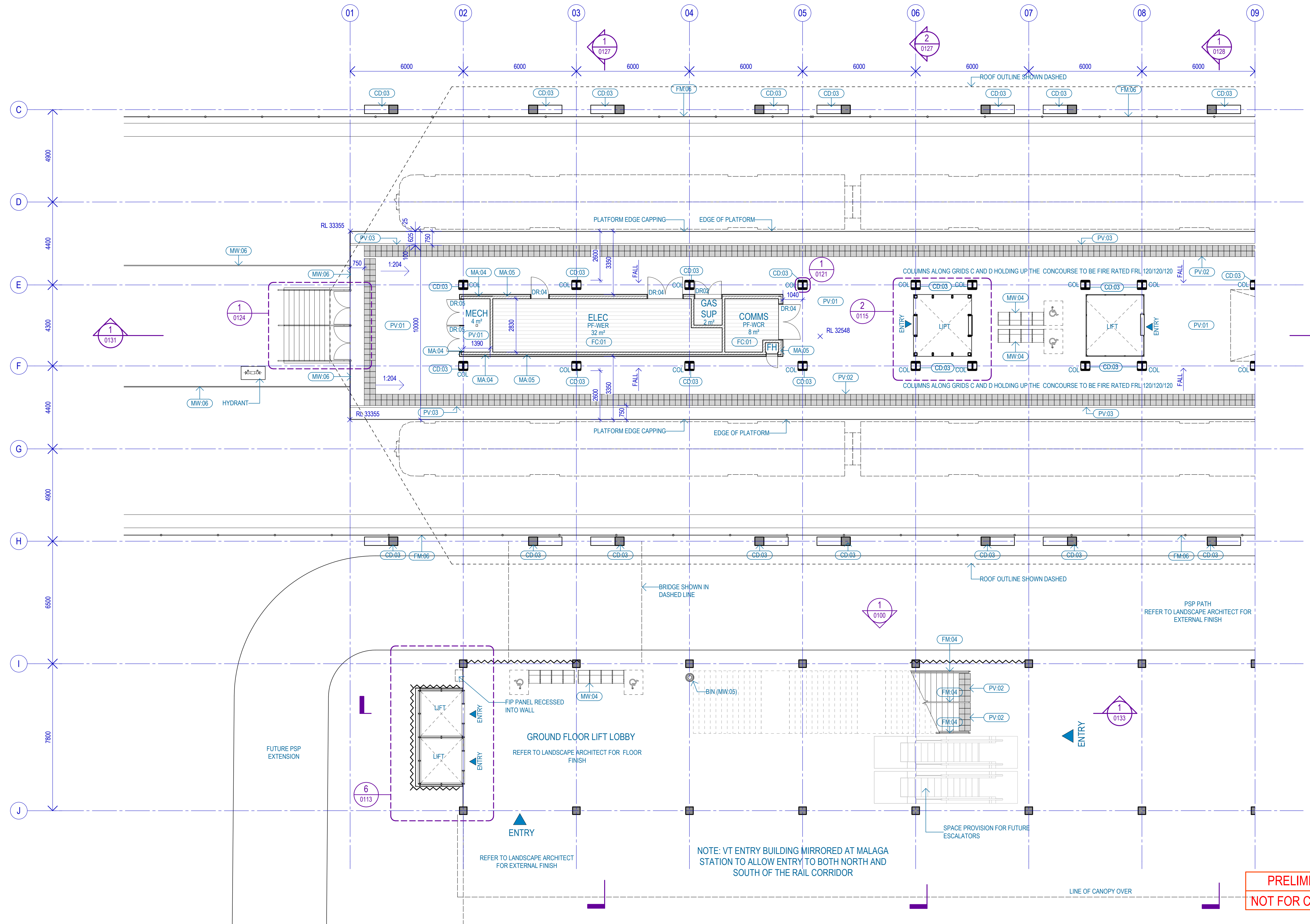
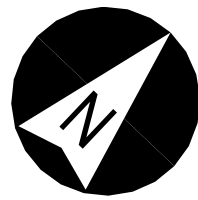
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		VERTICAL: AHD71	DATE 06/08/21

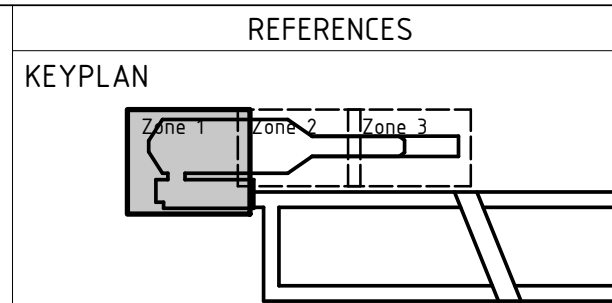
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OVERALL SECTIONS	
SECTIONS - SHEET 2	
PTA Drawing No: 25-A-287-AR0029	Rev: B02



PRELIMINARY ONLY
NOT FOR CONSTRUCTION

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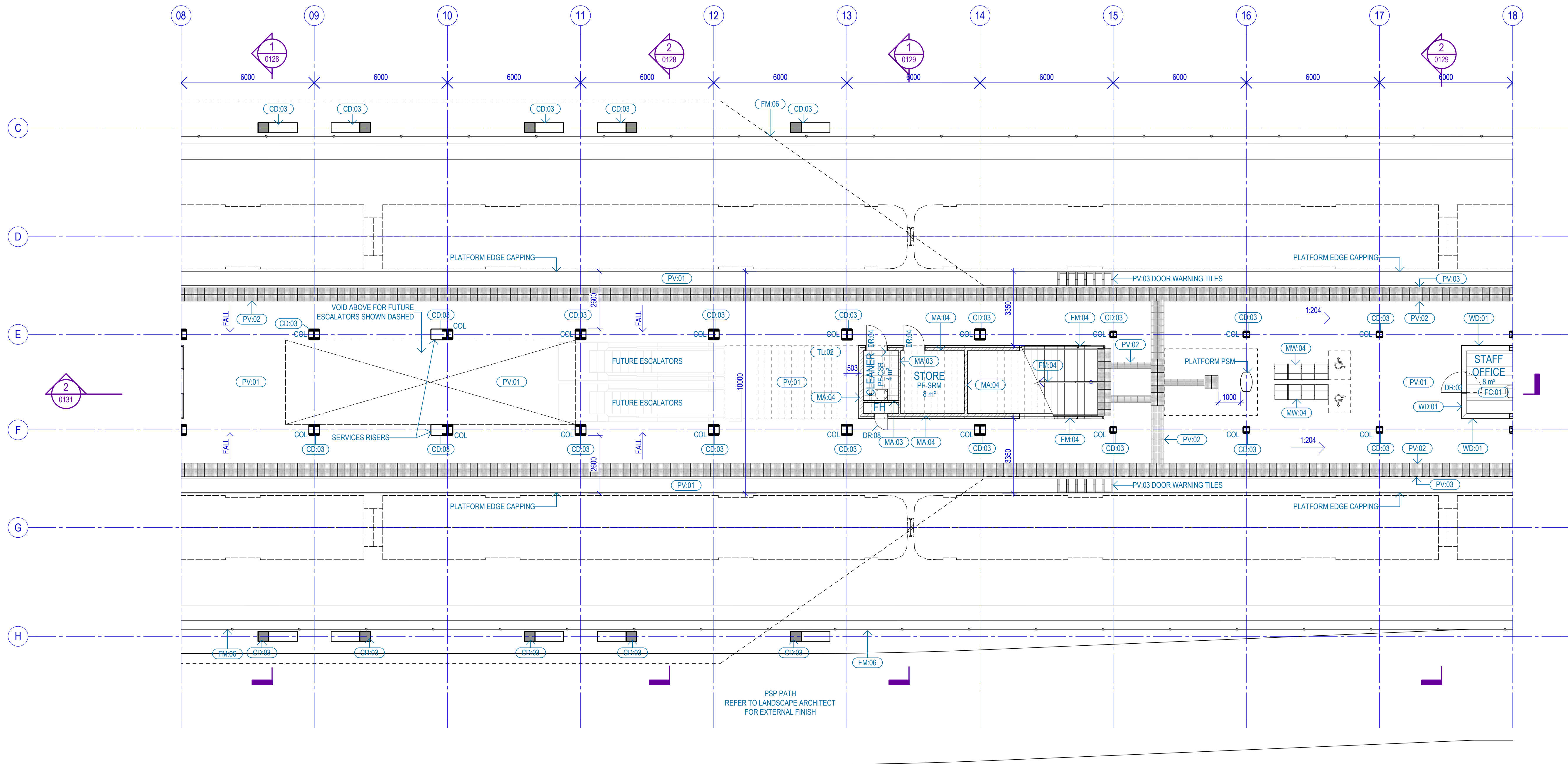
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HORIZONTAL: PCG2020
VERTICAL: AHD71

DESIGNED T.PRIEST
DRAWN E.SIMPSON
CHECKED C.TESTA
APPROVED M.ARAVIND
DATE 06/08/21

Government of Western Australia
Public Transport Authority

MORLEY ELLENBROOK LINE

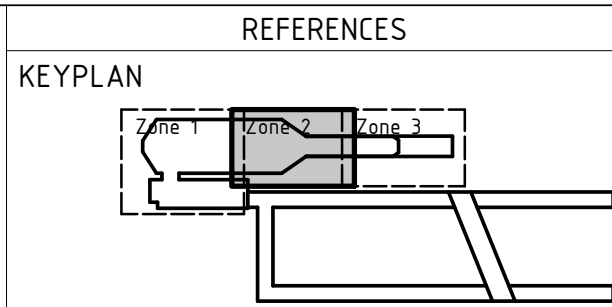
MALAGA STATION - ARCHITECTURE
GENERAL ARRANGEMENT FLOOR PLAN
PLATFORM LEVEL - SHEET 1
PTA Drawing No: 25-A-287-AR0044 Rev: B02



PRELIMINARY ONLY
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REFERENCE DESIGN

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B01	06/08/21	Draft DA Issue for MELconnx Review	TP	TA	CT	
A	07/06/21	REFERENCE DESIGN	TP	TA	CT	MA
A02	29/04/21	Issued for RD - IDC	TP	TA	CT	
A01	26/03/21	50% Reference Design	TP	TA	CT	
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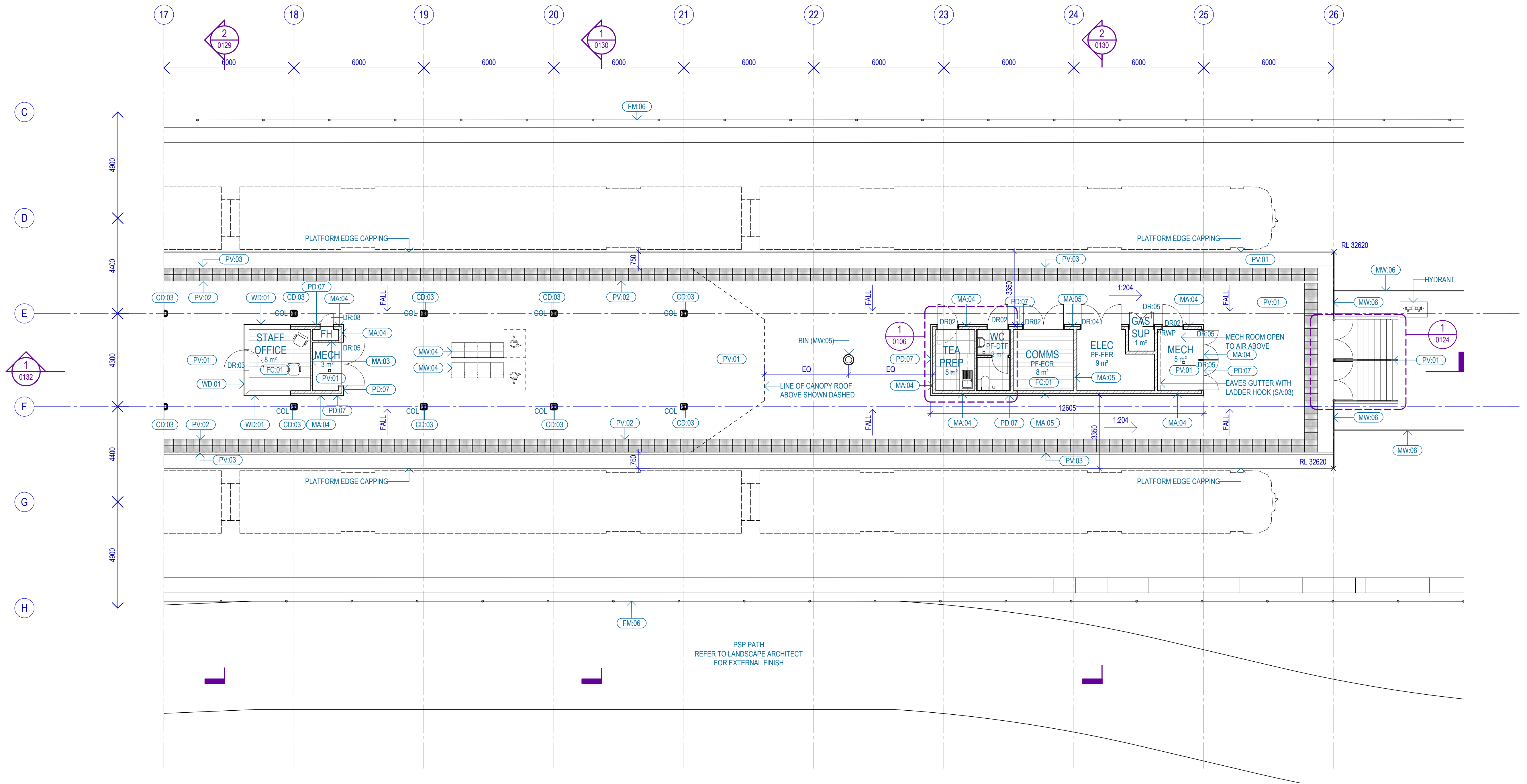
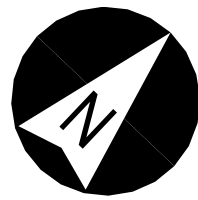
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HORIZONTAL: PCG2020
VERTICAL: AHD71

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DRAWN E.SIMPSON
CHECKED C.TESTA
APPROVED M.ARAVIND
DATE 06/08/21

 MORLEY ELLENBROOK LINE

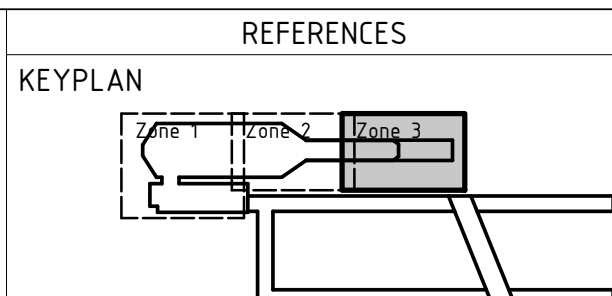
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GENERAL ARRANGEMENT FLOOR PLAN
PLATFORM LEVEL - SHEET 2
PTA Drawing No: 25-A-287-AR0045 Rev: B02



PRELIMINARY ONLY
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REFERENCE DESIGN

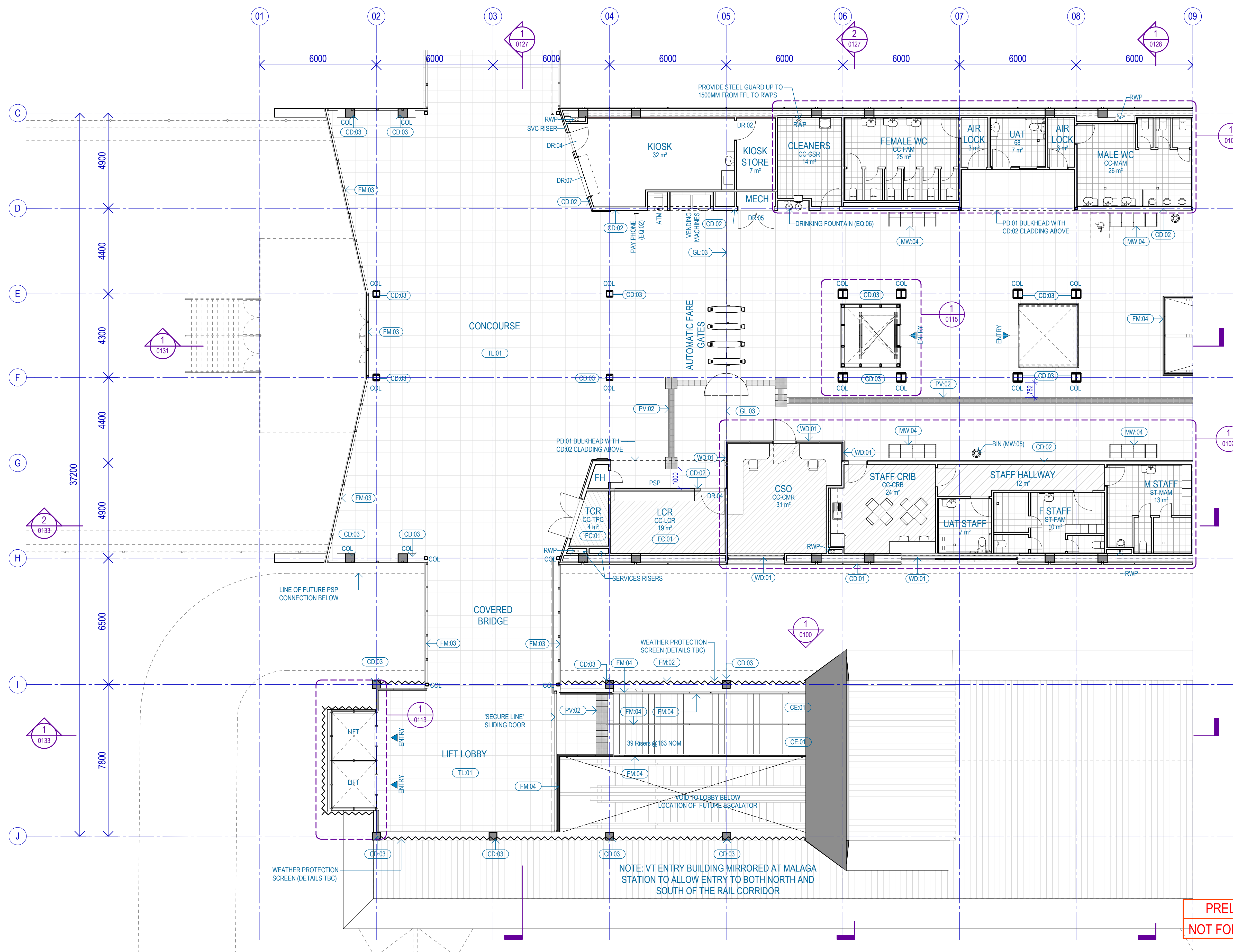
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A02	29/04/21	Issued for RD - IDC	TP	TA	CT	
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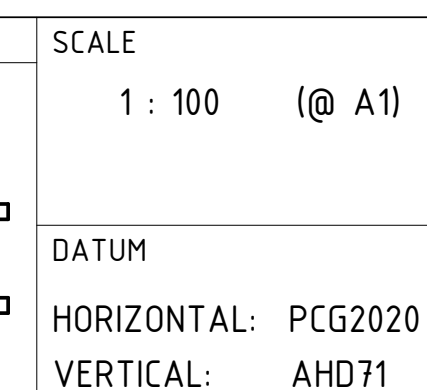
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HORIZONTAL: PCG2020
VERTICAL: AHD71

DESIGNED T.PRIEST
DRAWN E.SIMPSON
CHECKED C.TESTA
APPROVED M.ARAVIND
DATE 06/08/21

Government of Western Australia
Public Transport Authority
MORLEY ELLENBROOK LINE
MALAGA STATION - ARCHITECTURE
GENERAL ARRANGEMENT FLOOR PLAN
PLATFORM LEVEL - SHEET 3
PTA Drawing No: 25-A-287-AR0046 Rev: B02

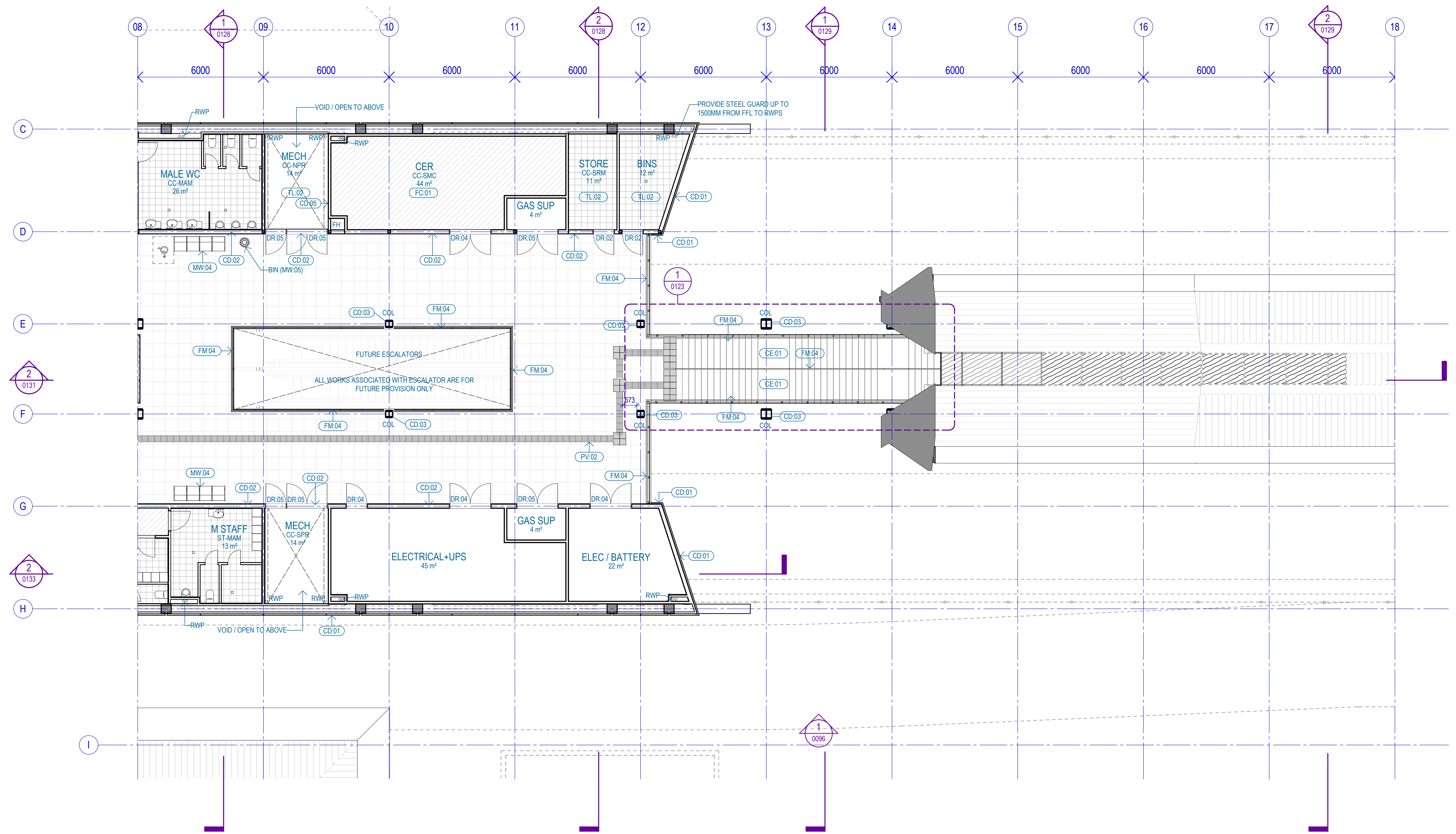


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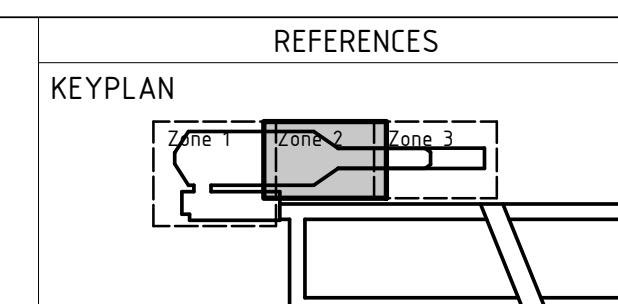


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DRAWN	E.SIMPSON
CHECKED	C.TESTA
APPROVED	M.ARAVIND
DATE	06/08/21

 <p>Government of Western Australia Public Transport Authority</p>	MORLEY ELLENBROOK LINE	
	MALAGA STATION - ARCHITECTURE	
	GENERAL ARRANGEMENT FLOOR PLAN	
	CONCOURSE LEVEL - SHEET 1	
PTA Drawing No: 25-A-287-AR0047		Rev: B02

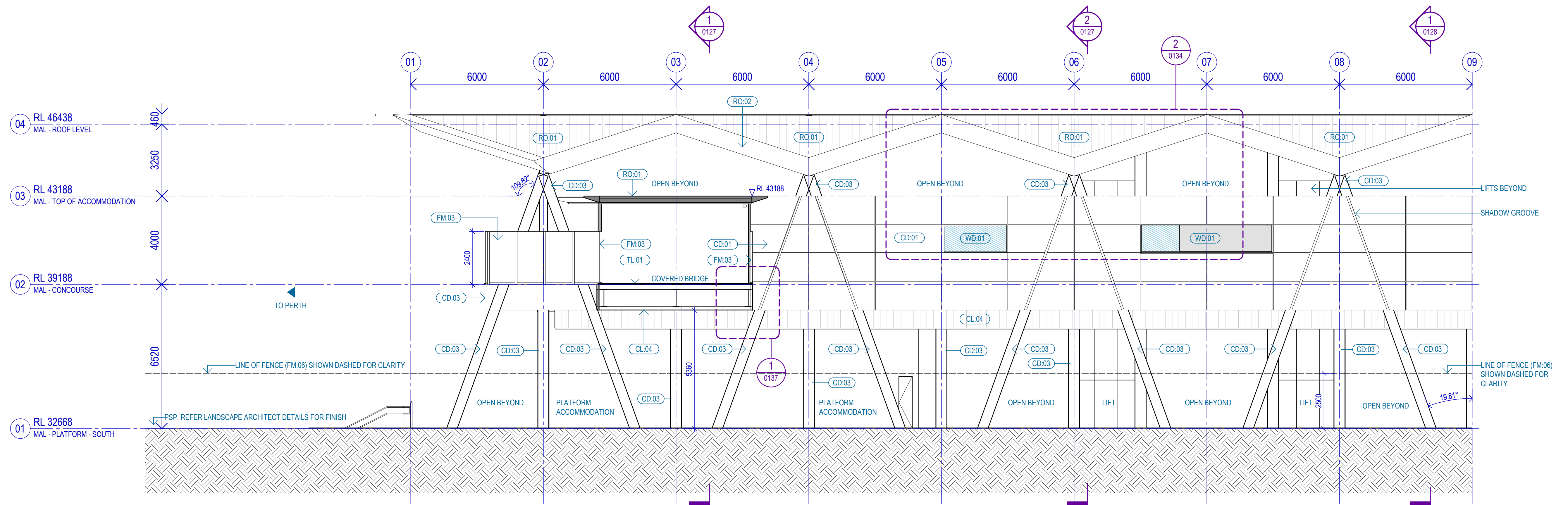


 Government of Western Australia Public Transport Authority	MORLEY ELLENBROOK LINE	
	MALAGA STATION - ARCHITECTURE	
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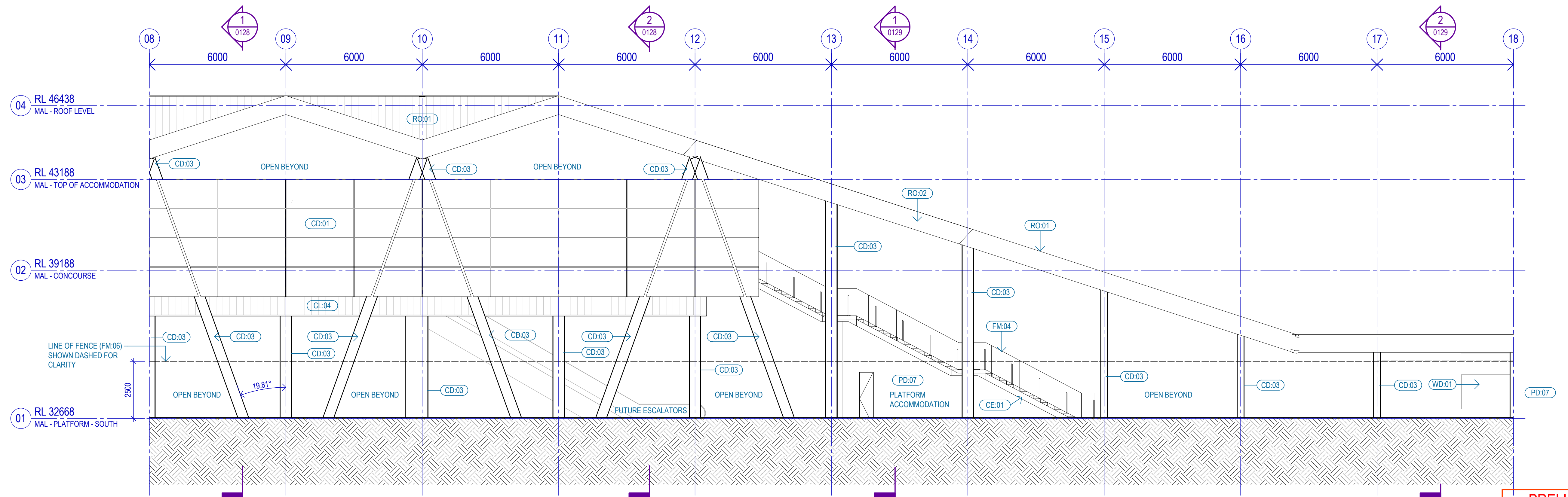
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DESIGNED	T.PRIEST
DRAWN	E.SIMPSON
CHECKED	C.TESTA
APPROVED	M.ARAVIND
DATE	06/08/21



1 ELEVATION 1 - SOUTH
SCALE 1 : 100



2 ELEVATION 1 - SOUTH
SCALE 1 : 100

PRELIMINARY ONLY
NOT FOR CONSTRUCTION

REFERENCE DESIGN

REV	DATE	AMENDMENT	DSN	DRN	CHK	APP
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B01	06/08/21	Draft DA Issue for MELconnx Review	TP	TA	CT	
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A02	29/04/21	Issued for RD - IDC	TP	TA	CT	
A01	26/03/21	50% Reference Design	TP	TA	CT	

ORIG SIZE A1

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AT ORIGINAL PLOT SIZE

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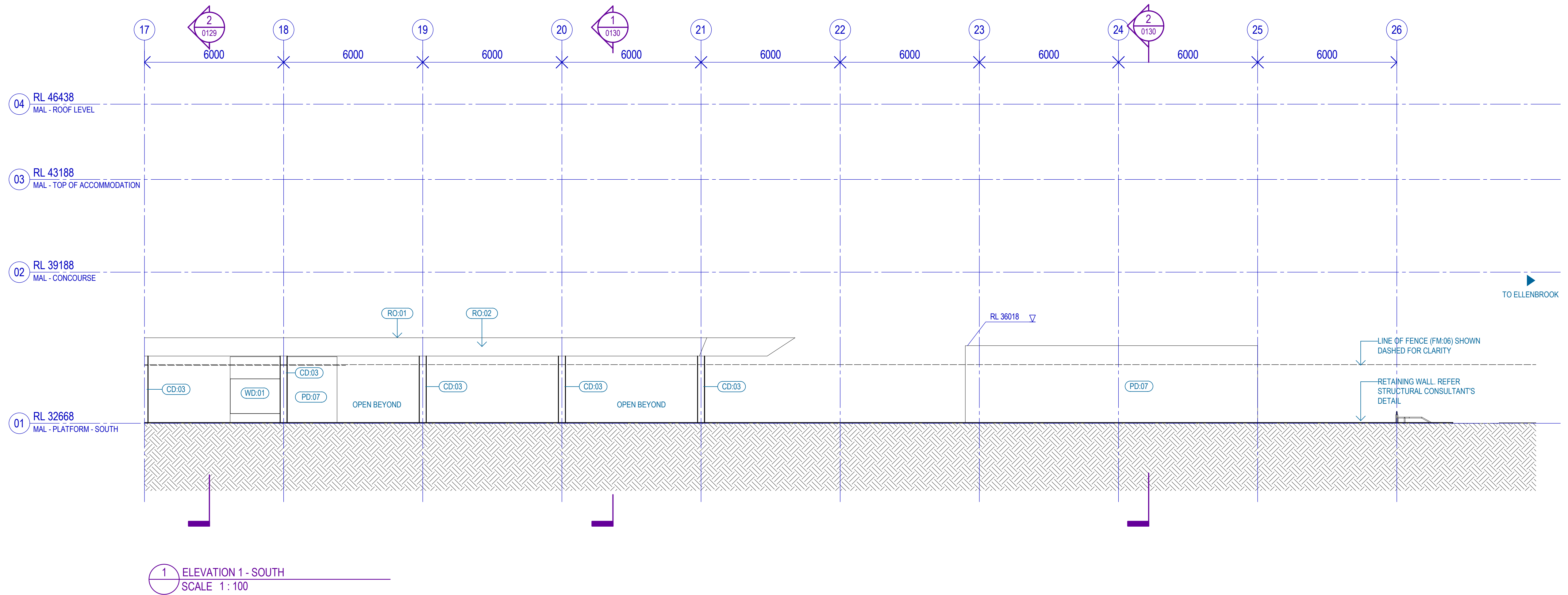
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HORIZONTAL: PCG2020

VERTICAL: AHD71

DESIGNED	T.PRIEST
DRAWN	E.SIMPSON
CHECKED	C.TESTA
APPROVED	M.ARAVIND
DATE	06/08/21

	MORLEY ELLENBROOK LINE
MALAGA STATION - ARCHITECTURE	
GENERAL ARRANGEMENT	
ELEVATION	
PTA Drawing No: 25-A-287-AR0095	Rev: B02



PRELIMINARY ONLY
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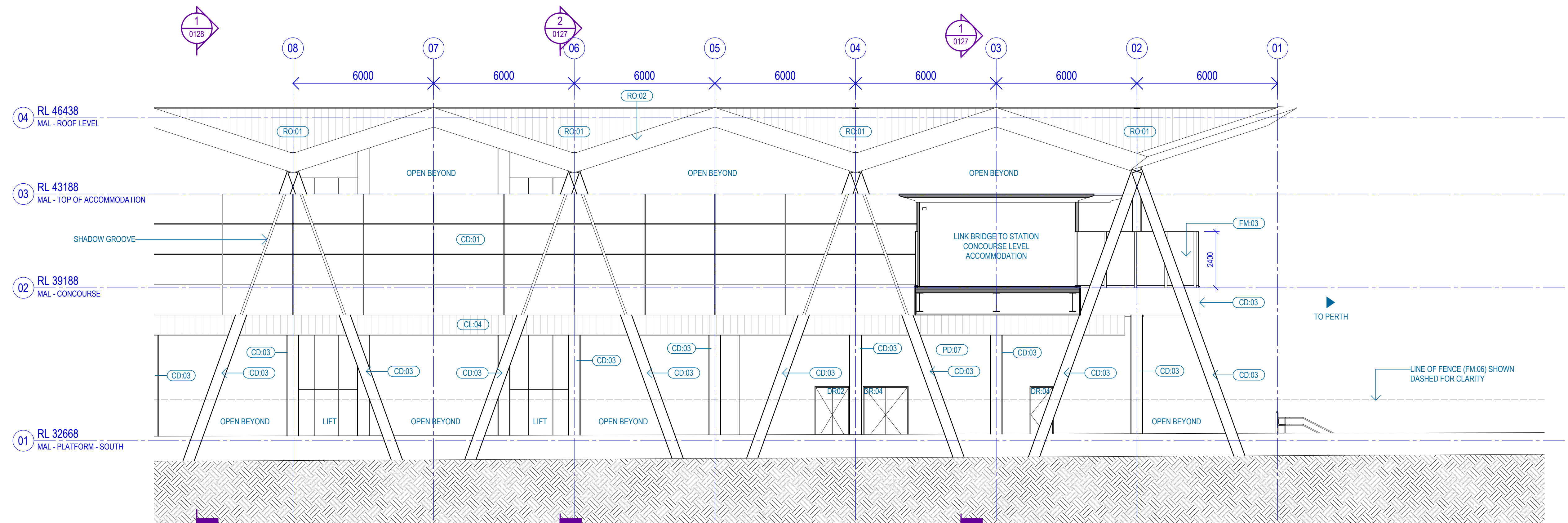
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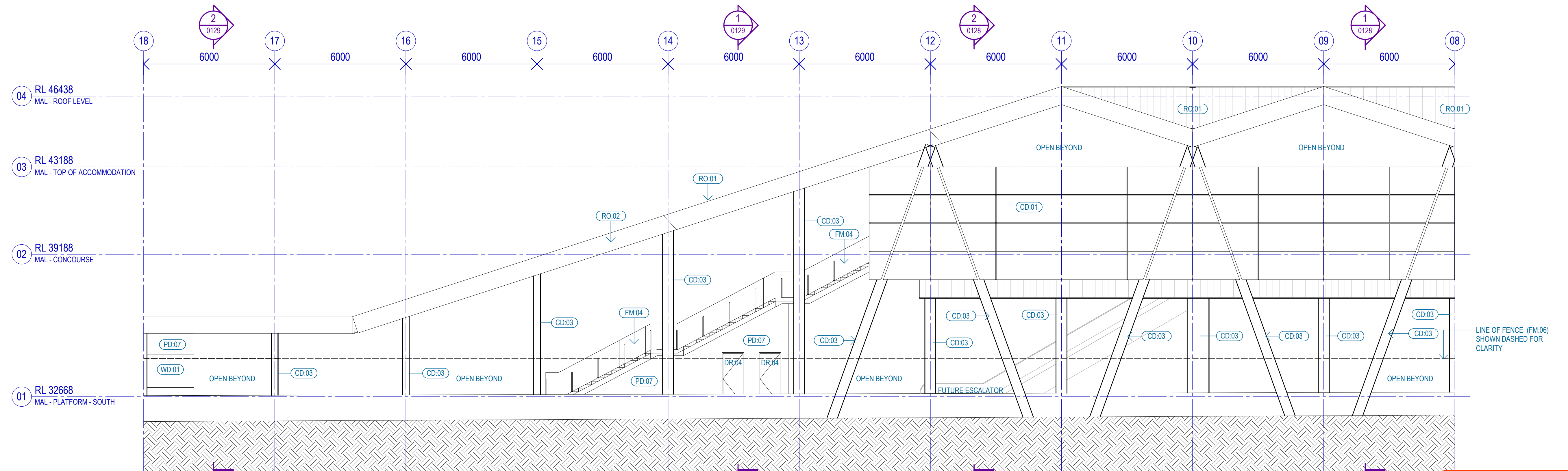


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		DRAWN
		E.SIMPSON
		CHECKED
		C.TESTA
		APPROVED
		M.ARAVIND
		DATE
		06/08/21

	MORLEY ELLENBROOK LINE
MALAGA STATION - ARCHITECTURE	
GENERAL ARRANGEMENT	
ELEVATION	
PTA Drawing No: 25-A-287-AR0096	Rev: B02



1 ELEVATION 2 - NORTH
SCALE 1 : 100



2 ELEVATION 2 - NORTH
SCALE 1 : 100

PRELIMINARY ONLY
NOT FOR CONSTRUCTION

REFERENCE DESIGN

REV	DATE	AMENDMENT	DSN	DRN	CHK	APP
B02	13/08/21	DA Issue	TP	ES	CT	
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REFERENCES

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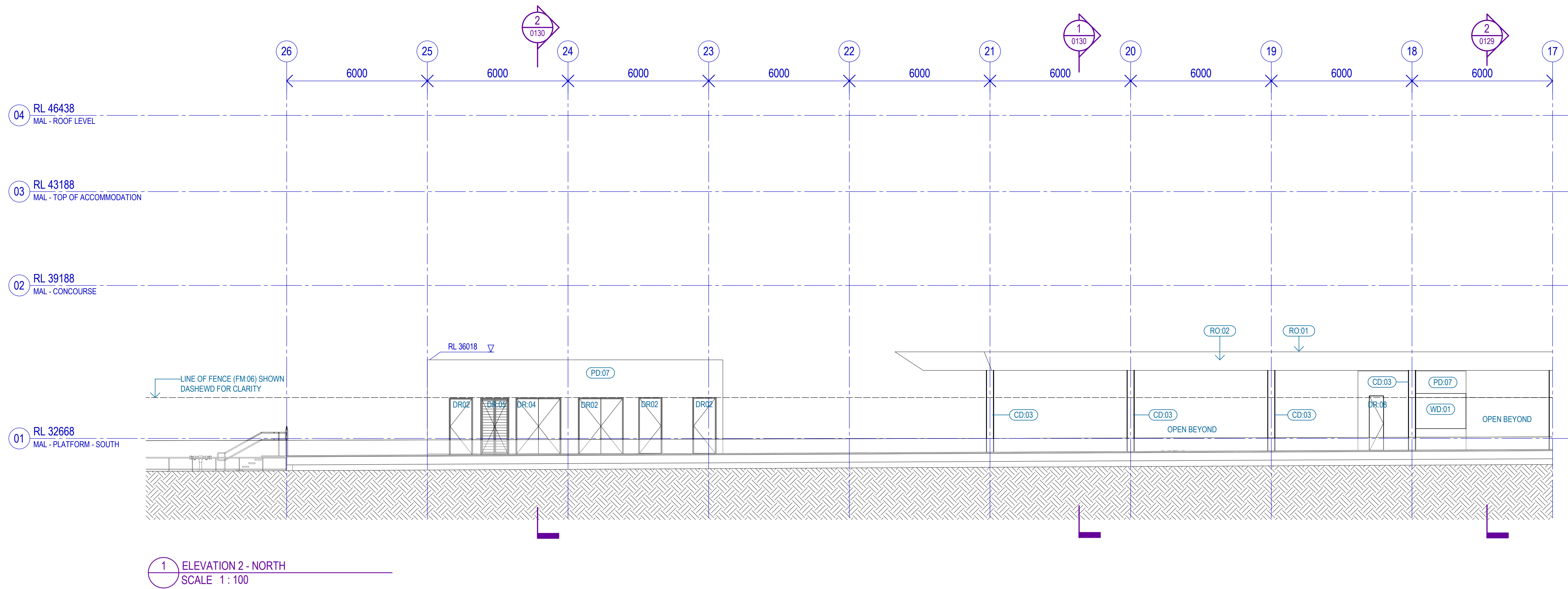
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HORIZONTAL: PCG2020

VERTICAL: AHD71

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DRAWN	E.SIMPSON
CHECKED	C.TESTA
APPROVED	M.ARAVIND
DATE	06/08/21

	MORLEY ELLENBROOK LINE
MALAGA STATION - ARCHITECTURE	
GENERAL ARRANGEMENT	
ELEVATION	
PTA Drawing No: 25-A-287-AR0097	Rev: B02



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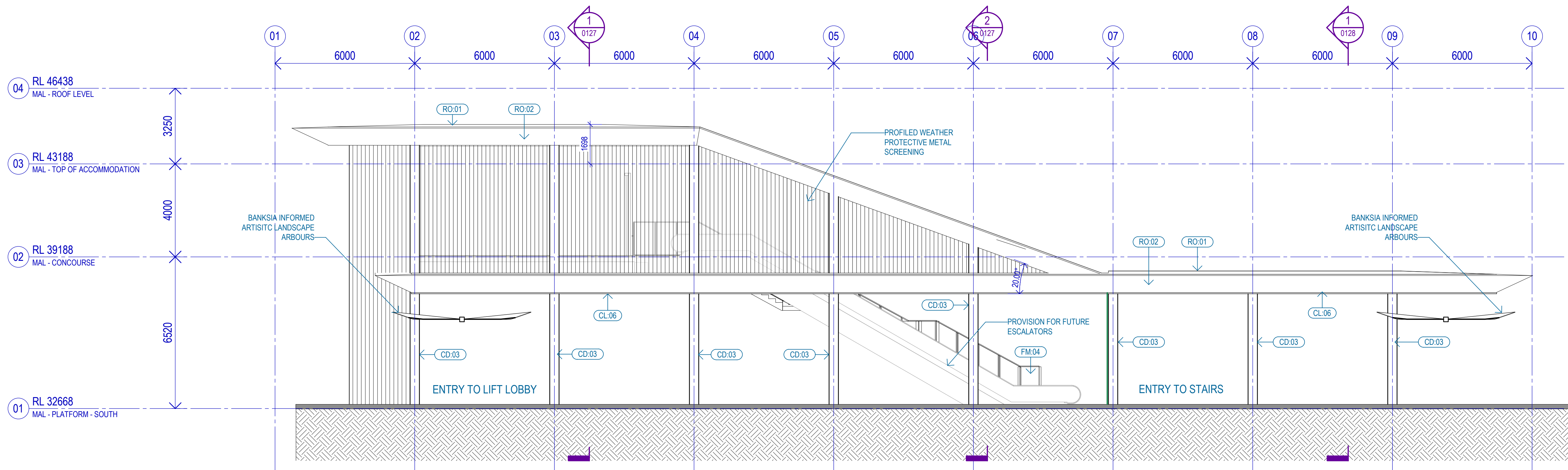
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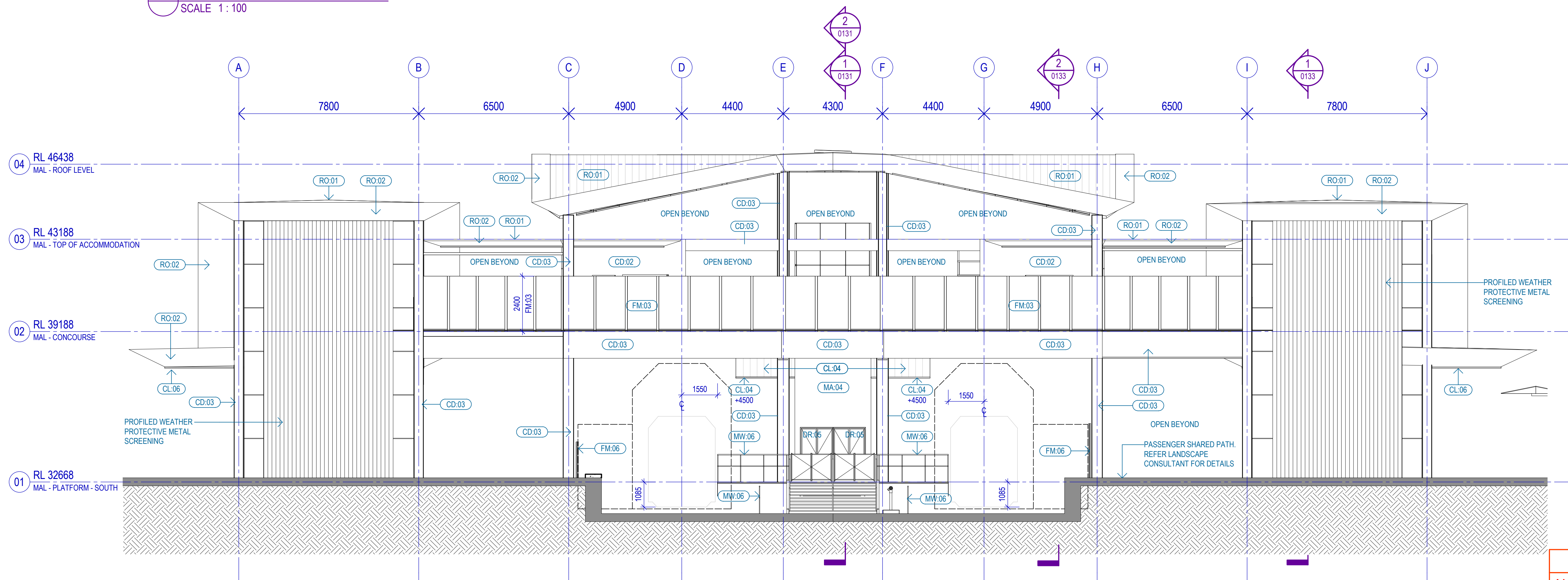


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	1 : 100 (@ A1)	T.PRIEST
		DRAWN E.SIMPSON
		CHECKED C.TESTA
		APPROVED M.ARAVIND
		DATE 06/08/21

Government of Western Australia Public Transport Authority	MORLEY ELLENBROOK LINE
MALAGA STATION - ARCHITECTURE	
GENERAL ARRANGEMENT	
ELEVATION	
PTA Drawing No: 25-A-287-AR0098	Rev: B02



1 VT ELEVATION - SOUTH
SCALE 1 : 100



2 VT ELEVATION - WEST
SCALE 1 : 100

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REFERENCE DESIGN

REV	DATE	AMENDMENT	DSN	DRN	CHK	APP
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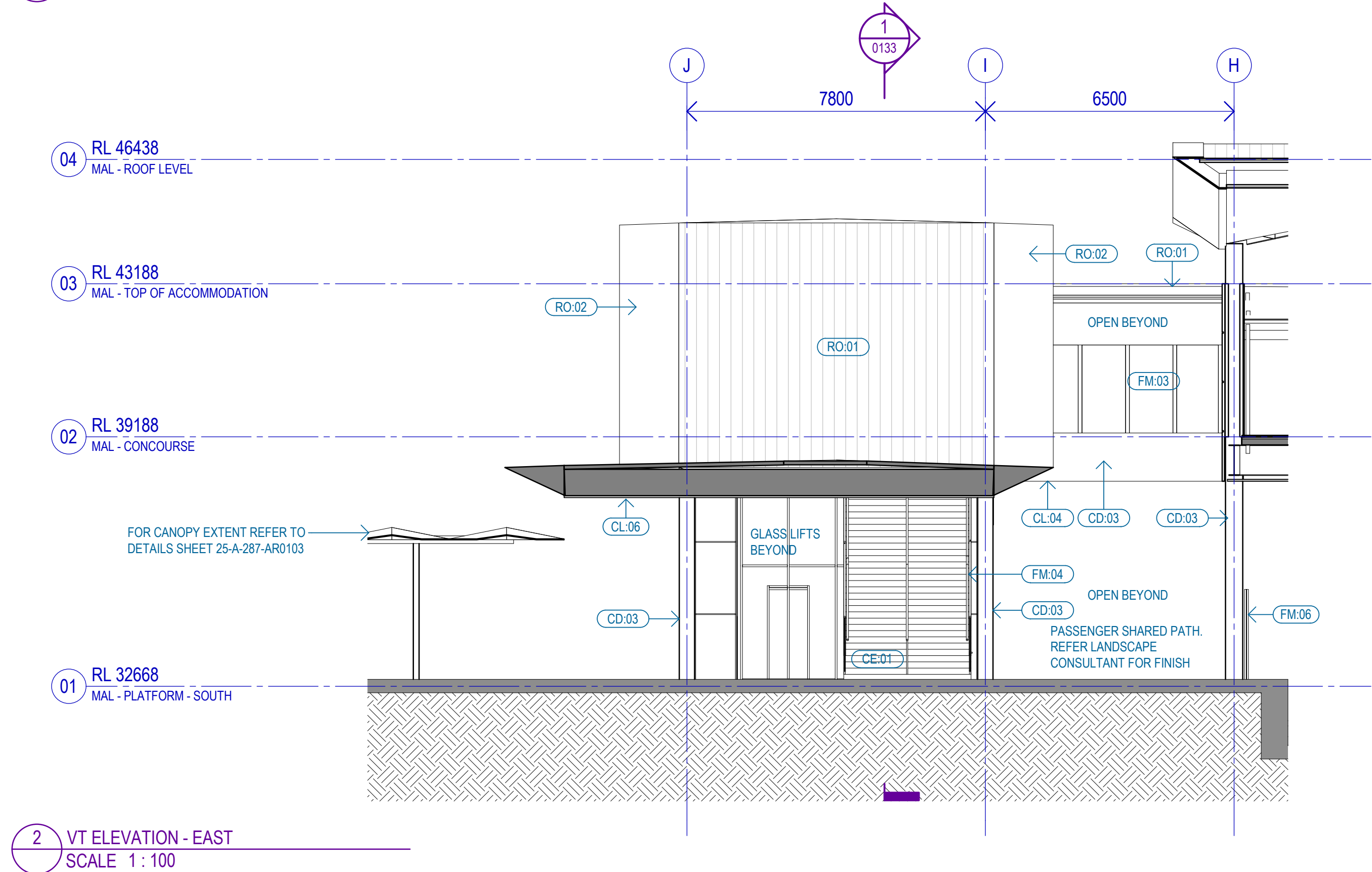
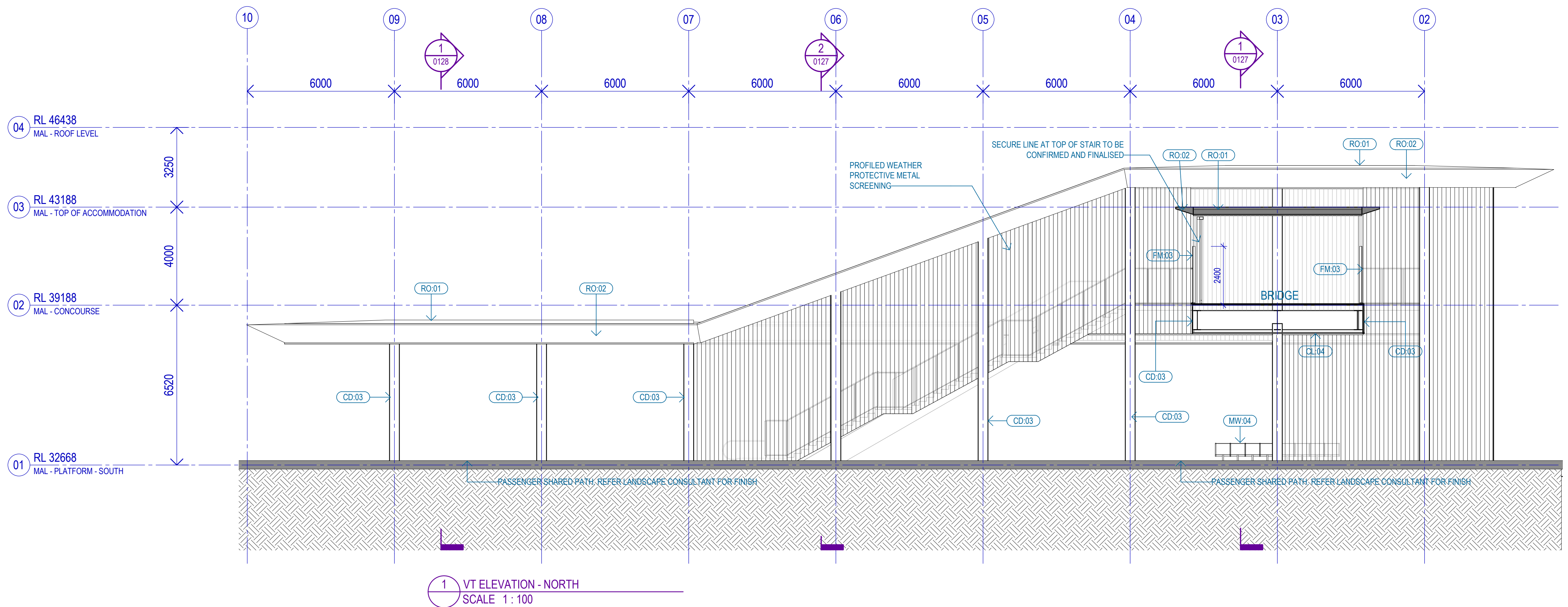
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REFERENCES	SCALE	DESIGNED	Government of Western Australia Public Transport Authority	MORLEY ELLENBROOK LINE
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		DRAWN	E.SIMPSON	
		CHECKED	C.TESTA	
		APPROVED	M.ARAVIND	
		DATE	06/08/21	
	DATUM			
	HORIZONTAL: PCG2020			
	VERTICAL: AHD71			

MALAGA STATION - ARCHITECTURE
GENERAL ARRANGEMENT
VT ELEVATION
PTA Drawing No: 25-A-287-AR0099 Rev: B02



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REFERENCE DESIGN

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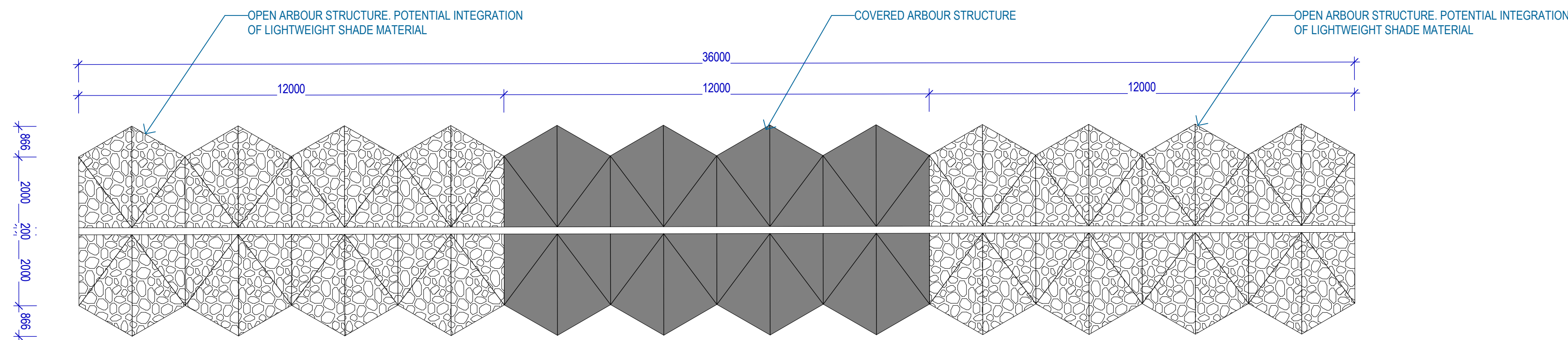
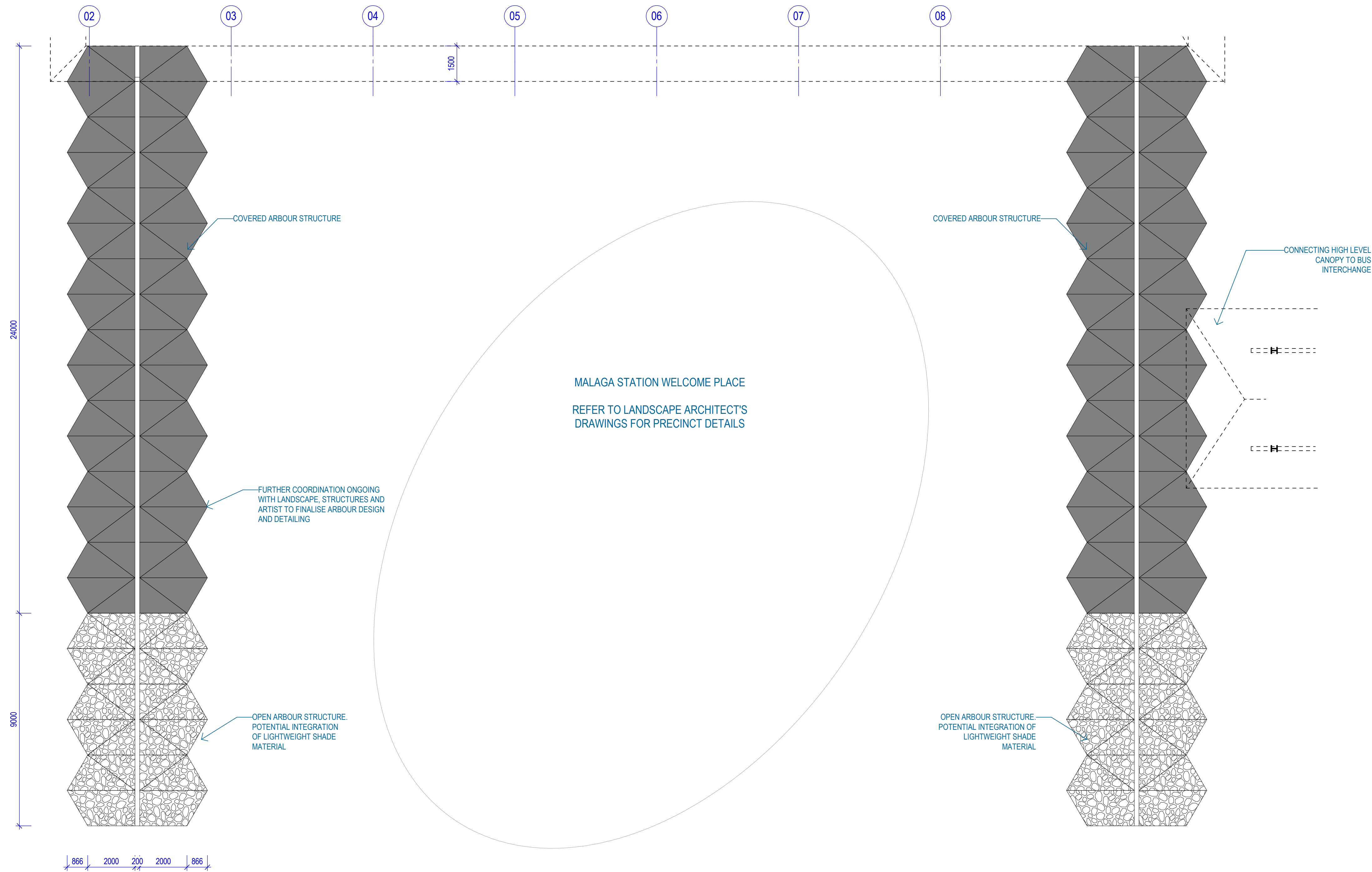
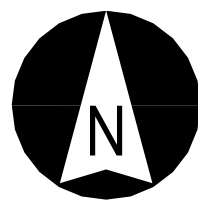
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REFERENCES	SCALE 1 : 100 (@ A1)	DESIGNED T.PRIEST
	DATUM HORIZONTAL: PCG2020 VERTICAL: AHD71	DRAWN E.SIMPSON
		CHECKED C.TESTA
		APPROVED M.ARAVIND
		DATE 06/08/21

	MORLEY ELLENBROOK LINE
MALAGA STATION - ARCHITECTURE	
GENERAL ARRANGEMENT	
VT ELEVATION	
PTA Drawing No: 25-A-287-AR0100	Rev: B02



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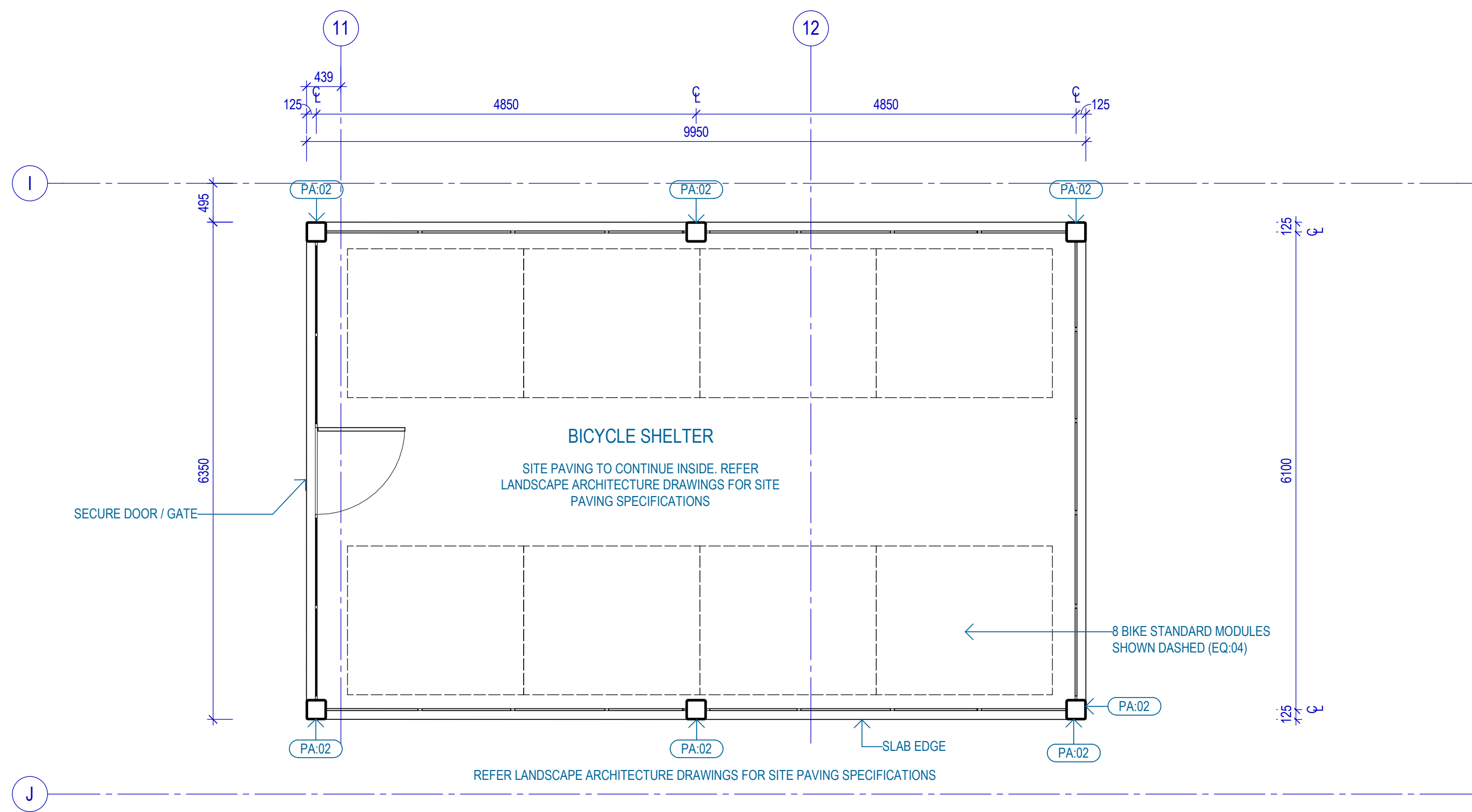
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REFERENCES	SCALE 1 : 100 (@ A1)	DESIGNED T.PRIEST
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		CHECKED C.TESTA
		APPROVED M.ARAVIND
		DATE 06/08/21

Government of Western Australia Public Transport Authority	MORLEY ELLENBROOK LINE
MALAGA STATION - ARCHITECTURE ARBOUR STRUCTURE PLAN	
PTA Drawing No: 25-A-287-AR0103	Rev: B02



1 BICYCLE SHELTER PLAN
SCALE 1 : 50


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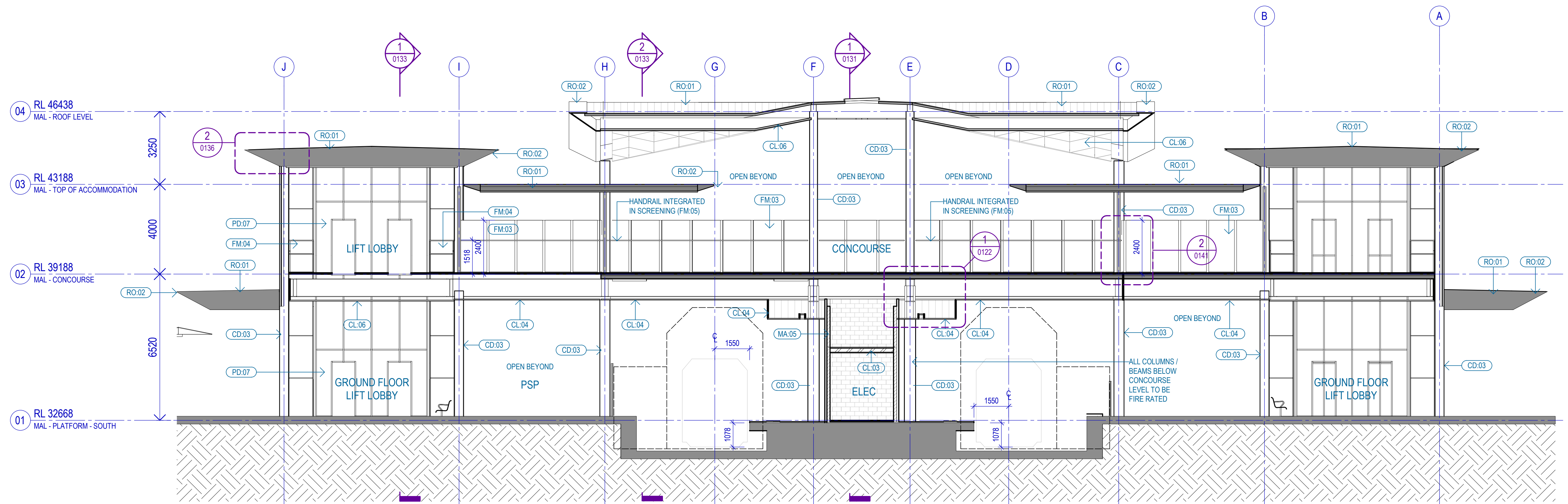
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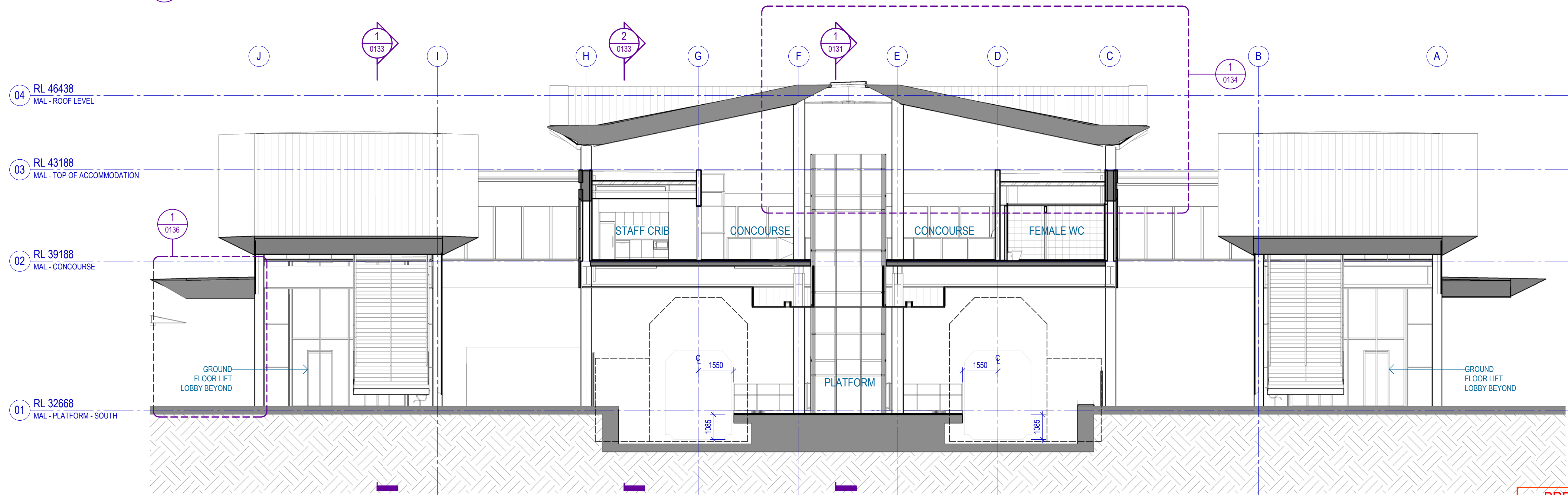


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	DATUM	APPROVED
	HORIZONTAL: PCG2020	M.ARAVIND
	VERTICAL: AHD71	DATE 06/08/21

REFERENCE DESIGN	
 MORLEY ELLENBROOK LINE	
MALAGA STATION - ARCHITECTURE	
ENLARGED PLANS	
BICYCLE SHELTER PLAN	
PTA Drawing No: 25-A-287-AR0105	Rev: B02



1 SECTION GRID 03
SCALE 1 : 100



2 SECTION GRID 06
SCALE 1 : 100

PRELIMINARY ONLY
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REFERENCE DESIGN

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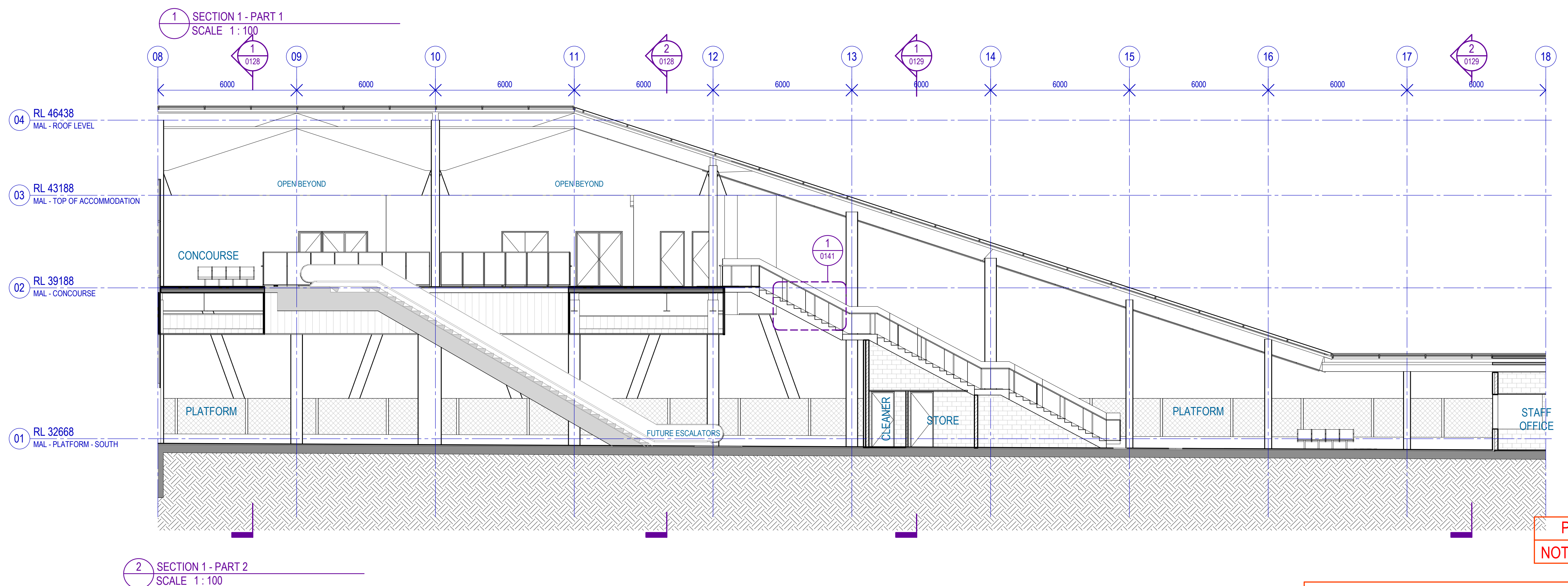
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HORIZONTAL: PCG2020

VERTICAL: AHD71

DESIGNED	T.PRIEST
DRAWN	E.SIMPSON
CHECKED	C.TESTA
APPROVED	M.ARAVIND
DATE	06/08/21


Government of Western Australia Public Transport Authority	MORLEY ELLENBROOK LINE
MALAGA STATION - ARCHITECTURE	
OVERALL SECTIONS	
STATION - SHEET 01	
PTA Drawing No: 25-A-287-AR0127	Rev: B02



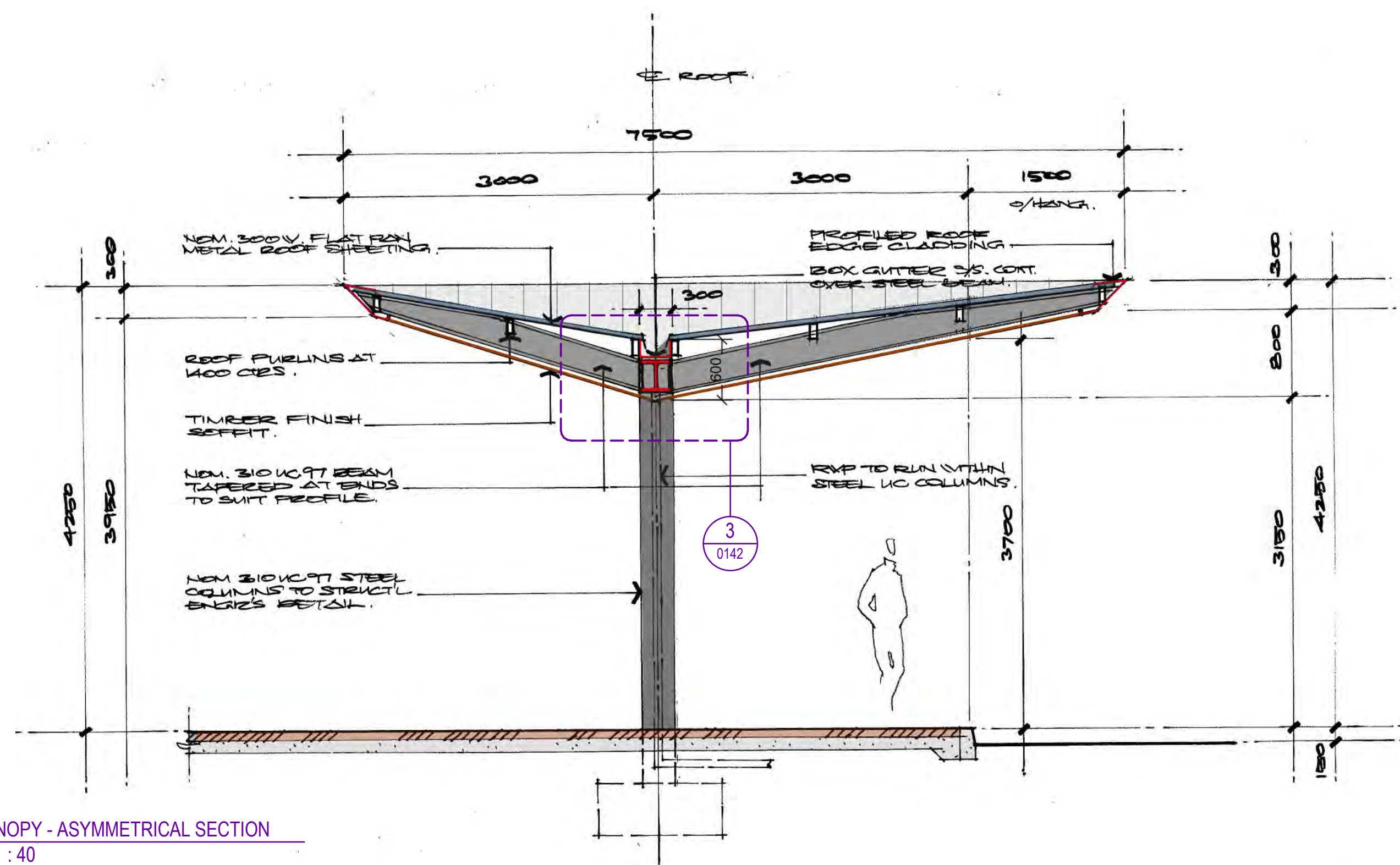
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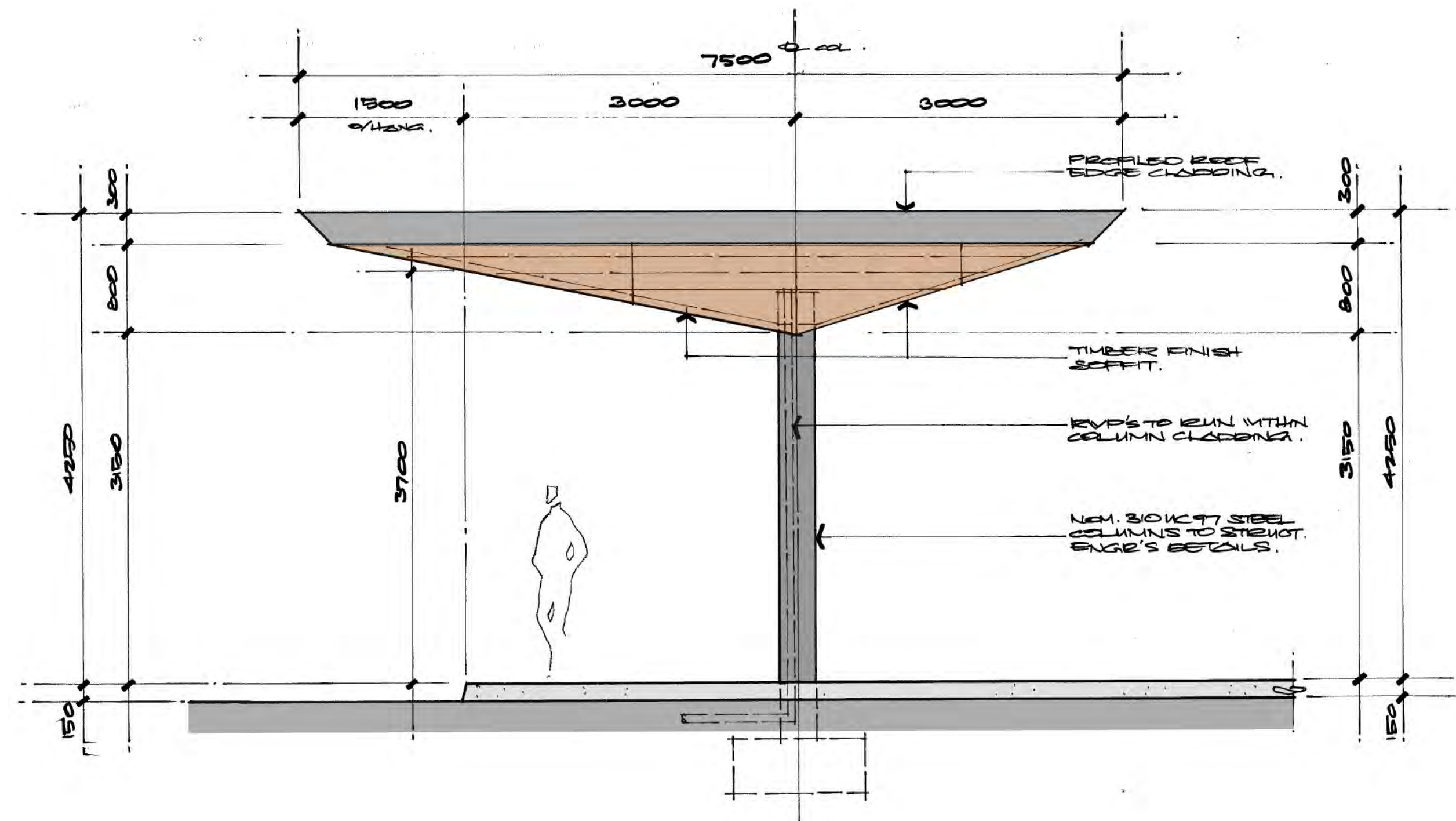
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	HORIZONTAL: PCG2020 VERTICAL: AHD71	DATE	06/08/21

 Government of Western Australia Public Transport Authority	MORLEY ELLENBROOK LINE	
	MALAGA STATION - ARCHITECTURE	
	OVERALL SECTIONS	
	STATION - SHEET 05	
PTA Drawing No: 25-A-287-AR0131		Rev: B02

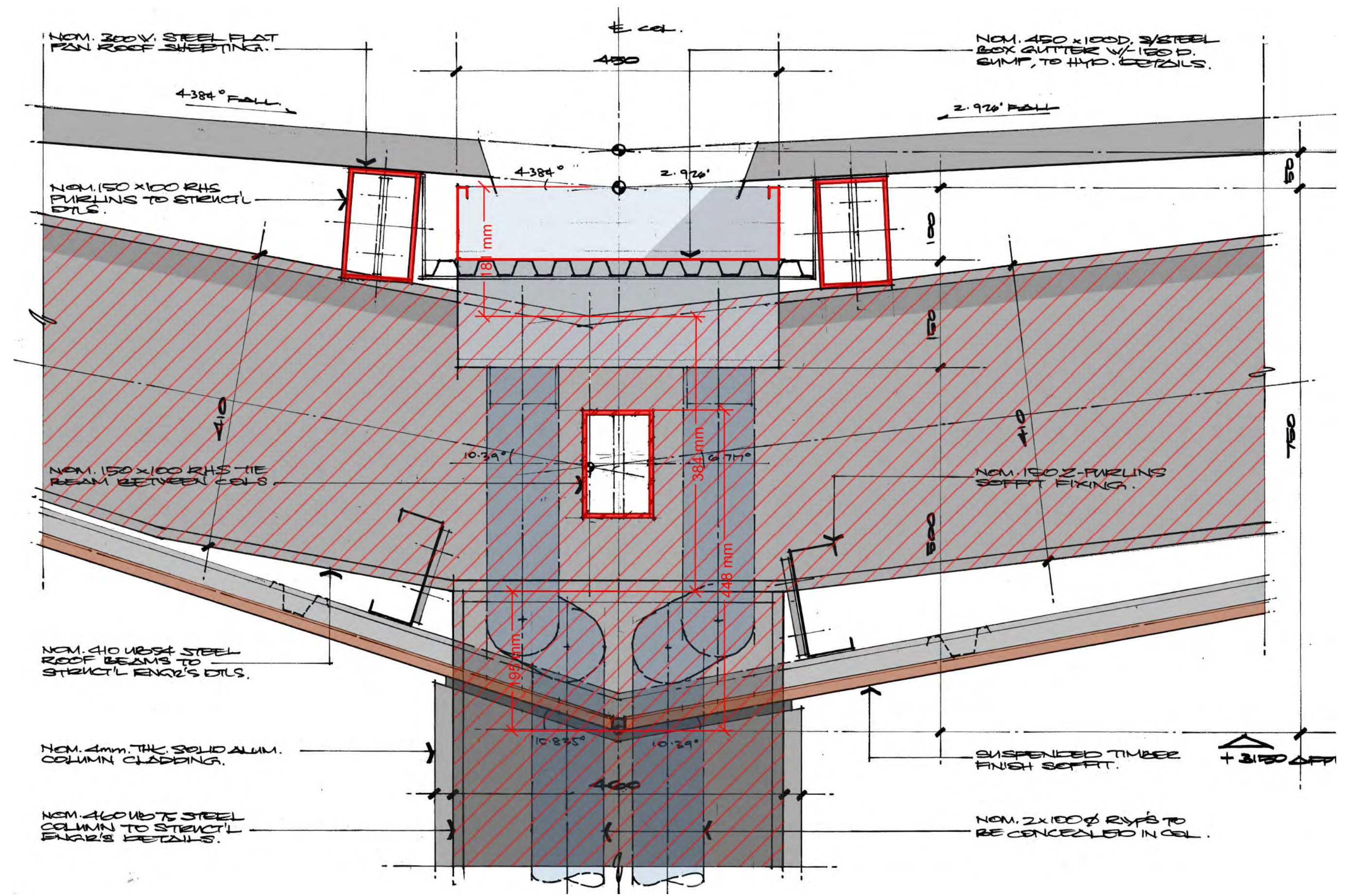
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1 BUS CANOPY - ASYMMETRICAL SECTION
SCALE 1:40



2 BUS CANOPY - ASYMMETRICAL - END ELEVATION
SCALE 1:40



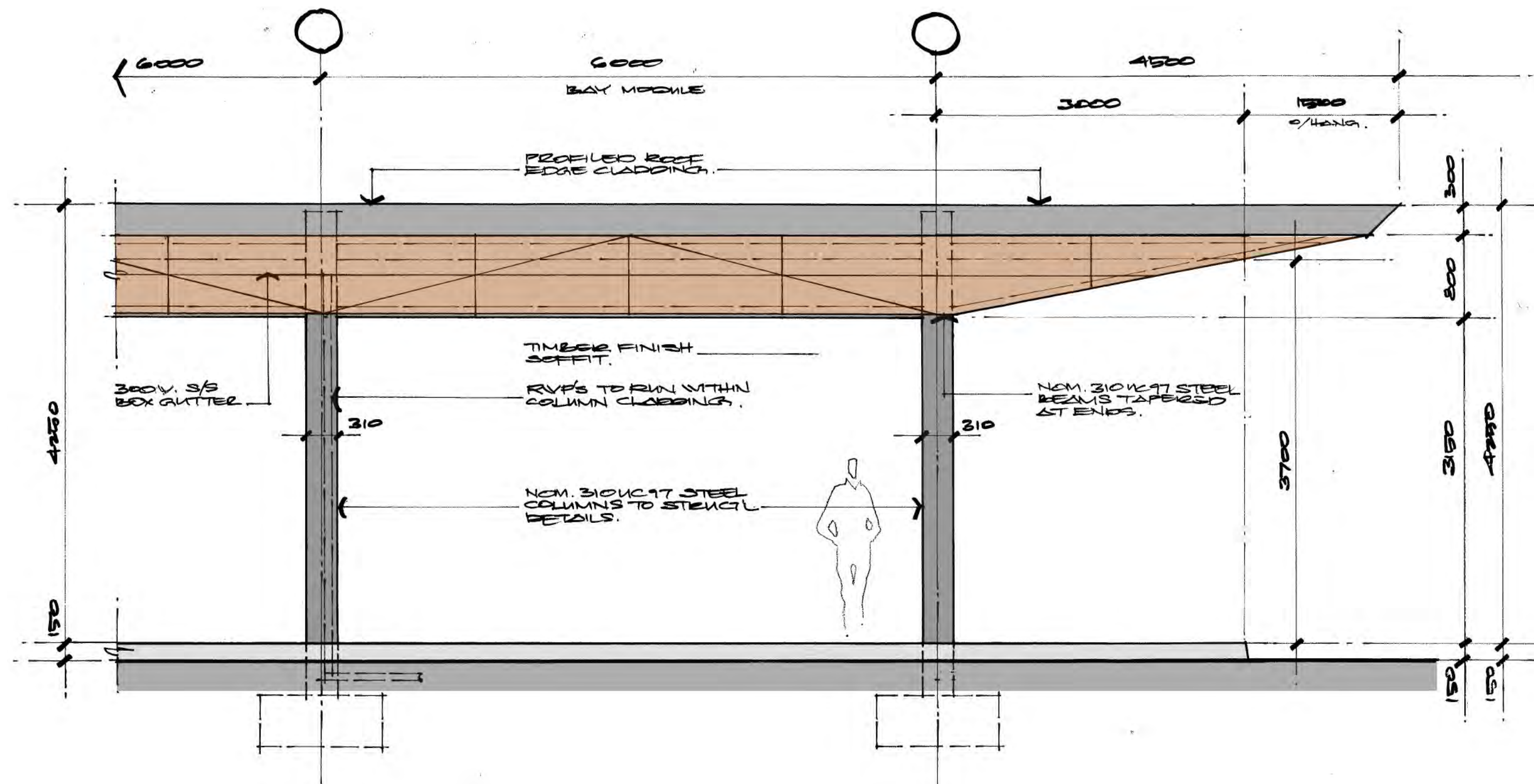
3 BUS CANOPY - ASYMMETRICAL SECTION - GUTTER DETAIL
SCALE 1:5

PRELIMINARY ONLY
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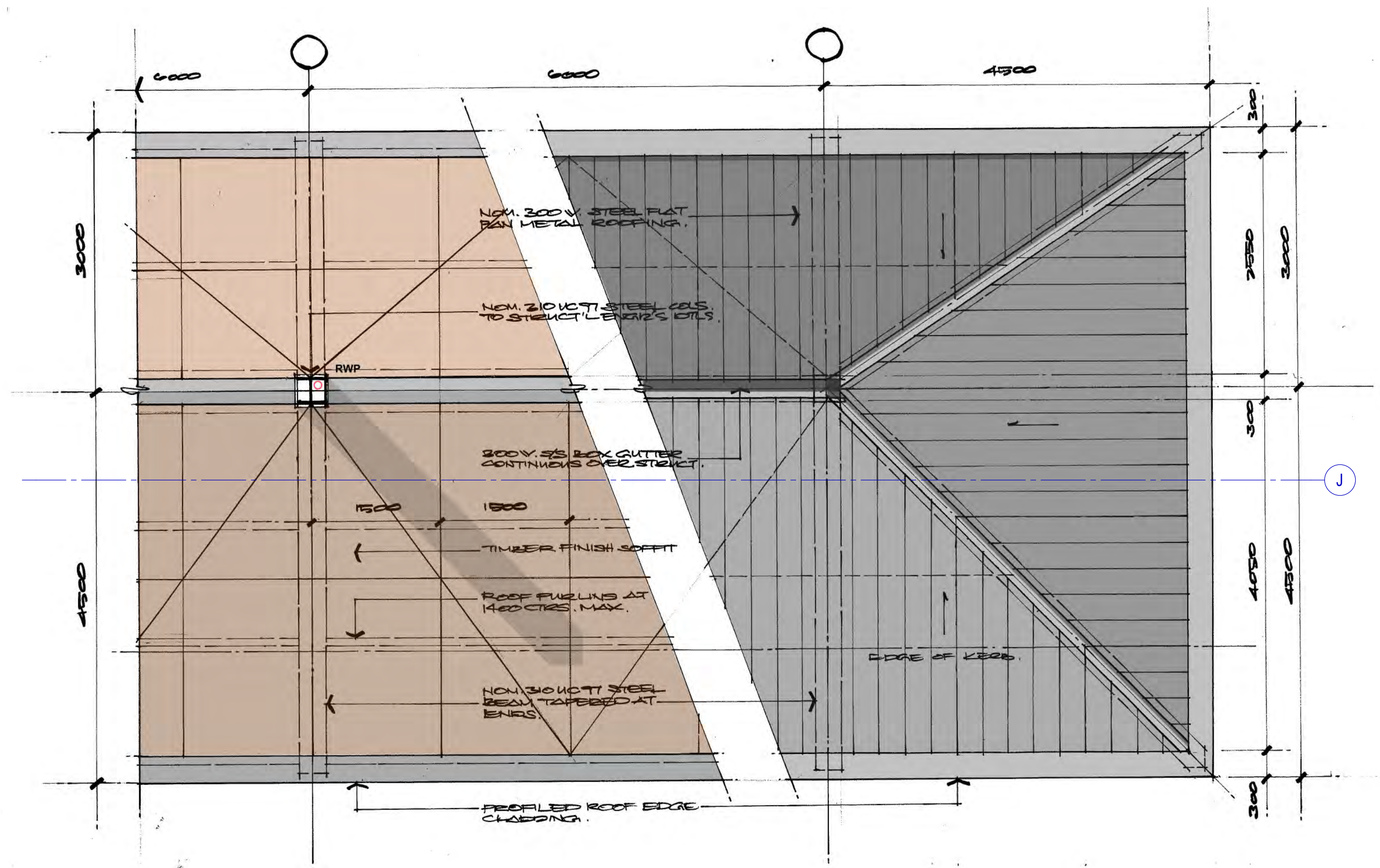
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<p>PTA Drawing No: 25-A-287-AR0142</p>	<p>Rev: B02</p>

REV	DATE	AMENDMENT	DSN	DRN	CHK	APP
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A01	26/03/21	50% Reference Design	TP	TA	CT	
REV	DATE	AMENDMENT	DSN	DRN	CHK	APP
A1						





1 BUS CANOPY - ASYMETRICAL - FRONT ELEVATION
SCALE 1 : 40



2 BUS CANOPY - ASYMMETRICAL - ROOF PLAN AND RCP
SCALE 1 : 40

PRELIMINARY ONLY
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REFERENCE DESIGN

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REFERENCES

SCALE

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DATUM

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VERTICAL: AHD71

DESIGNED

T.PRIEST

DRAWN

E.SIMPSON

CHECKED

C.TESTA

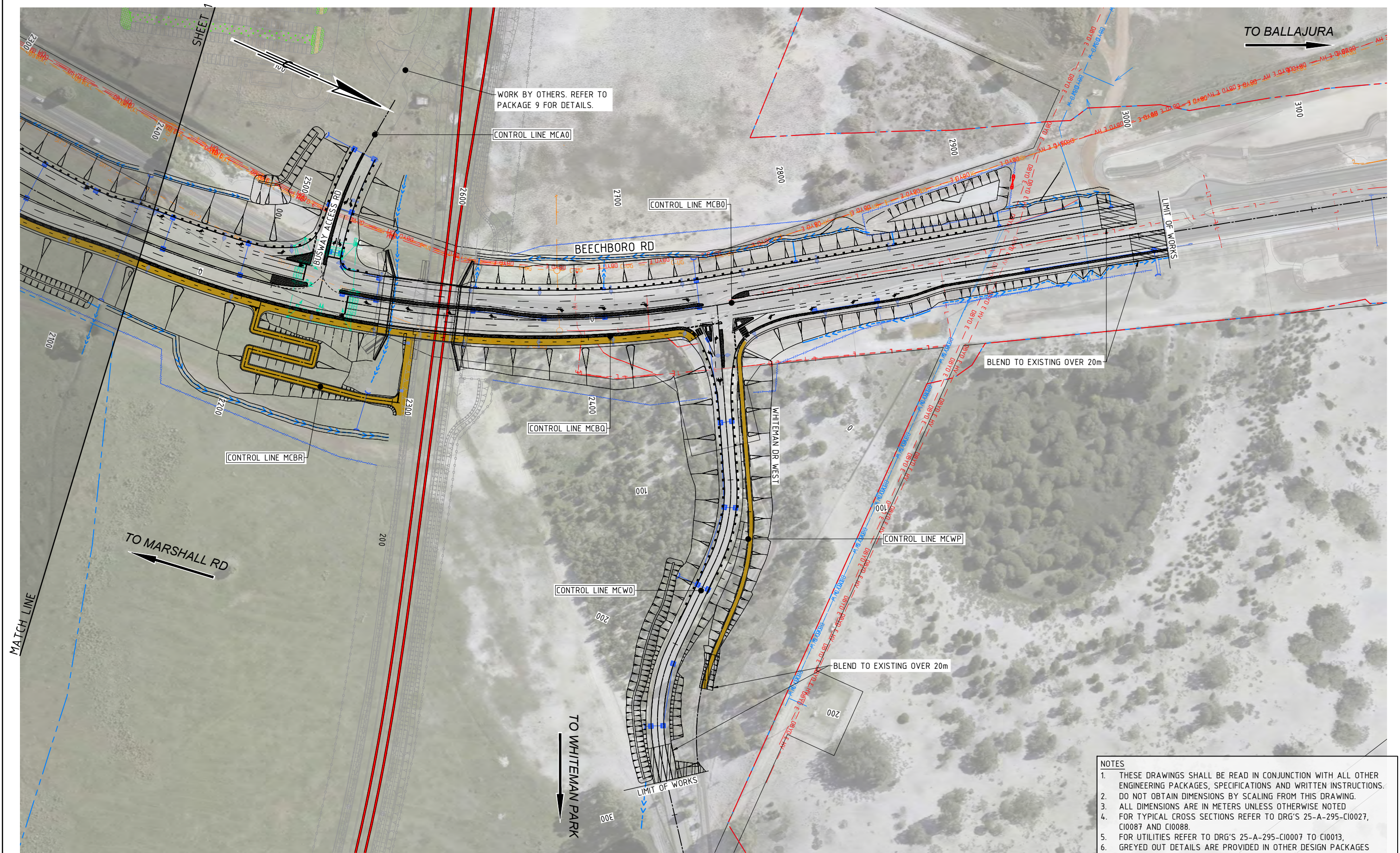
APPROVED

M.ARAVIND

DATE


06/08/21

	MORLEY ELLENBROOK LINE
MALAGA STATION - ARCHITECTURE	
DETAILS	
BUS CANOPY DETAIL - SHEET 02	
PTA Drawing No: 25-A-287-AR0143	Rev: B02



- NOTES
1. THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH ALL OTHER ENGINEERING PACKAGES, SPECIFICATIONS AND WRITTEN INSTRUCTIONS.
 2. DO NOT OBTAIN DIMENSIONS BY SCALING FROM THIS DRAWING.
 3. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE NOTED
 4. FOR TYPICAL CROSS SECTIONS REFER TO DRG'S 25-A-295-CI0027, CI0087 AND CI0088.
 5. FOR UTILITIES REFER TO DRG'S 25-A-295-CI0007 TO CI0013,
 6. GREYED OUT DETAILS ARE PROVIDED IN OTHER DESIGN PACKAGES

NOT FOR CONSTRUCTION

B01	13.09.21	ISSUED FOR IDO REVIEW				KB	DB	EC	MA
A	02.06.21	REFERENCE DESIGN				KB	DB	EC	MA
REV	DATE	AMENDMENT				DSN	DRN	CHK	APP
ORIG SIZE						This document must not be copied without PTA's written permission, and the contents thereof must not be imparted to a third party nor be used for any unauthorised purpose.			
A1		AT ORIGINAL PLOT SIZE							



REFERENCES		SCALE	DESIGNED
		1:1000m	K.BOGUMIL
		DATUM	D.BOURKE
		HORIZONTAL: PCG2020	CHECKED E.CHADFIELD
		VERTICAL: AHD71	APPROVED M.ARAVIND
			DATE 13.09.21

Government of Western Australia
Public Transport Authority

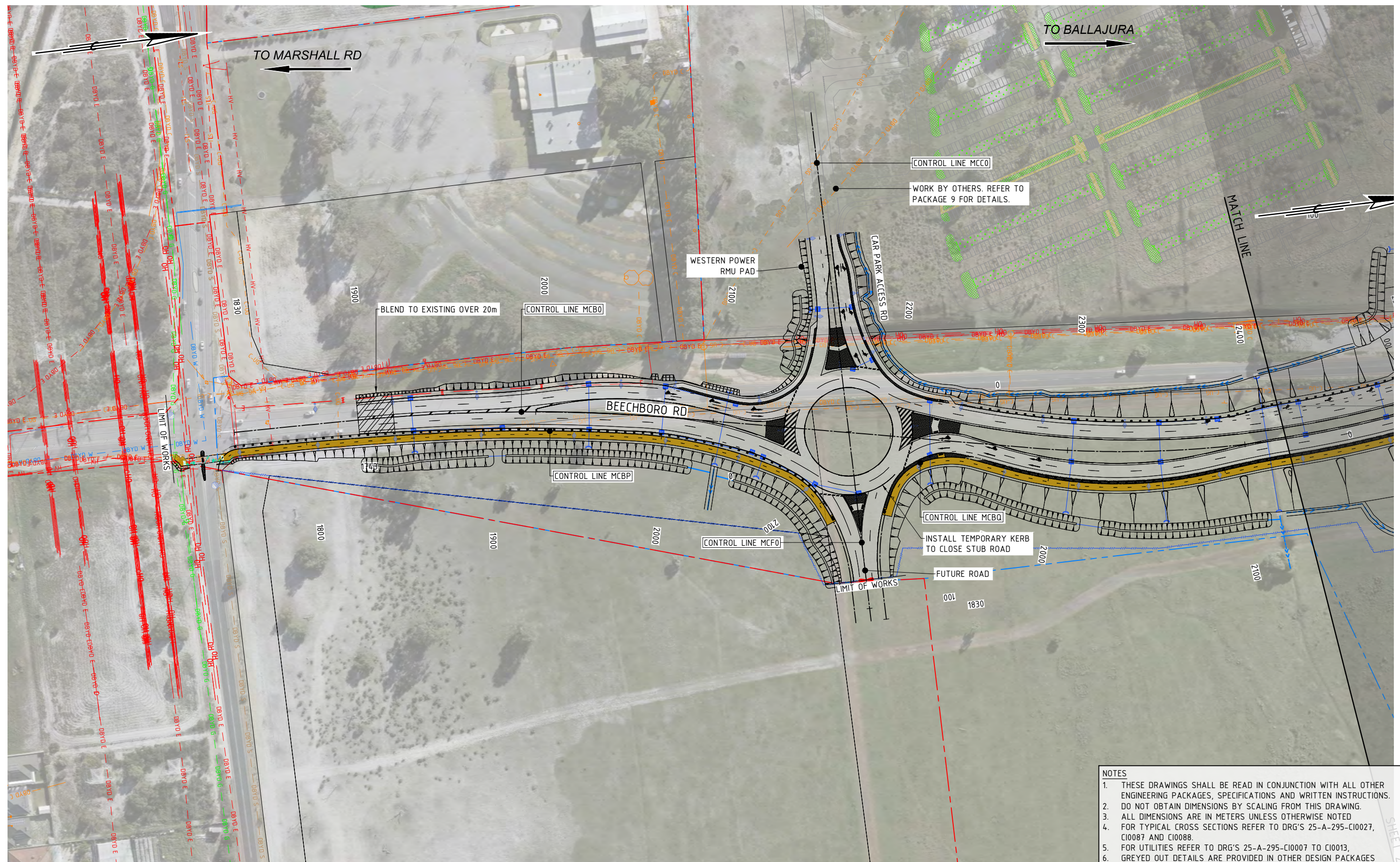
MORLEY ELLENBROOK LINE

NORTHERN DIVE TO WHITEMAN PARK - BEECHBORO RD CIVIL

GENERAL ARRANGEMENT PLAN - SHEET 2 OF 2

PTA Drawing No: 25-C-AA-3006

Rev: B01



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[illegible]

REFERENCES	SCALE 1:1000m	DESIGNED	K.BOGUMIL
		DRAWN	D.BOURKE
	DATUM HORIZONTAL: PCG2020 VERTICAL: AHD71	CHECKED	E.CHADFIELD
		APPROVED	M.ARAVIND
		DATE	13.09.21

DETAILED DESIGN



MORLEY ELLENBROOK LINE

NORTHERN DIVE TO WHITEMAN PARK - BEECHBORO RD
CIVIL

GENERAL ARRANGEMENT PLAN - SHEET 1 OF 2

PTA Drawing No: 25-C-AA-3005

Rev: B01



Morley Ellenbrook Line (MEL) Station & Precinct Design

August 2021

Visualisation
Malaga Station

Malaga Station

Station Approach from Main Street



Malaga Station

Station Approach from The Welcome Place



Malaga Station

Approach from The Bus Interchange



Malaga Station

Concourse View Toward Faregates

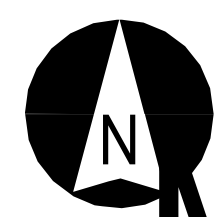


Malaga Station

View From Entry



Appendix C - Landscape Plans



MORLEY-ELLENBROOK LINE
MALAGA PRECINCT LANDSCAPE WORKS
Beechboro Road North, Whiteman, WA 6068



Drawing List		
Sheet Number	Sheet Name	Current Revision
25-A-287-LA0001	COVERSHEET	B01
25-A-287-LA0002	LEGEND & NOTES	B01
25-A-287-LA0006	SCHEDULES	B01
25-A-287-LA0010	LANDSCAPE SITE PLAN	B01
25-A-287-LA0011	LANDSCAPE MASTERPLAN	B01
25-A-287-LA0067	GENERAL ARRANGEMENT & FINISHES PLAN	B01
25-A-287-LA0068	GENERAL ARRANGEMENT & FINISHES PLAN	B01
25-A-287-LA0069	GENERAL ARRANGEMENT & FINISHES PLAN	B01
25-A-287-LA0070	GENERAL ARRANGEMENT & FINISHES PLAN	B01
25-A-287-LA0071	GENERAL ARRANGEMENT & FINISHES PLAN	B01
25-A-287-LA0072	GENERAL ARRANGEMENT & FINISHES PLAN	B01
25-A-287-LA0073	GENERAL ARRANGEMENT & FINISHES PLAN	B01
25-A-287-LA0074	GENERAL ARRANGEMENT & FINISHES PLAN	B01
25-A-287-LA0075	GENERAL ARRANGEMENT & FINISHES PLAN	B01
25-A-287-LA0082	PLANTING PLAN	B01
25-A-287-LA0083	PLANTING PLAN	B01
25-A-287-LA0084	PLANTING PLAN	B01
25-A-287-LA0085	PLANTING PLAN	B01
25-A-287-LA0086	PLANTING PLAN	B01
25-A-287-LA0087	PLANTING PLAN	B01
25-A-287-LA0088	PLANTING PLAN	B01
25-A-287-LA0089	PLANTING PLAN	B01
25-A-287-LA0090	PLANTING PLAN	B01
25-A-287-LA0108	LANDSCAPE SECTIONS	B01

PRELIMINARY ONLY

NOT FOR CONSTRUCTION

Model Rev:B.01 Issued:x.x.21

[illegible]

REFERENCES	SCALE (@ A1)	DESIGNED	UDLA
		DRAWN	Kurt Tanner
		CHECKED	Scott Lang
		APPROVED	Manoj Aravin
	DATE	13/08/21	
	DATUM		
	HORIZONTAL:	PCG2020	
	VERTICAL:	AHD71	

 Government of Western Australia Public Transport Authority		MORLEY ELLENBROOK LINE	
MALAGA STATION - LANDSCAPING COVERSHEET			
PTA Drawing No: 25-A-287-LA0001			Rev: B01

CAD DRAWING PATHNAME U:\1 - udl\PROJECTS\MELCONN Morley Ellenbrook Line\2. Drawings\0. Revit\3. Malaga\25-B-287-LA0001.rvt

LEGEND



PV01 High Quality Stone Unit Paver (Trafficable)
Refer Material Schedule



PV02A High Quality Insitu Exposed Aggregate Concrete
Darker Colour Finish (Trafficable)
Refer Material Schedule



PV02D High Quality Insitu Exposed Aggregate Concrete
Light Colour Finish (Trafficable)
Refer Material Schedule



PV02B Standard Grey Broom Finish Insitu Concrete (Non-Trafficable)
Refer Material Schedule



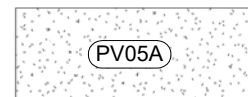
PV02C Standard Grey Broom Finish Insitu Concrete (Trafficable)
Refer Material Schedule

PV04A

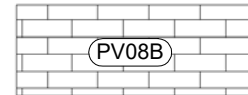
PV04A Tactile Ground Surface Indicator - Dot
Refer Material Schedule

PV04B

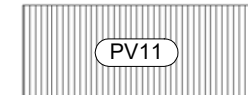
PV04B Tactile Ground Surface Indicator - T-Bar
Refer Material Schedule



PV05A Red Asphalt
Refer Material Schedule



PV08B Brick Pavement - Brikmakers Easipave 80 Silver
Refer Material Schedule



PV11 Custom Seat/Stage Deck
Under Development

ED02

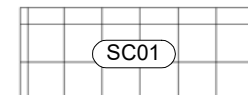
ED02 Standard Insitu Concrete Edge with interpretive text/art inlay
Refer Material Schedule

ED04A

ED04A Standard Softscape Maintenance Edge, Subsurface
Refer Material Schedule

WT05

WT05 Insitu Concrete Seating Wall with light recess
Refer Material Schedule



SC01 Structural Soils Cells
Refer Material Schedule

FN01

FN01 Bike Hoop
Refer Material Schedule.

FN02

FN02 Dual Bin Enclosure
Refer Material Schedule.

FN03

FN03 Drinking Fountain with 'Dog Watering Bowl'
Refer Material Schedule.

FN04A

FN04A Bench Seat
Refer Material Schedule.

FN04B

FN04B Mounted Accessible Bench Seat
Under Development

FN05

FN05 Electrical General Purpose Outlet
Refer Material Schedule.

FN06

FN06 External General Purpose Water Source
Refer Material Schedule.

FX01

FX01 Non-Slip In Fill Tree Grate
Refer Material Schedule.

FX02A

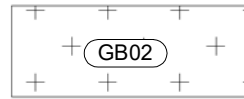
FX02A Fixed Bollard
Refer Material Schedule.

FX02B

FX02B Removable Bollard
Refer Material Schedule.



GB01 High Quality Amenity Garden Bed
Refer Material Schedule.



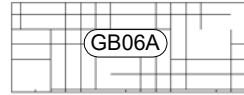
GB02 Standard Amenity Garden Bed
Refer Material Schedule.



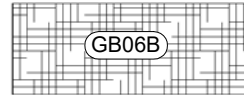
GB03 Basic Amenity Garden Bed
Refer Material Schedule.



GB04 Swale and Basin Garden Bed
Refer Material Schedule.



GB06A Tubestock Revegetation (Groundcover) Garden Bed
Refer Material Schedule.



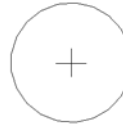
GB06B Tubestock Revegetation (Shrubs) Garden Bed
Refer Material Schedule.



GB08 Mulch Only Garden Bed
Refer Material Schedule.



LS01 Irrigated Lawn
Refer Material Schedule.



TR03 200L Tree
Refer Material Schedule.



TR04 100L Tree
Refer Material Schedule.



TR05 45L Tree
Refer Material Schedule.

— • — Landscape Scope of Works

— • — Environmental Boundary

— • — 1.2m Precinct Fence (Indicative Only)
Under Development
Refer Civil Documentation

NOTES

1. DRAWINGS SHALL BE READ IN CONJUNCTION WITH ALL RELEVANT DOCUMENTATION (INCLUDING THAT OF DISCIPLINES INTERFACING WITH LANDSCAPE WORKS) PRIOR TO COMMENCEMENT OF WORKS. RELEVANT DOCUMENTATION SHALL INCLUDE BUT IS NOT LIMITED TO:

- THE CONTRACT;
- RELEVANT LEGISLATION, STANDARDS AND CODES OF PRACTICE;
- LANDSCAPE AND IRRIGATION DRAWINGS, TECHNICAL SPECIFICATONS, SCHEDULES AND REPORTS;
- ARCHITECTURAL DRAWINGS, TECHNICAL SPECIFICATONS, SCHEDULES AND REPORTS;
- STRUCTURAL, CIVIL, SERVICES ENGINEERING DRAWINGS, TECHNICAL SPECIFICATONS, SCHEDULES AND REPORTS;
- INSTRUCTIONS, CONSULTANT ADVICE NOTES AND ANY OTHER CONTRACTUAL NOTIFICATIONS FROM THE MANAGING CONTRACTOR;
- REPORTS AND STUDIES, INCLUDING ENVIRONMENTAL, ARBORICULTURAL, GEOTECHNICAL, BUSHFIRE, HERITAGE, ETC;
- BILLS OF QUANTITIES (WHERE PROVIDED);
- ANY OTHER INFORMATION DEEMED PERTINENT BY THE MANAGING CONTRACTOR.

2. THESE DRAWINGS HAVE BEEN BASED ON A COMPILATION OF INFORMATION AND BASE DATA (INCLUDING DRAWINGS AND MODELS PROVIDED BY OTHER DISCIPLINES) AVAILABLE AT THE TIME OF PRODUCTION. THE LANDSCAPE DESIGN AND DOCUMENTATION IS RELIANT ON THE ACCURACY AND COMPLETENESS OF INFORMATION PROVIDED BY OTHERS. NO RESPONSIBILITY IS TAKEN FOR THE QUALITY OR COMPLETENESS OF INFORMATION FROM OTHERS ON WHICH THE LANDSCAPE DESIGN IS RELIANT.

3. ANOMALIES, OMISSIONS, ERRORS OR DISCREPENCIES IN THE PROJECT DOCUMENTATION ARE TO BE REFERRED TO THE MANAGING CONTRACTOR AND RELEVANT DISCIPLINE SRE'S IMMEDIATELY UPON DISCOVERY FOR DETERMINATION OF RESOLUTION AND SUBSEQUENT INSTRUCTION PRIOR TO CONTINUATION OF WORKS.

3. THE CONTRACTOR AND SUB-CONTRACTORS SHALL VERIFY ALL DIMENSIONS, SET-OUT, LEVELS, EXISTING AND PROPOSED INTERFACING WORKS (INCLUDING SERVICES AND SUB-SURFACE WORKS) PRIOR TO COMMENCEMENT ON SITE, PREPARATION OF DETAIL/SHOP DRAWINGS, AND FABRICATION OF CONSTRUCTION / BUILDING COMPONENTS.

4. SET-OUT OF ALL WORKS SHALL BE UNDERTAKEN BY LICENSED SURVERYOR UTILISING 'ISSUE FOR CONSTRUCTION' DIGITAL FILES. LEVELS TO BE VERIFIED AGAINST THE 'ISSUE FOR CONSTRUCTION' DRAWINGS.

5. ALL DIMENSIONS ARE IN MM. DO NOT SCALE OFF DRAWINGS.

6. THE CONTRACTOR IS TO PROVIDE SHOP DRAWINGS (CAD DRAFTED TO SCALE WITH ADEQUATE NOTES AND DIMENSIONS FOR REVIEW AND FABRICATION) TO THE MANAGING CONTRACTOR FOR REVIEW PRIOR TO FABRICATION. FIXING AND FASTENING SELECTIONS ARE TO BE CONFIRMED VIA THE SHOP DRAWING PROCESS IN ACCORDANCE WITH THE AESTHETIC AND STRUCTURAL REQUIREMENTS OF THE DESIGN DOCUMENTATION.

7. WHERE STRUCTURAL FIXINGS AND CONNECTIONS AND / OR THEIR SET-OUT HAVE NOT BEEN NOMINATED IN THE DOCUMENTATION, THE CONTRACTOR IS TO VERIFY SUITABLE SELECTIONS AND SET-OUT WITH THE MANAGING CONTRACTOR PRIOR TO FABRICATION.

8. CONSTRUCTION WORKS SHALL ONLY BE UNDERTAKEN ON RECEIPT OF 'ISSUE FOR CONSTRUCTION' DOCUMENTATION.

9. TREES IDENTIFIED FOR RETENTION IN THE DOCUMENTS SHALL BE PROTECTED FOR THE DURATION OF CONSTRUCTION WORKS IN ACCORDANCE WITH TREE PROTECTION SPECIFICATIONS. *[NB. TREE SPECIFICATIONS ARE SUBJECT TO DEVELOPMENT AND CONFIRMATION IN THE NEXT DESIGN STAGE].*

10. ALL PAVED SURFACES ARE TO BE CONSTRUCTED IN COMPLIANCE WITH PROJECT 'DESIGN FOR DISABLED ACCESS' (DDA) REQUIREMENTS AND AS1428. DISCREPENCIES IN THE DOCUMENTATION PERTAINING TO PAVEMENT DESIGN AND DDA REQUIREMENTS ARE TO BE REFERRED TO THE MANAGING CONTRACTOR FOR RESOLUTION.

11. ALL SURFACES SHALL BE FREE-DRAINING. THE CONTRACTOR SHALL ENSURE SURFACES GRADES FALL AWAY FROM BUILDINGS, STRUCTURES, FURNITURE, KERB RAMPS AND PATHS OF TRAVEL.

12. SET-OUT AND SELECTION OF LIGHT FITTINGS ARE A WORK IN PROGRESS AND ARE NOT YET CAPTURED IN THE LANDSCAPE DOCUMENTATION FOR REFERENCE DESIGN. LIGHTING DETAILS WILL BE CONFIRMED IN THE NEXT PHASE OF DESIGN. IN THE INTERIM, PLEASE REFER TO PRELIMINARY LIGHTING STRATEGIES RD_LA_SK035 / RD_LA_SK038 FOR LIGHTING INTENT.

13. UNIT PAVING HEADER COURSES ARE NOT SHOWN DISTINCTLY ON FINISHES PLANS, REFER MATERIAL SCHEDULE FOR REQUIREMENTS.

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Model Rev:B.01 Issued:x.x.21

B01	13/08/21	DA Submission		UDLA	KT	SL
A	4/06/21	Issue for 100% RD		UDLA	KT	SL
A02	29/04/21	Issue for RD-IDC		UDLA	KT	SL
A01	29/03/21	Issue for 50% RD		UDLA	KT	SL
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		AT ORIGINAL PLOT SIZE				



REFERENCES

SCALE

1 : 100 (@ A1)

DATUM

HORIZONTAL: PCG2020

VERTICAL: AHD71

DESIGNED

UDLA

DRAWN

Kurt Tanner

CHECKED

Scott Lang

APPROVED

Manoj Aravind

DATE

13/08/21



Government of Western Australia
Public Transport Authority

MORLEY ELLENBROOK LINE

MALAGA STATION - LANDSCAPING

LEGEND & NOTES

PTA Drawing No: 25-A-287-LA0002

Rev: B01

Materials Schedule		
Code	Description	Area
ED02	Insitu Concrete Edge White	39 m²
GB01	High Quality Irrigated Amenity Garden Bed	972 m²
GB02	Standard Non-Irrigated Amenity Garden Bed	4199 m²
GB03	Basic Non-Irrigated Amenity Garden Bed	2772 m²
GB04	Non-Irrigated Swale and Basin Garden Bed	7276 m²
GB06A	Non-Irrigated Tubestock Revegetation Groundcover Garden Bed	23515 m²
GB06B	Non-Irrigated Tubestock Revegetation Garden Bed - Shrubs	8761 m²
LS01	Irrigated Lawn	305 m²
PV01A	High Quality Stone Unit Paver (Trafficable)	112 m²
PV02A	Insitu Exposed Aggregate Concrete (Trafficable) - Dark	4093 m²
PV02B	Standard Grey, Broom Finish Insitu Concrete (Non-Trafficable)	1927 m²
PV02C	Standard Grey, Broom Finish Insitu Concrete (Trafficable)	259 m²
PV02D	Insitu Exposed Aggregate Concrete (Trafficable) - Light	1888 m²
PV05A	Red Asphalt	2118 m²
PV08B	Standard Brick Paving	2247 m²
PV11	Custom Timber Seating Deck	27 m²
SC01	Structural Soil Cells	144 m²

Trees		
Code	Description	Quantity
TR03	200L Tree	85
TR04	100L Tree	136
TR05	45L Tree	987
Grand total		1208

Walls		
Code	Description	Length (Lm)

WT05	Insitu Concrete Seat Wall w/ Light Recess	111 m
------	---	-------

Furniture & Fixings		
Code	Description	Quantity

FN01	Bike Hoop	12
FN02	Dual Bin Enclosure	16
FN03	Drink Fountain with Dog Bowl	2
FN04A	Bench Seat	20
FN04B	Wall Mounted Seat with Arms	4
FN05	General Purpose Outlet	5
FN06	General Purpose External Water Service	5
FX01	Non-Slip Tree Grate	103
FX02A	Fixed Stainless Steel Bollard	39
FX02B	Removable Stainless Steel Bollard	2

Planting Schedule
Garden Bed Species: GB01, GB02, GB03

<i>Acacia gregorii</i>
<i>Acacia lasiocarpa</i> 'Glow Wattle'
<i>Acacia saligna</i> <i>Prostrate</i>
<i>Acacia wilddenowiana</i>
<i>Adenanthos cuneatus</i> <i>Coral Carpet</i>
<i>Anigozanthos flavidus</i> <i>Orange Gem</i>
<i>Anigozanthos flavidus</i> <i>Red</i>
<i>Anigozanthos mangliesii</i>
<i>Anigozanthos viridis</i>
<i>Banksia blechnifolia</i>
<i>Banksia nivea</i>
<i>Banksia prionotes</i> <i>Dwarf</i>
<i>Beaufortia aestiva</i>
<i>Boronia crenulata</i>
<i>Callistemon phoeniceus</i> <i>Dwarf</i>
<i>Calothamnus hirsutus</i>
<i>Calothamnus quadrifidus</i> <i>Little Ripper</i>
<i>Carpobrotus virescens</i> <i>Aussie Rambler</i>
<i>Chorizema chordata</i>
<i>Chorizema varium</i>
<i>Conospermum stoechadis</i>
<i>Conostylis candicans</i>
<i>Crowea exalta</i>
<i>Dampiera diversifolia</i>
<i>Dampiera linearis</i>
<i>Dampiera teres</i>
<i>Eremophila glabra</i> <i>Kalbarri Carpet</i>
<i>Hardenbergia comptoniana</i>
<i>Hemiandra pungens</i> 'Alba'
<i>Hibbertia grossulariifolia</i>
<i>Hypocalymma angustifolium</i>
<i>Hypocalymma robustum</i>
<i>Kennedia coccinea</i>
<i>Kennedia prostrata</i>
<i>Lechenaultia biloba</i> <i>Sky Blue</i>
<i>Lepidosperma calcicola</i>
<i>Lepidosperma gladiatum</i>
<i>Leucophyta brownii</i> <i>Silver Nugget</i>
<i>Lomandra katrinus</i>
<i>Lomandra nyalla</i>
<i>Lomandra tanika</i>
<i>Melaleuca huegii</i> 'Rambler'
<i>Melaleuca sariata</i>
<i>Myporum parvifolium</i> <i>Fine Leaf</i>
<i>Olearia axillaris</i> 'Little Smokie'
<i>Orthrosanthus multiflorus</i>
<i>Pimelea ferruginea</i> <i>Pink Solitaire</i>
<i>Pimelea ferruginea</i> <i>White Solitaire</i>
<i>Ptilotus exalta</i> 'Phoenix'
<i>Verticordia chrysantha</i>
<i>Verticordia mitchelliana</i>
<i>Veticordia monadelpha</i>
<i>Westringia fruticosa</i> <i>Low Horizon</i>
<i>Westringia mundi</i>

Planting Schedules are an indicative species list that is to be refined throughout design development.

Planting Schedule
Garden Bed Species: GB04

<i>Baumea juncea</i>
<i>Baumea rubiginosa</i>
<i>Carex appressa</i>
<i>Ficinia nodosa</i>
<i>Juncus pallidus</i>
<i>Lepidosperma calcicola</i>
<i>Lepidosperma longitudinale</i>
<i>Meeboldina scariosa</i>

Planting Schedule
Garden Bed Species: GB06

<i>Acacia ashbyae</i>
<i>Acacia lasiocarpa</i>
<i>Acacia pulchella</i>
<i>Acacia splendens</i> <i>Autumn Gold</i>
<i>Banksia ashbyii</i> <i>Dwarf</i>
<i>Banksia attenuata</i> <i>Dwarf</i>
<i>Banksia priornotes</i> <i>Dwarf</i>
<i>Banksia sceptrum</i> <i>Little Xmas Candles</i>
<i>Baumea juncea</i>
<i>Baumea rubiginosa</i>
<i>Beautofrtia elegans</i>
<i>Callistemon phoencius</i> <i>Dwarf</i>
<i>Calothamn sanguineus</i>
<i>Calothamnus hirsutus</i>
<i>Calothamnus quadrifidus</i> <i>Little Ripper</i>
<i>Carpobrotus virescens</i>
<i>Ficinia nodosa</i>
<i>Hardenbergia comptoniana</i>
<i>Ispogan dubius</i>
<i>Juncus pallidus</i>
<i>Kennedia coccinea</i>
<i>Kennedia prostrata</i>
<i>Lepidosperma longitudinale</i>
<i>Leucophyta brownii</i>
<i>Melaleuca laterita</i> <i>Dwarf</i>
<i>Melaleuca seriata</i>
<i>Melaleuca systema</i>
<i>Meleuca conothamnoides</i>
<i>Olearia axillaris</i>
<i>Scaevola crassifolia</i>
<i>Verticordia plumosa</i>

Planting Schedule
Tree Species

<i>Banksia grandis</i>
<i>Banskia integrifolia</i>
<i>Corymbia calophylla</i>
<i>Eucalyptus gomphocephala</i>
<i>Eucalyptus rudis</i>
<i>Eucalyptus todiana</i>
<i>Eucalyptus torquata</i>
<i>Eucalyptus victrix</i>
<i>Eucalyptus wandoo</i>
<i>Melaeuca cuticularis</i>
<i>Melaleuca leucadendra</i>
<i>Melaleuca preissiana</i>
<i>Melaleuca quinquinervia</i>
<i>Melaleuca raphiophylla</i>

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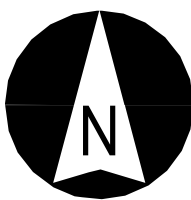
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A	4/06/21	Issue for 100% RD		UDLA	KT	SL
A02	29/04/21	Issue for RD-IDC		UDLA	KT	SL
A01	29/03/21	Issue for 50% RD		UDLA	KT	SL
REV	DATE	AMENDMENT		DSN	DRN	CHK
ORIG	SIZE					
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REFERENCES	SCALE	DESIGNED
	(@ A1)	UDLA
		DRAWN Kurt Tanner
		CHECKED Scott Lang
	DATUM	
	HORIZONTAL: PCG2020	
	VERTICAL: AHD71	
		APPROVED Manoj Aravind
		DATE 13/08/21

	MORLEY ELLENBROOK LINE
MALAGA STATION - LANDSCAPING SCHEDULES	
PTA Drawing No: 25-A-287-LA0006	Rev: B01

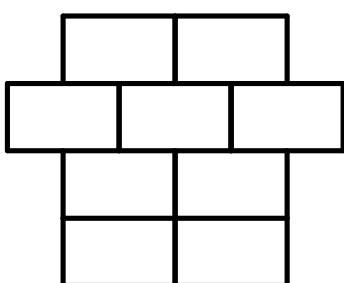


1 25-A-287-LA0010
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A02	29/04/21	Issue for RD-IDC	UDLA	KT	SL	MA
A01	29/03/21	Issue for 50% RD	UDLA	KT	SL	MA
ORIG SIZE	AT ORIGINAL PLOT SIZE		This document must not be copied without PTA's written permission, and the contents thereof must not be imparted to a third party nor be used for any unauthorised purpose.			
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REFERENCES



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DATUM

HORIZONTAL: PCG2020
VERTICAL: AHD71

DESIGNED

UDLA

DRAWN

Kurt Tanner

CHECKED

Scott Lang

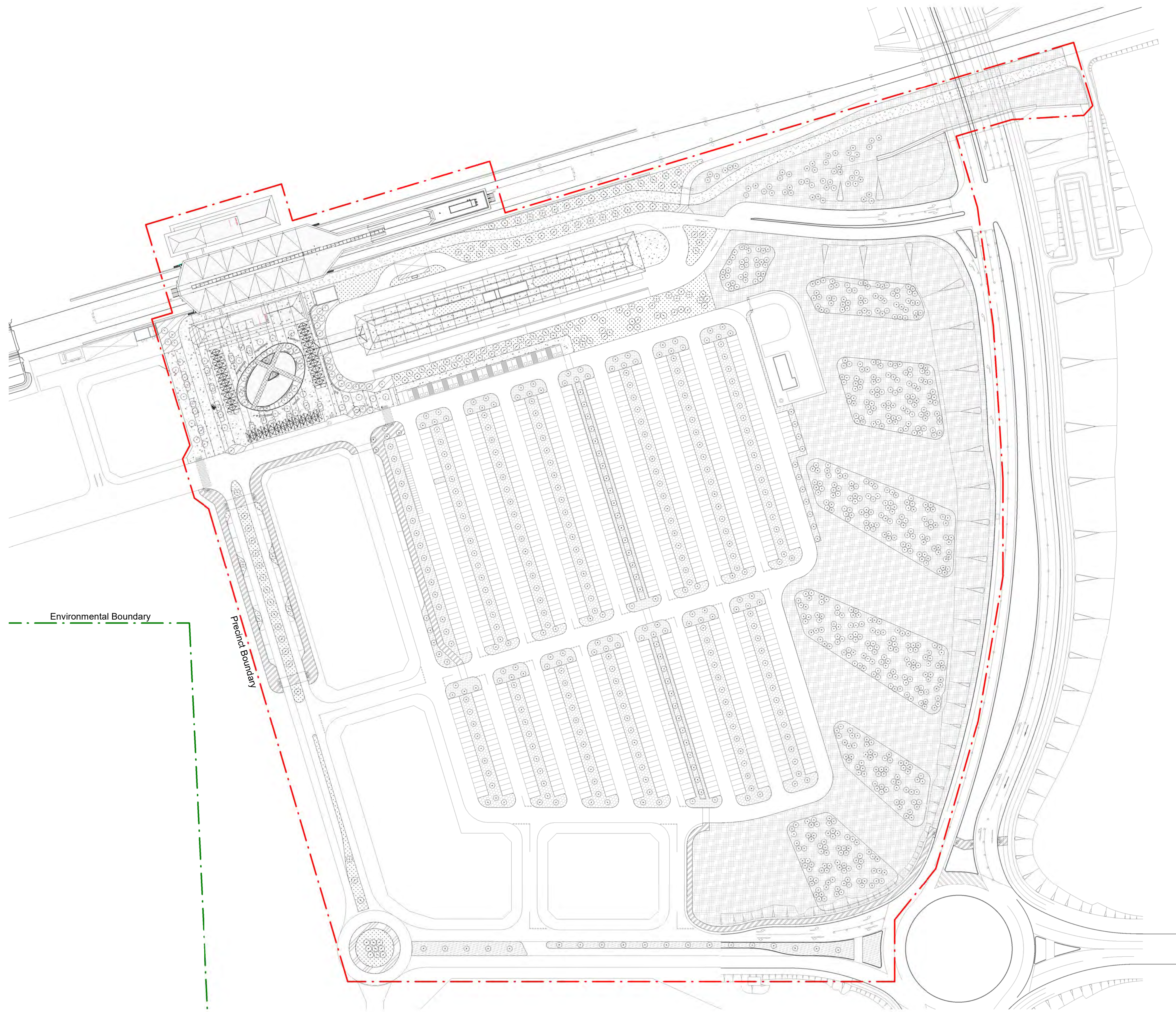
APPROVED

Manoj Aravind

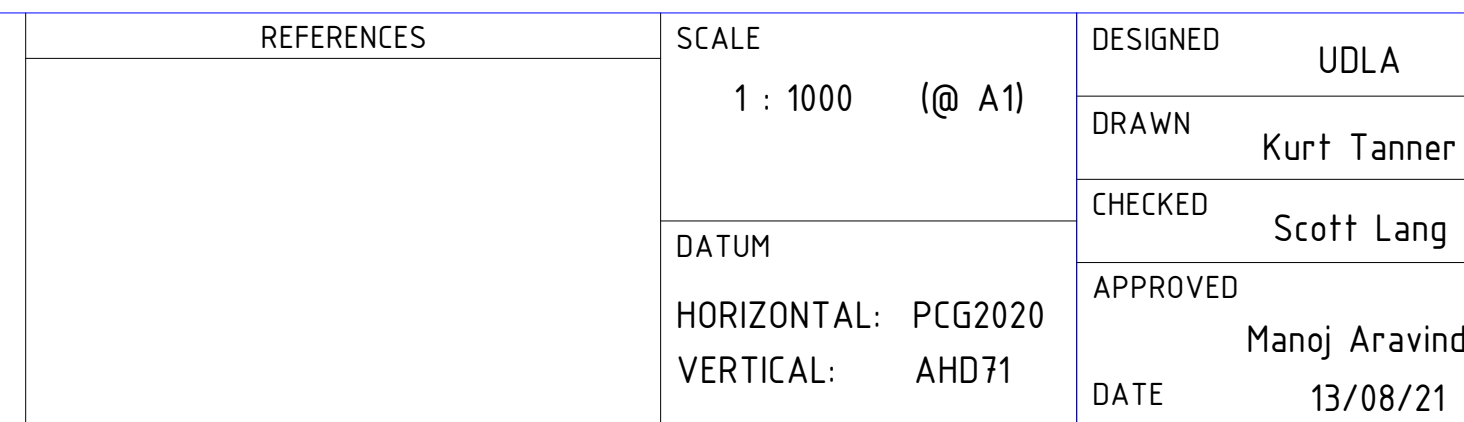
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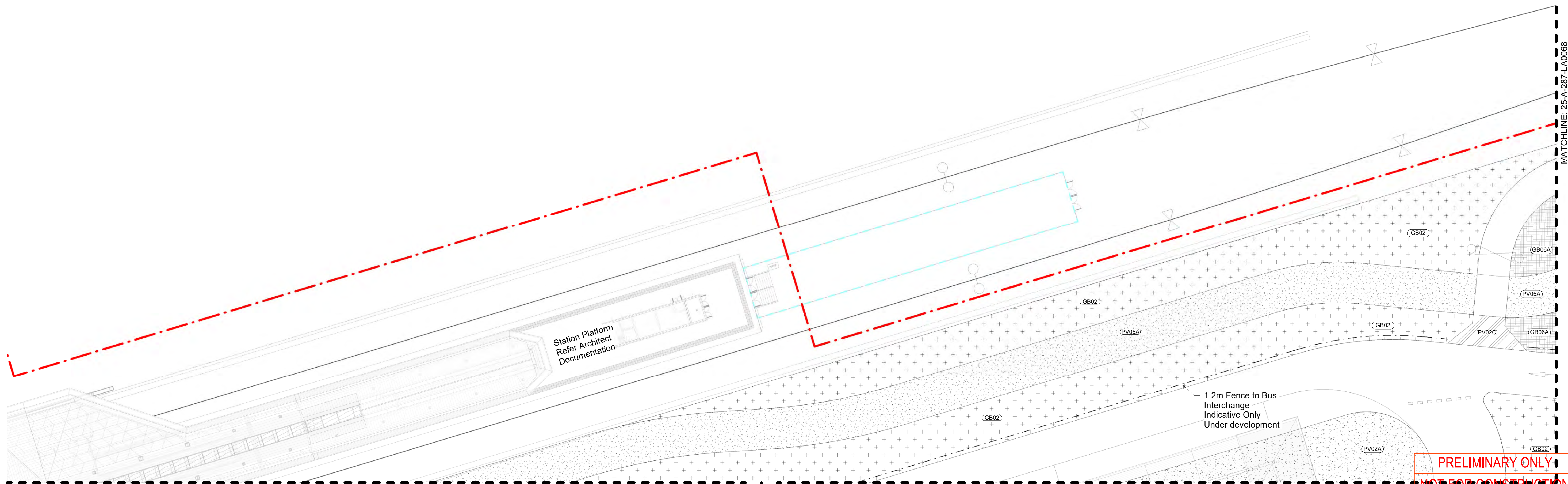
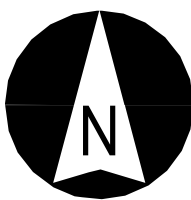
13/08/21

Model Rev:B.01 Issued:x.x.21	
PRELIMINARY ONLY NOT FOR CONSTRUCTION	
Government of Western Australia Public Transport Authority	
MORLEY ELLENBROOK LINE	
MALAGA STATION - LANDSCAPING LANDSCAPE SITE PLAN	
PTA Drawing No: 25-A-287-LA0010	Rev: B01

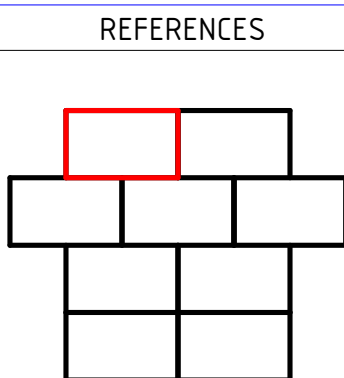


Model Rev:B.01 Issued:x.x.21	
 Government of Western Australia Public Transport Authority	MORLEY ELLENBROOK LINE
MALAGA STATION - LANDSCAPING LANDSCAPE MASTERPLAN	
PTA Drawing No: 25-A-287-LA0011	Rev: B01

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1 25-A-287-LA0067
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SCALE
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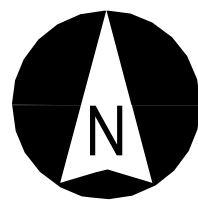
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DESIGNED UDLA
DRAWN Kurt Tanner
CHECKED Scott Lang
APPROVED Manoj Aravind
DATE 13/08/21

Model Rev:B.01 Issued:x.x.21

MORLEY ELLENBROOK LINE
MALAGA STATION - LANDSCAPING
GENERAL ARRANGEMENT & FINISHES PLAN
PTA Drawing No: 25-A-287-LA0067 Rev: B01

REV	DATE	AMENDMENT	DSN	DRN	CHK	APP
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A	4/06/21	Issue for 100% RD	UDLA	KT	SL	MA
A02	29/04/21	Issue for RD-IDC	UDLA	KT	SL	MA
A01	29/03/21	Issue for 50% RD	UDLA	KT	SL	MA
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A1	100mm					



MATCHLINE: 25-A-287-LA0067

Services Access Road
By Others

Opportunity for feature
lighting/artistic element to
bridge abutment.
Under development by
Public Art Coordinator.

BEECHBORO ROAD NORTH

Refer Civil Documentation
for Beechboro Road North
Design Layout

1.2m Fence to Bus
Interchange
Indicative Only
Under development

MATCHLINE: 25-A-287-LA0070

MATCHLINE: 25-A-287-LA0071

PRELIMINARY ONLY
NOT FOR CONSTRUCTION

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25-A-287-LA0068

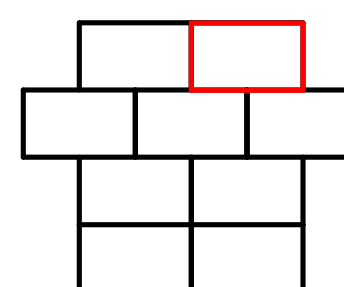
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A02	29/04/21	Issue for RD-IDC	UDLA	KT	SL	MA
A01	29/03/21	Issue for 50% RD	UDLA	KT	SL	MA
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REFERENCES



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DATUM

HORIZONTAL: PCG2020

VERTICAL: AHD71

DESIGNED

UDLA

DRAWN

Kurt Tanner

CHECKED

Scott Lang

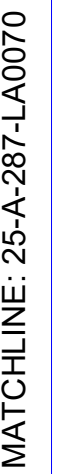
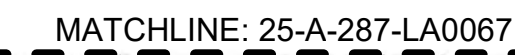
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Manoj Aravind

DATE

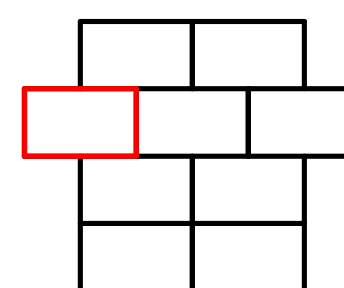
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Model Rev:B.01 Issued:x.x.21	
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MALAGA STATION - LANDSCAPING	
GENERAL ARRANGEMENT & FINISHES PLAN	
PTA Drawing No: 25-A-287-LA0068	Rev: B01



PRELIMINARY ONLY
NOT FOR CONSTRUCTION

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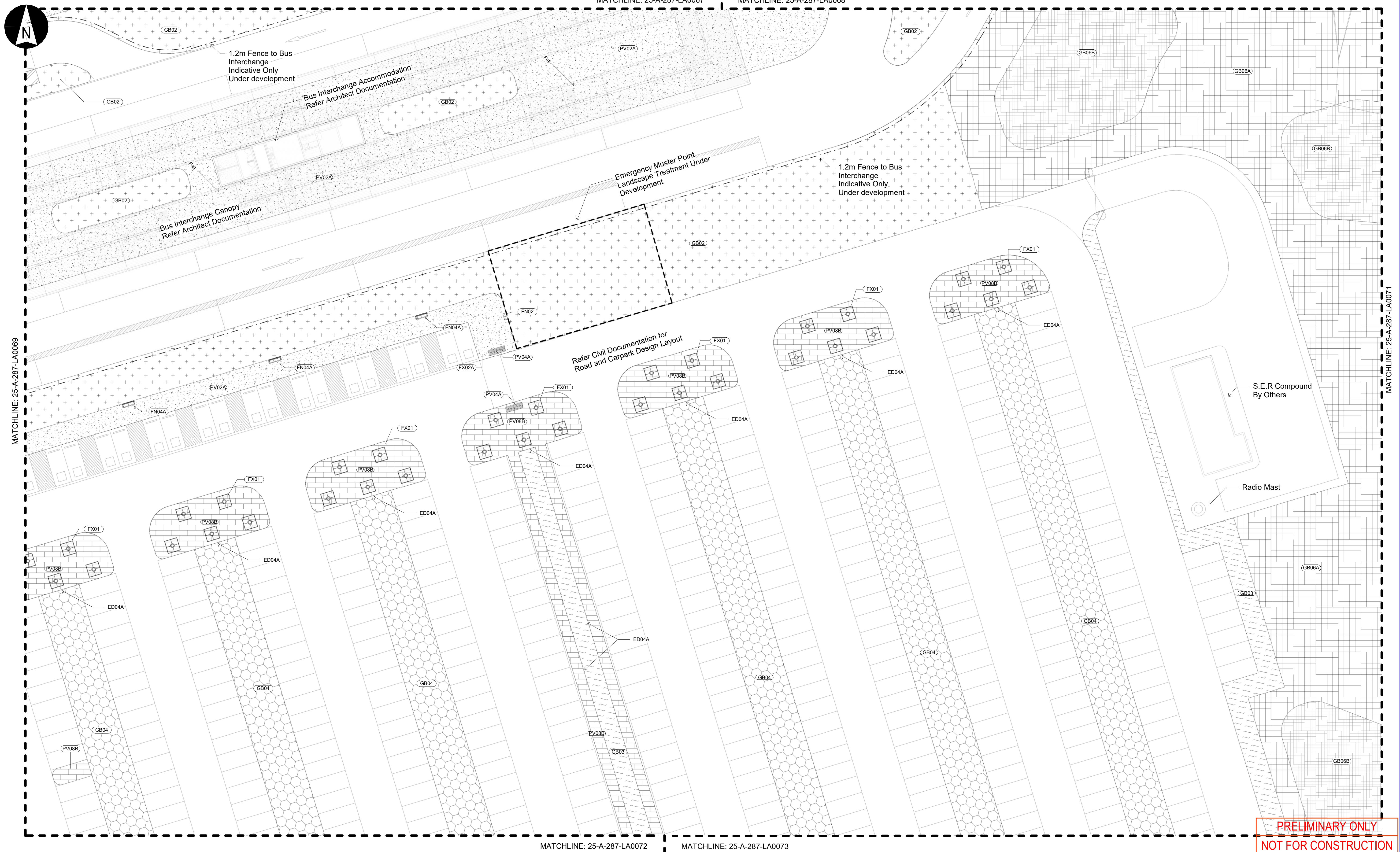
DESIGNED	UDLA
DRAWN	Kurt Tanner
CHECKED	Scott Lang
APPROVED	Manoj Aravind
DATE	13/08/21

Government of Western Australia
Public Transport Authority

MORLEY ELLENBROOK LINE

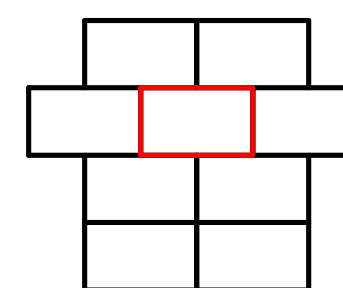
MALAGA STATION - LANDSCAPING
GENERAL ARRANGEMENT & FINISHES PLAN

PTA Drawing No: 25-A-287-LA0069 Rev: B01



PRELIMINARY ONLY
NOT FOR CONSTRUCTION

1 25-A-287-LA0070
1 : 250

[illegible]

REFERENCES

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HORIZONTAL:	PCG2020
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DESIGNED	UDLA
DRAWN	Kurt Tanner
CHECKED	Scott Lang
APPROVED	Manoj Aravind
DATE	13/08/21

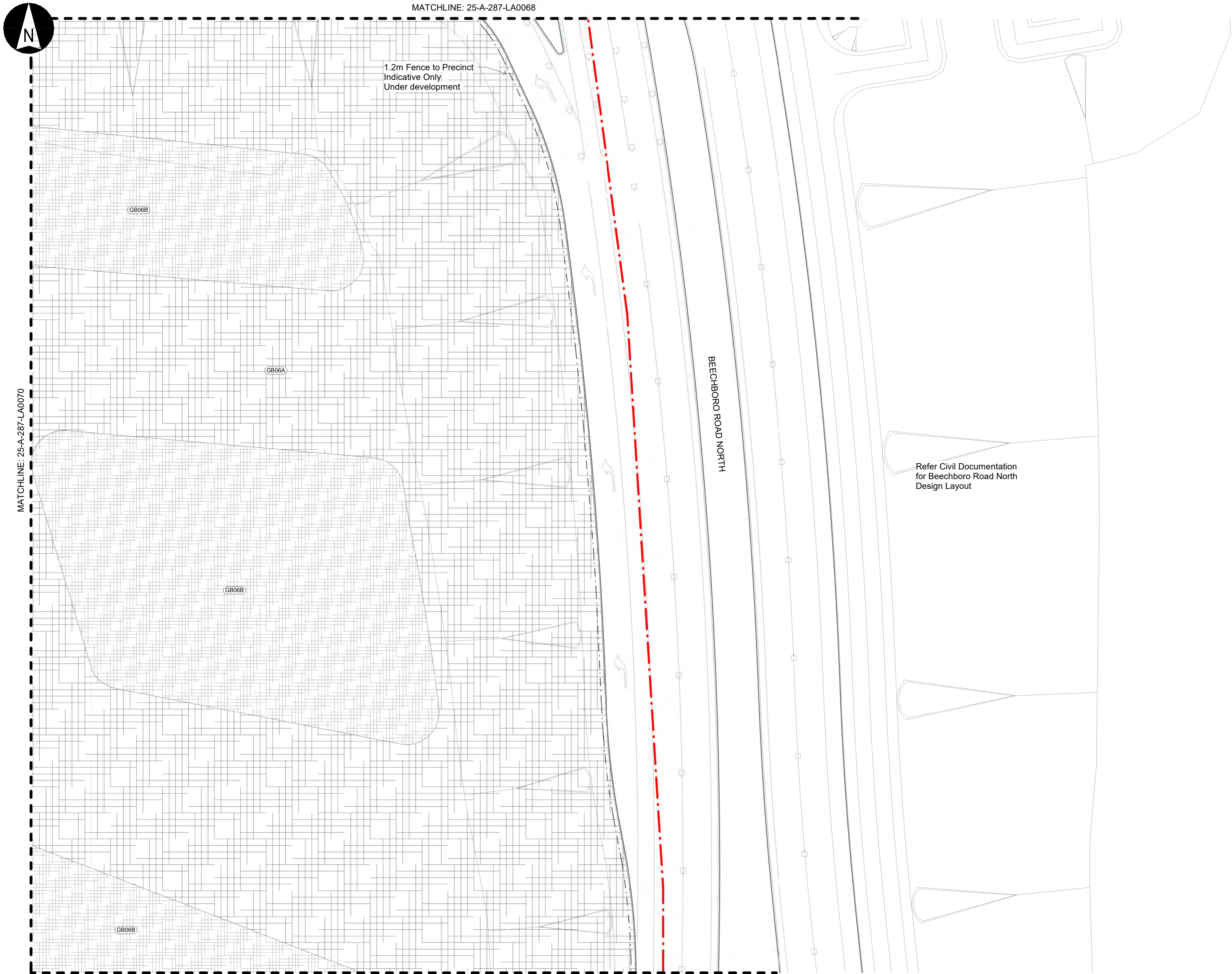
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MORLEY ELLENBROOK LINE

MALAGA STATION - LANDSCAPING
GENERAL ARRANGEMENT & FINISHES PLAN

PTA Drawing No: 25-A-287-LA0070	Rev: B01
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NOT FOR CONSTRUCTION

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		CHECKED		Scott Lang	
		APPROVED		Manoj Aravind	
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Model Rev:B.01 Issued:x.x.21

	MORLEY ELLENBROOK LINE
MALAGA STATION - LANDSCAPING	
GENERAL ARRANGEMENT & FINISHES PLAN	
PTA Drawing No: 25-A-287-LA0071	Rev: B01



MATCHLINE: 25-A-287-LA0069

MATCHLINE: 25-A-287-LA0070

MATCHLINE: 25-A-287-LA0073

MATCHLINE: 25-A-287-LA0074

Development Lot

Stabilisation Treatment and
Fencing to Lot Boundary to
Development Specification.
Refer Civil Documentation

Development Lot

Stabilisation Treatment and
Fencing to Lot Boundary to
Development Specification.
Refer Civil Documentation

Refer Civil Documentation for Road
and Carpark Design Layout

PRELIMINARY ONLY
NOT FOR CONSTRUCTION

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25-A-287-LA0072

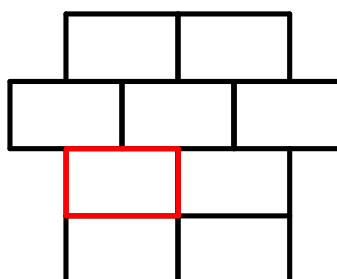
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ORIG SIZE	AT ORIGINAL PLOT SIZE					
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REFERENCES



SCALE

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DATUM

HORIZONTAL: PCG2020

VERTICAL: AHD71

DESIGNED

UDLA

DRAWN

Kurt Tanner

CHECKED

Scott Lang

APPROVED

Manoj Aravind

DATE

13/08/21

Model Rev:B.01 Issued:x.x.21

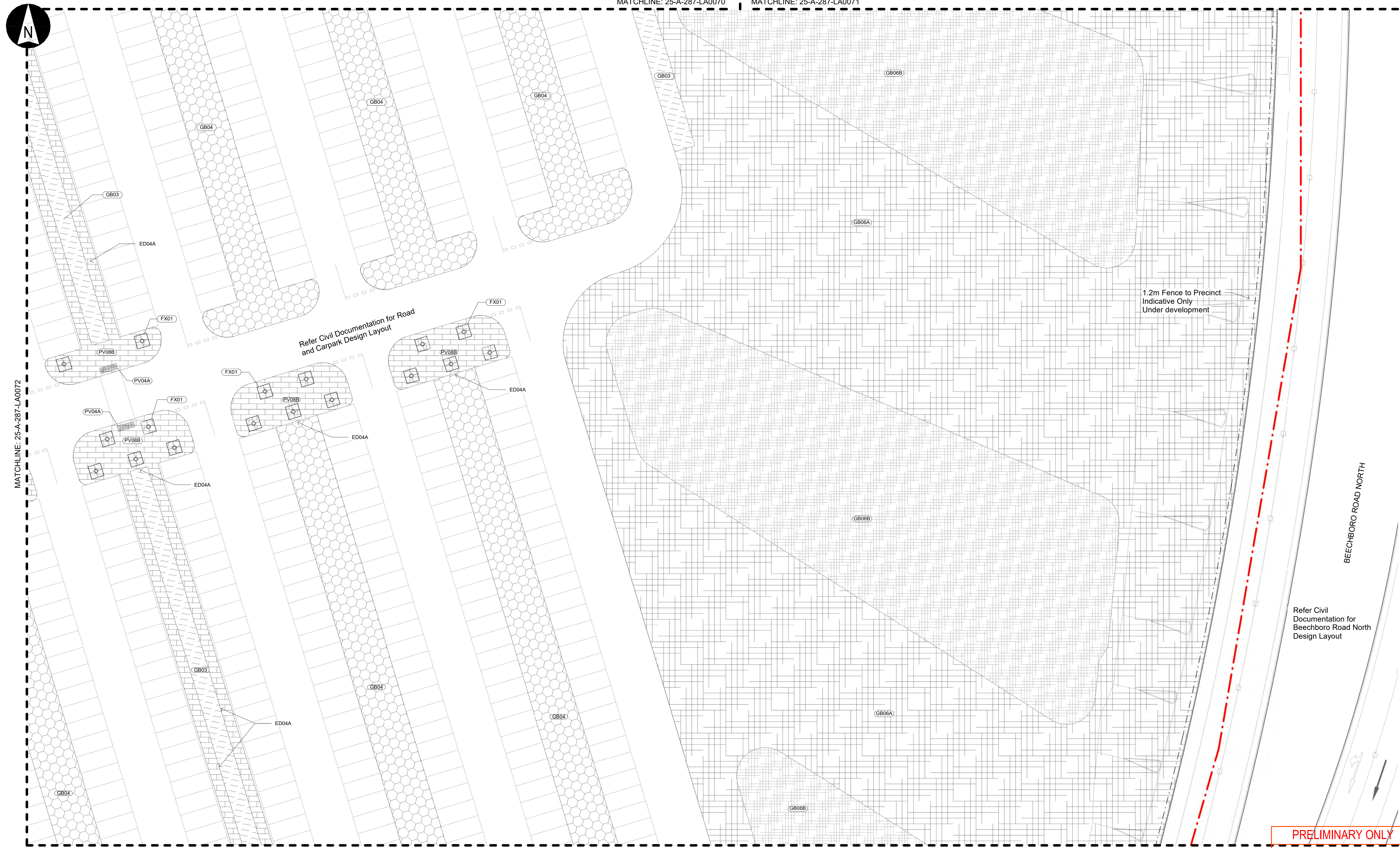


MORLEY ELLENBROOK LINE

MALAGA STATION - LANDSCAPING
GENERAL ARRANGEMENT & FINISHES PLAN

PTA Drawing No: 25-A-287-LA0072

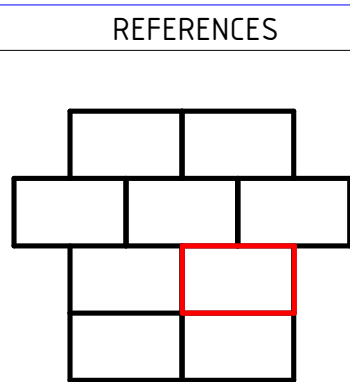
Rev: B01



PRELIMINARY ONLY
NOT FOR CONSTRUCTION

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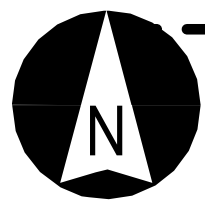
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VERTICAL:	AHD71
DESIGNED	UDLA
DRAWN	Kurt Tanner
CHECKED	Scott Lang
APPROVED	Manoj Aravind
DATE	13/08/21

Model Rev:B.01 Issued:x.x.21

MORLEY ELLENBROOK LINE

MALAGA STATION - LANDSCAPING
GENERAL ARRANGEMENT & FINISHES PLAN

PTA Drawing No: 25-A-287-LA0073 Rev: B01



MATCHLINE: 25-A-287-LA0072

Main Street

GB02

Development Lot

Stabilisation Treatment and
Fencing to Lot Boundary to
Development Specification.
Refer Civil Documentation

GB04

GB04

GB04

Refer Civil Documentation for
Road and Carpark Design Layout

Development Lot

Stabilisation Treatment and
Fencing to Lot Boundary to
Development Specification.
Refer Civil Documentation

GB03

PV02C

GB03

GB03

Entry Road

Development Lot

PRELIMINARY ONLY
NOT FOR CONSTRUCTION

MATCHLINE: 25-A-287-LA0075

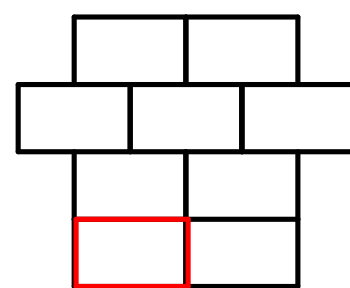
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REFERENCES



SCALE

1 : 250 (@ A1)

DATUM

HORIZONTAL: PCG2020

VERTICAL: AHD71

DESIGNED

UDLA

DRAWN

Kurt Tanner

CHECKED

Scott Lang

APPROVED

Manoj Aravind

DATE

13/08/21

Model Rev:B.01 Issued:x.x.21	
 MORLEY ELLENBROOK LINE	
MALAGA STATION - LANDSCAPING GENERAL ARRANGEMENT & FINISHES PLAN	
PTA Drawing No: 25-A-287-LA0074	Rev: B01



MATCHLINE: 25-A-287-LA0073

MATCHLINE: 25-A-287-LA0074

Refer Civil Documentation for
Road and Carpark Design Layout

Development Lot

Stabilisation Treatment and
Fencing to Lot Boundary to
Development Specification.
Refer Civil Documentation

Drainage design under development
Refer Civil Documentation

1.2m Fence to Precinct
Indicative Only
Under development

Indicative crossing &
pram ramp locations

Refer Civil Documentation for
Beechboro Road North Design Layout

Entry Road

Ring Main Unit
By Others

Development Lot

1 25-A-287-LA0075
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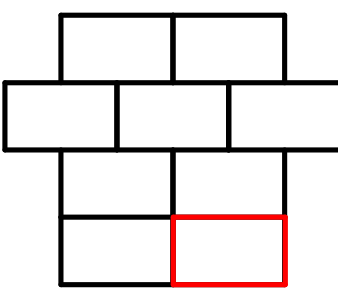
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NOT FOR CONSTRUCTION

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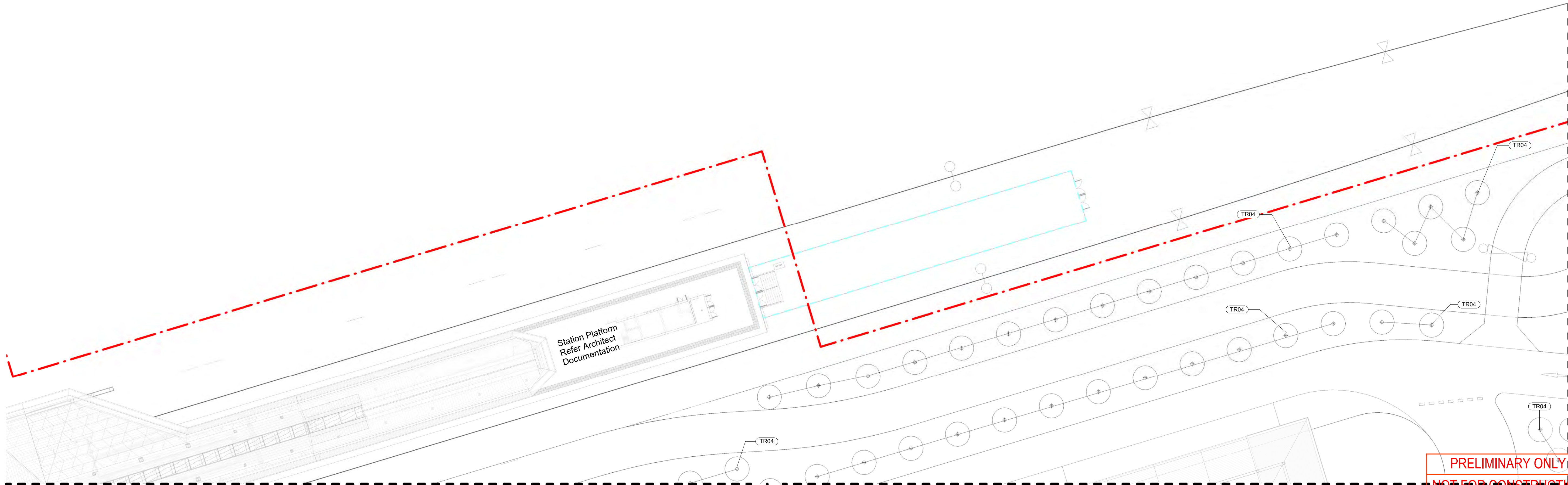
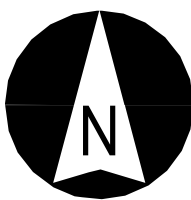


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DATUM
HORIZONTAL: PCG2020
VERTICAL: AHD71

DESIGNED UDLA
DRAWN Kurt Tanner
CHECKED Scott Lang
APPROVED Manoj Aravind
DATE 13/08/21

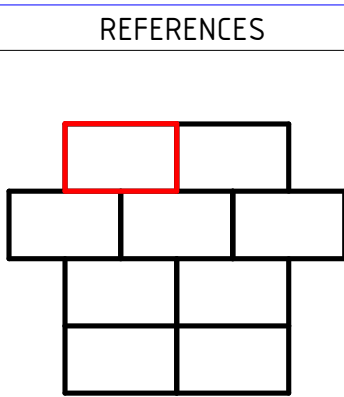
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MALAGA STATION - LANDSCAPING GENERAL ARRANGEMENT & FINISHES PLAN
PTA Drawing No: 25-A-287-LA0075 Rev: B01



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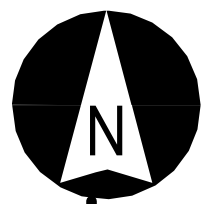
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NOT FOR CONSTRUCTION

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REFERENCES	SCALE	DESIGNED
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		DRAWN Kurt Tanner
		CHECKED Scott Lang
		APPROVED Manoj Aravind
		DATE 13/08/21

Model Rev:B.01 Issued:x.x.21	
 MORLEY ELLENBROOK LINE	
MALAGA STATION - LANDSCAPING PLANTING PLAN	
PTA Drawing No: 25-A-287-LA0082	Rev: B01



MATCHLINE: 25-A-287-LA0082

Services Access Road
By Others

Opportunity for feature
lighting/artistic element to
bridge abutment.
Under development by
Public Art Coordinator.

BEECHBORO ROAD NORTH

Refer Civil Documentation
for PSP connection east of
BRN

Refer Civil Documentation
for Beechboro Road North
Design Layout

MATCHLINE: 25-A-287-LA0085

MATCHLINE: 25-A-287-LA0086

PRELIMINARY ONLY
NOT FOR CONSTRUCTION

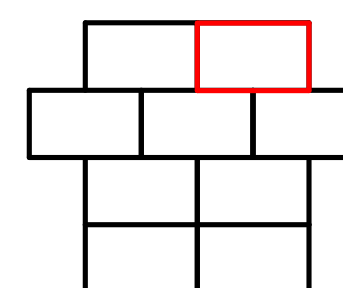
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REFERENCES



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DESIGNED

UDLA

DRAWN

Kurt Tanner

CHECKED

Scott Lang

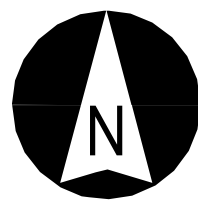
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Manoj Aravind

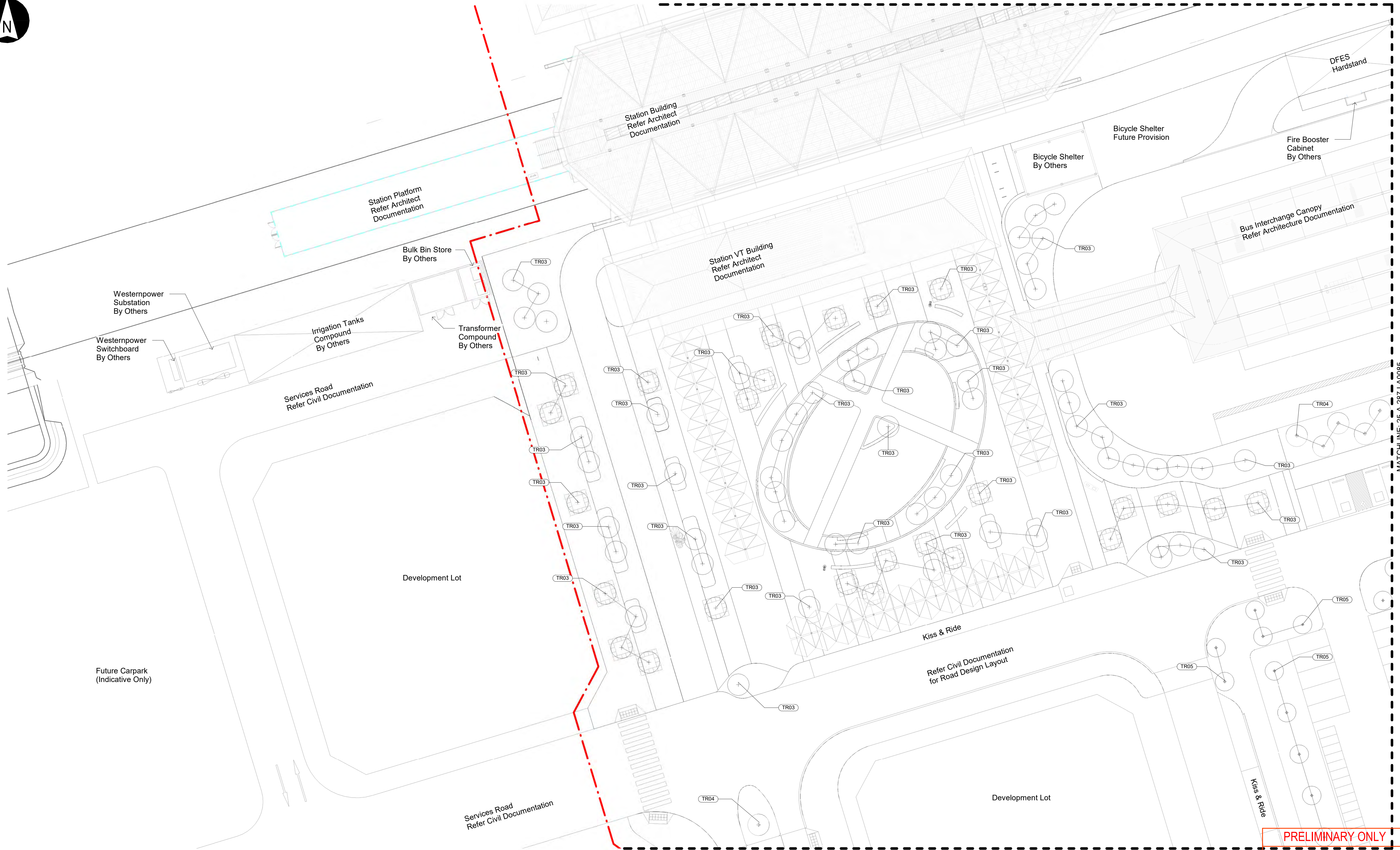
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13/08/21

Model Rev:B.01 Issued:x.x.21	
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MALAGA STATION - LANDSCAPING PLANTING PLAN	
PTA Drawing No: 25-A-287-LA0083	Rev: B01



MATCHLINE: 25-A-287-LA0082



MATCHLINE: 25-A-287-LA0085

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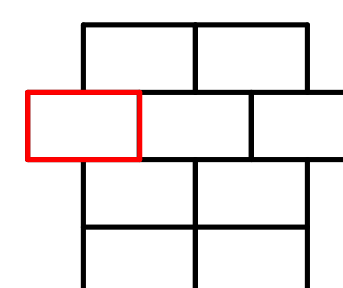
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NOT FOR CONSTRUCTION

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ORIG SIZE	AT ORIGINAL PLOT SIZE		This document must not be copied without PTA's written permission, and the contents thereof must not be imparted to a third party nor be used for any unauthorised purpose.			
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REFERENCES



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VERTICAL: AHD71

DESIGNED

UDLA

DRAWN

Kurt Tanner

CHECKED

Scott Lang

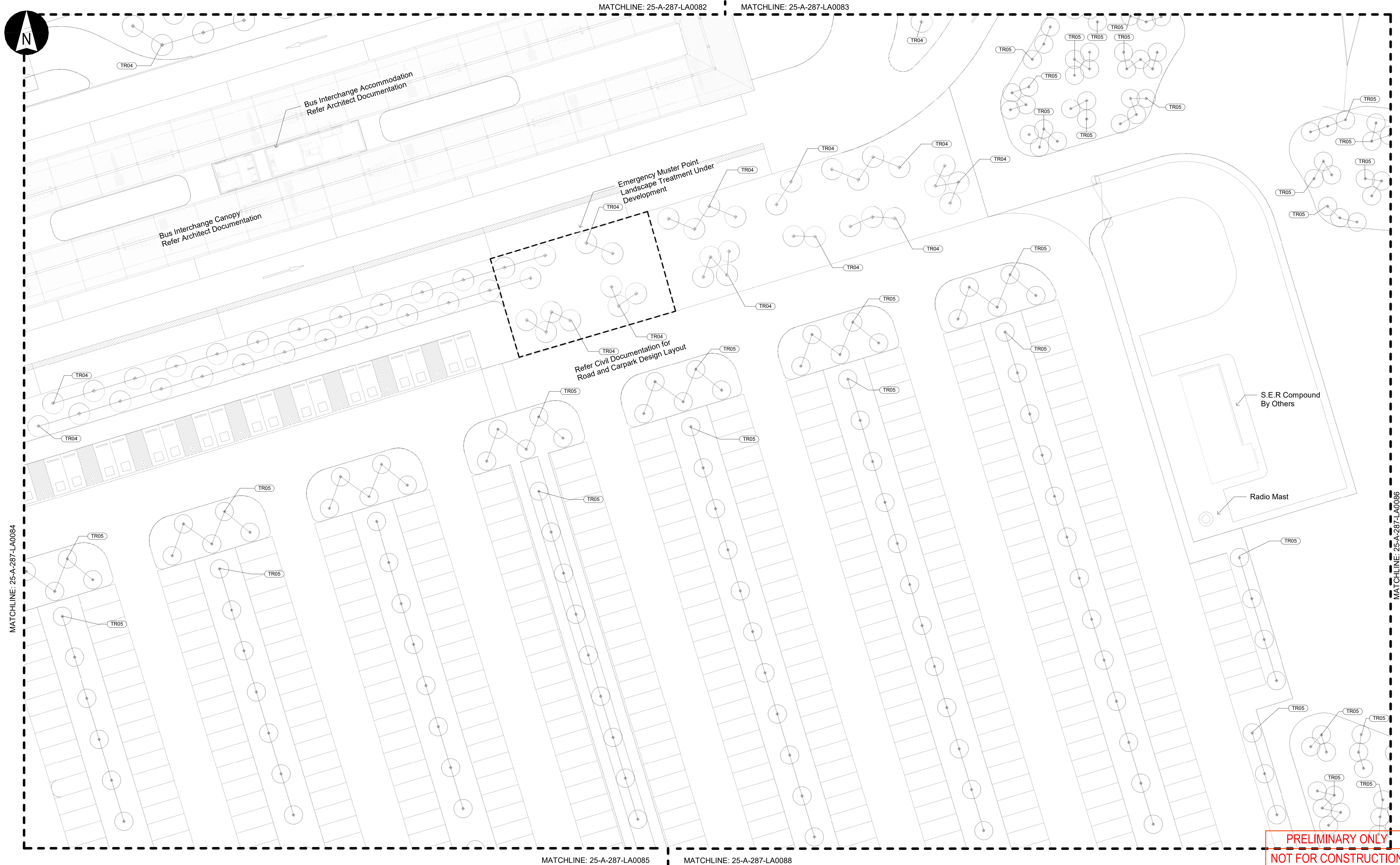
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Manoj Aravind

DATE

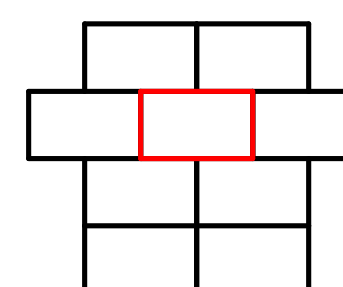
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MALAGA STATION - LANDSCAPING PLANTING PLAN	
PTA Drawing No: 25-A-287-LA0084	Rev: B01



PRELIMINARY ONLY
NOT FOR CONSTRUCTION

1 25-A-287-LA0085
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[illegible]

REFERENCES

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DESIGNED	UDLA
DRAWN	Kurt Tanner
CHECKED	Scott Lang
APPROVED	Manoj Aravind
DATE	13/08/21

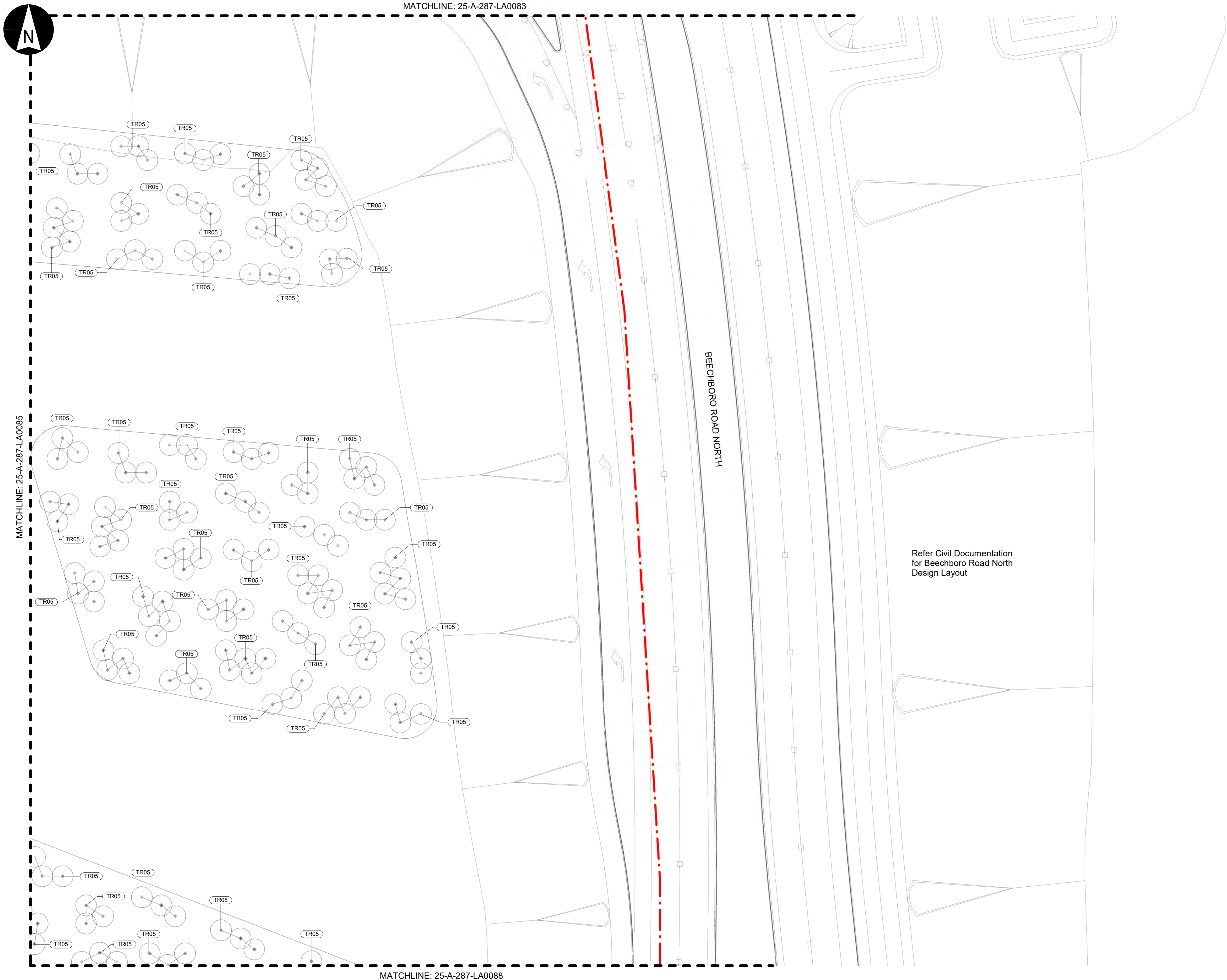
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MORLEY ELLENBROOK LINE

MALAGA STATION - LANDSCAPING PLANTING PLAN

PTA Drawing No: 25-A-287-LA0085 Rev: B01



PRELIMINARY ONLY
NOT FOR CONSTRUCTION

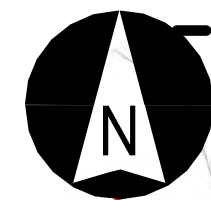
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A01	29/03/21	Issue for 50% RD	UDLA	KT	SL	MA
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REFERENCES		SCALE	DESIGNED	UDLA
		1 : 250 (@ A1)	DRAWN	Kurt Tanner
		DATUM	CHECKED	Scott Lang
		HORIZONTAL: PCG2020	APPROVED	Manoj Aravind
		VERTICAL: AHD71	DATE	13/08/21
Model Rev:B.01 Issued:x.x.21				
MALAGA STATION - LANDSCAPING PLANTING PLAN				
PTA Drawing No: 25-A-287-LA0086 Rev: B01				



MATCHLINE: 25-A-287-LA0084

MATCHLINE: 25-A-287-LA0085

MATCHLINE: 25-A-287-LA0088

MATCHLINE: 25-A-287-LA0089

Refer Civil Documentation for Road
and Carpark Design Layout

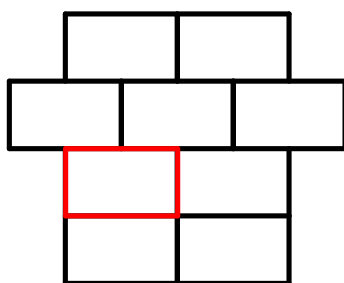
PRELIMINARY ONLY
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1 25-A-287-LA0087
1 : 250

B01	13/08/21	DA Submission		UDLA	KT	SL	SL		
A	4/06/21	Issue for 100% RD		UDLA	KT	SL	MA		
A02	29/04/21	Issue for RD-IDC		UDLA	KT	SL	MA		
A01	29/03/21	Issue for 50% RD		UDLA	KT	SL	MA		
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A1		AT ORIGINAL PLOT SIZE							



REFERENCES



SCALE

1 : 250 (@ A1)

DATUM

HORIZONTAL: PCG2020
VERTICAL: AHD71

DESIGNED

UDLA

DRAWN

Kurt Tanner

CHECKED

Scott Lang

APPROVED

Manoj Aravind

DATE

13/08/21

Model Rev:B.01 Issued:x.x.21

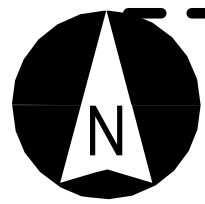


MORLEY ELLENBROOK LINE

MALAGA STATION - LANDSCAPING
PLANTING PLAN

PTA Drawing No: 25-A-287-LA0087

Rev: B01



MATCHLINE: 25-A-287-LA0087

Main Street

TR05

TR05

TR05

TR05

TR05

Refer Civil Documentation for
Road and Carpark Design Layout

Development Lot

TR04

Development Lot

TR04

TR05

TR05

Entry Road

Development Lot

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1 25-A-287-LA0089
1 : 250

Model Rev:B.01 Issued:x.x.21


B01	13/08/21	DA Submission		UDLA	KT	SL	SL
A	4/06/21	Issue for 100% RD		UDLA	KT	SL	MA
A02	29/04/21	Issue for RD-IDC		UDLA	KT	SL	MA
A01	29/03/21	Issue for 50% RD		UDLA	KT	SL	MA
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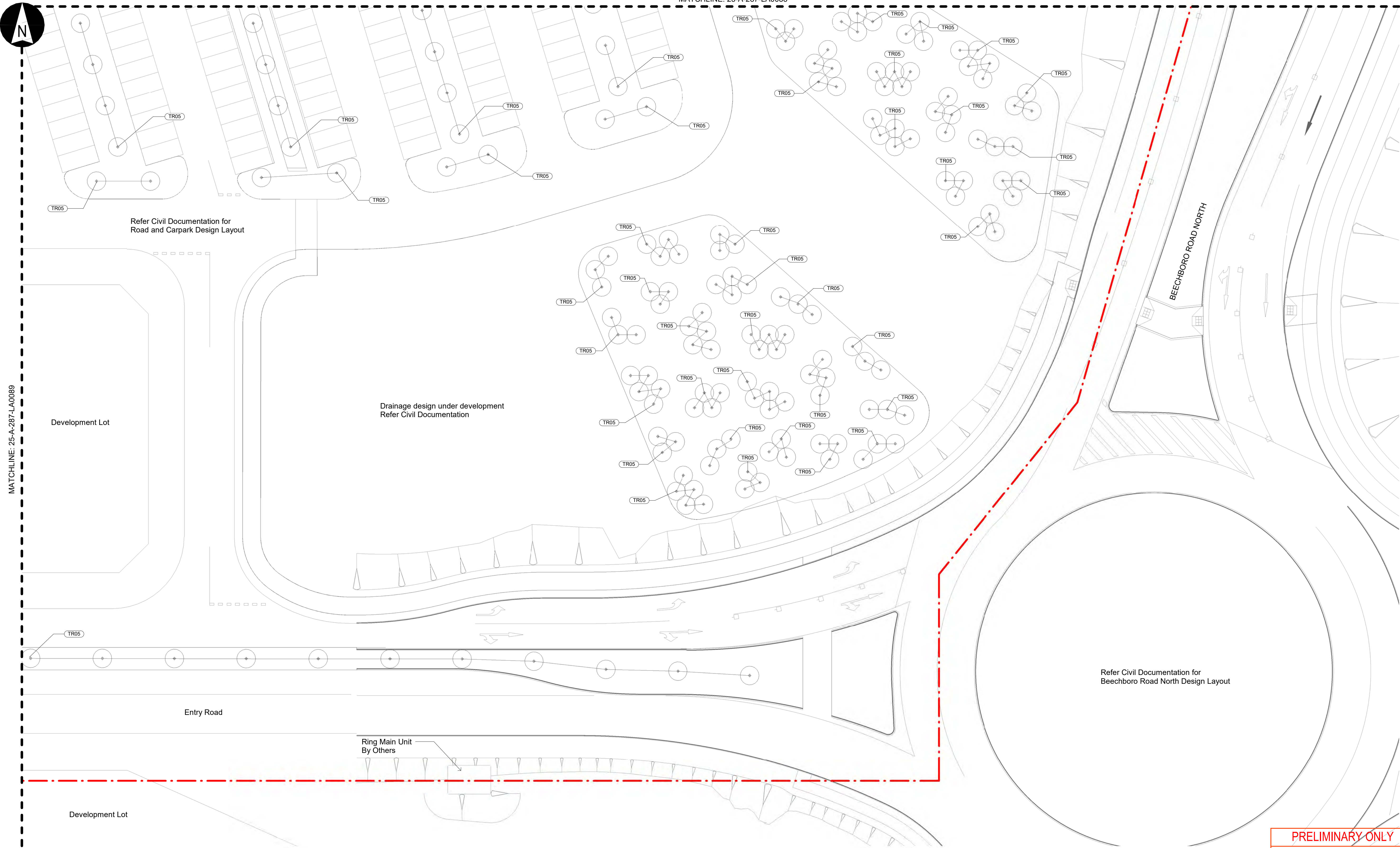
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<div>REFERENCES</div> <div></div>	SCALE 1 : 250 (@ A1)		DESIGNED UDLA	<div>Government of Western Australia Public Transport Authority</div> <div>MORLEY ELLENBROOK LINE</div>
			DRAWN Kurt Tanner	
			CHECKED Scott Lang	
			APPROVED Manoj Aravind	
	DATUM HORIZONTAL: PCG2020 VERTICAL: AHD71		DATE 13/08/21	
PTA Drawing No: 25-A-287-LA0089				Rev: B01



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1 25-A-287-LA0090
1 : 250

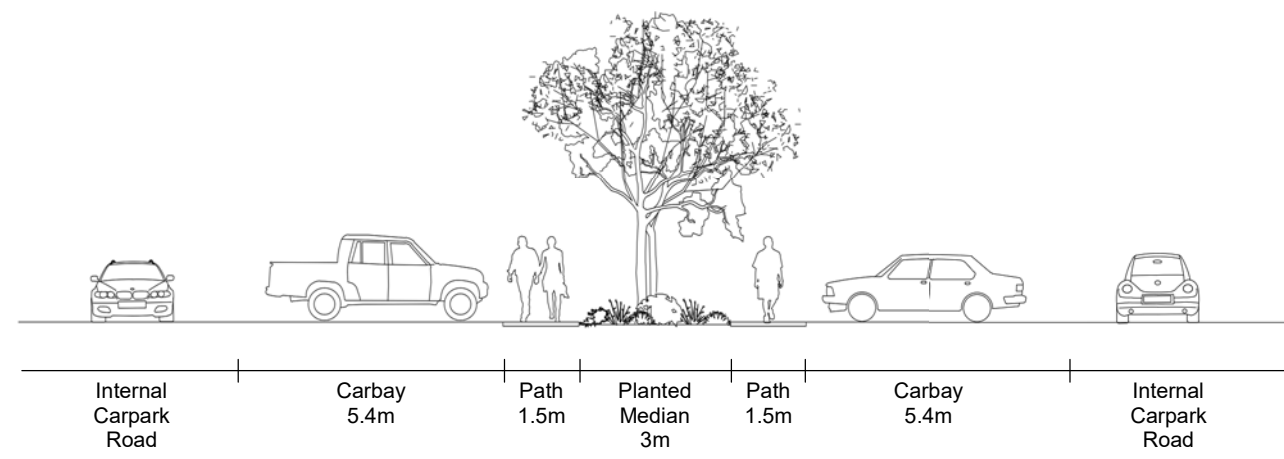
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A01	29/03/21	Issue for 50% RD		UDLA	KT	SL	MA		
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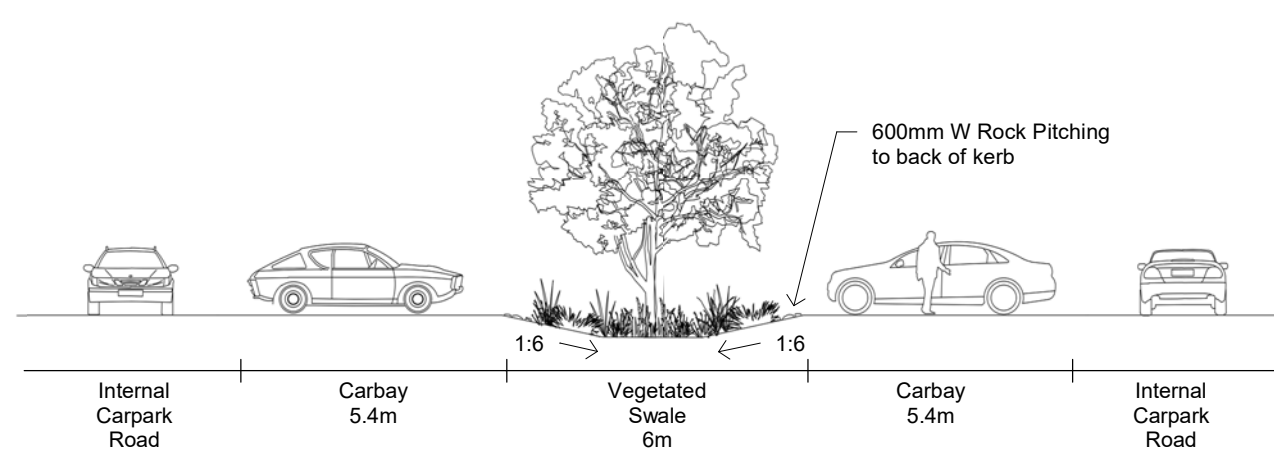
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VERTICAL:	AHD71	
DESIGNED	UDLA	
DRAWN	Kurt Tanner	
CHECKED	Scott Lang	
APPROVED	Manoj Aravind	
DATE	13/08/21	

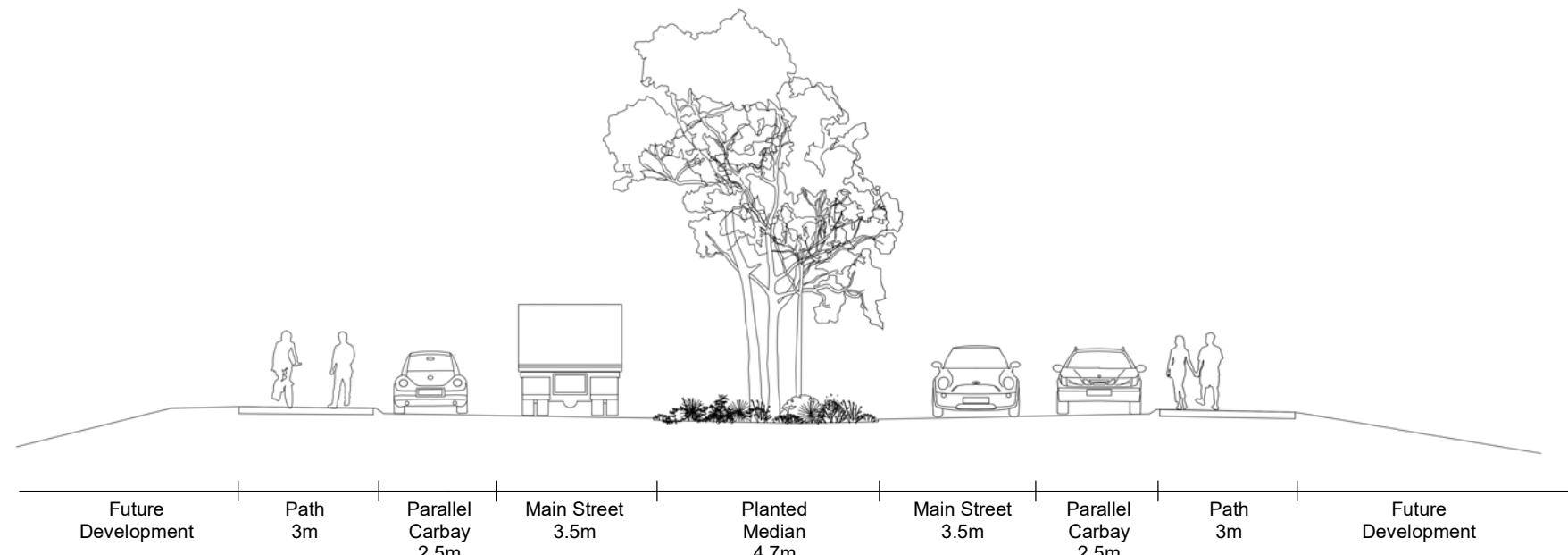
Model Rev:B.01 Issued:x.x.21	
	MORLEY ELLENBROOK LINE
MALAGA STATION - LANDSCAPING PLANTING PLAN	
PTA Drawing No: 25-A-287-LA0090	Rev: B01



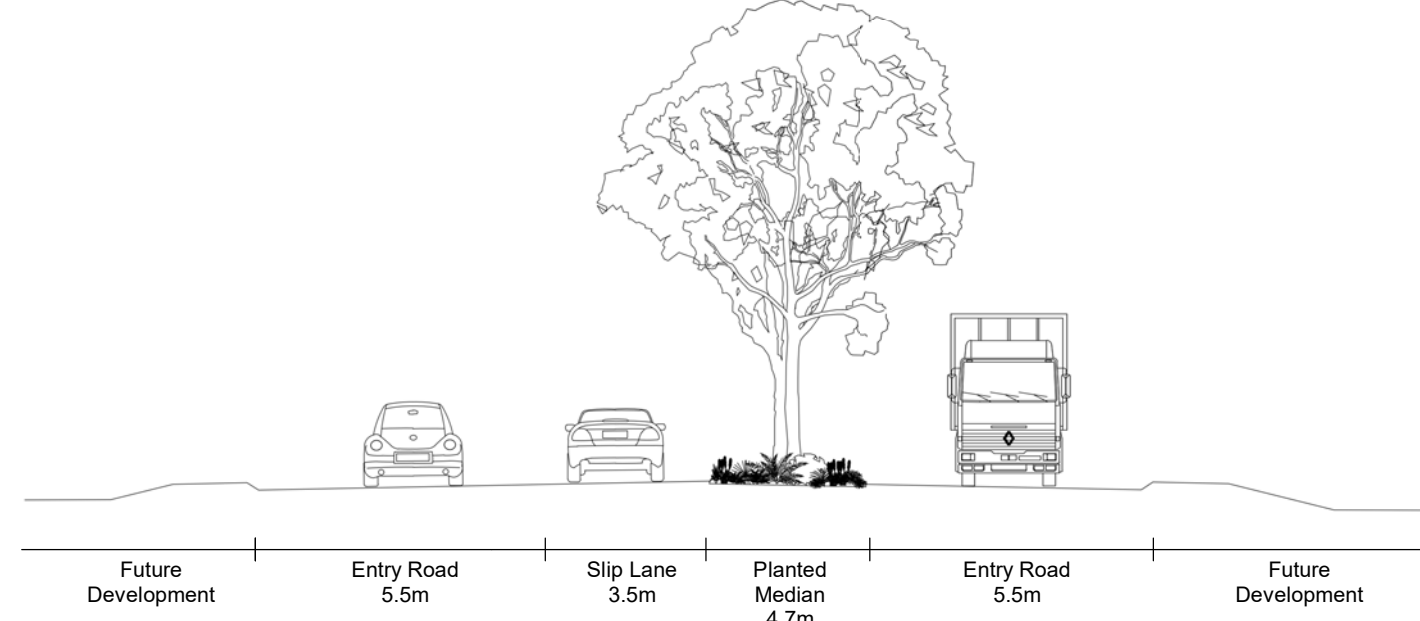
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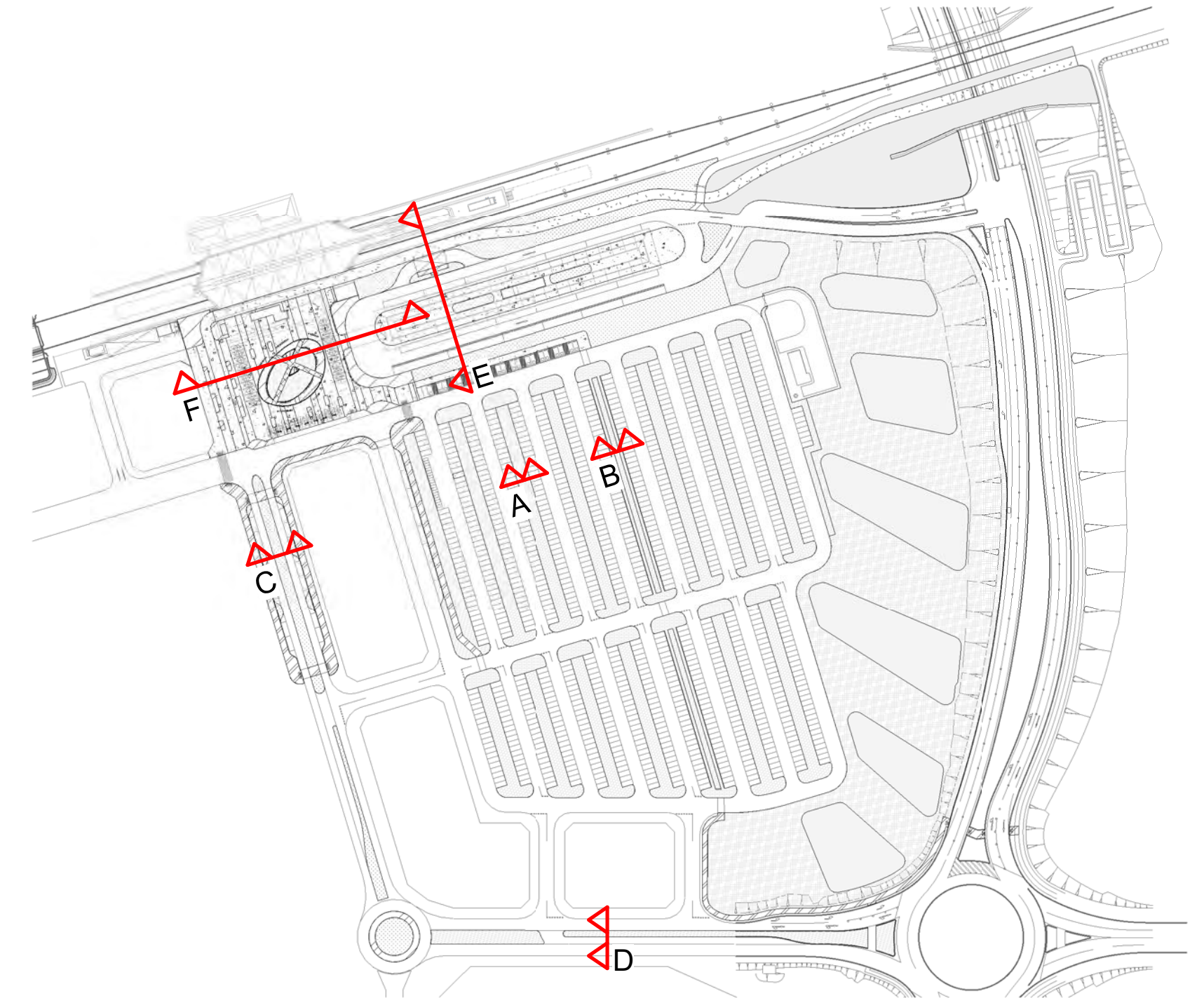
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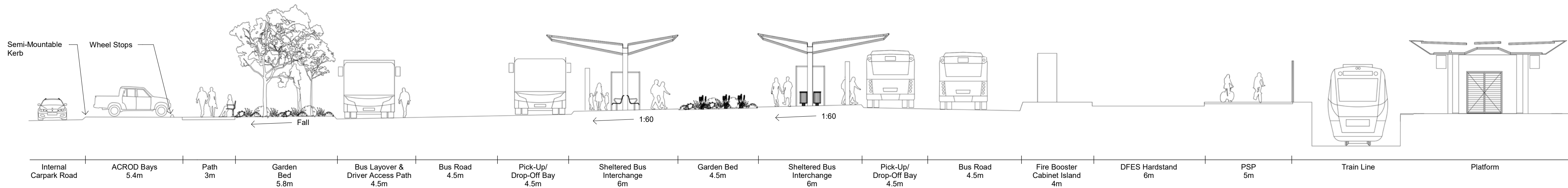
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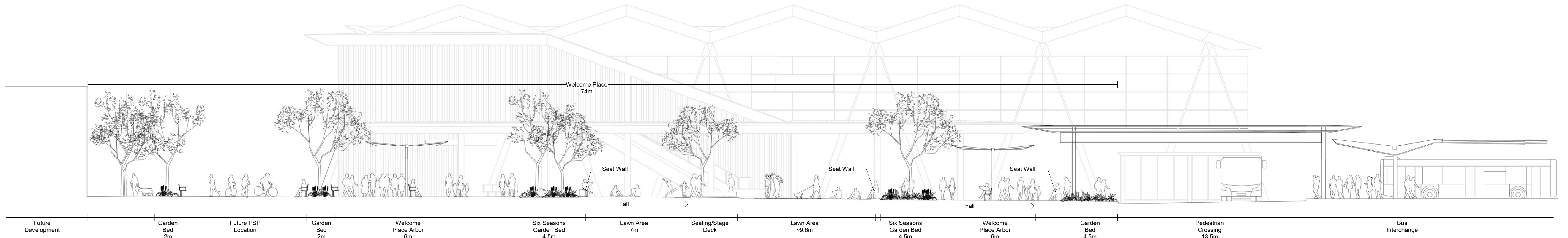
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1 LOCATION PLAN
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E SECTION E
1 : 150



F SECTION F
1 : 150

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Model Rev:B.01 Issued:x.x.21








REV	DATE	AMENDMENT	UDLA	KT	SL	SL
B01	13/08/21	DA Submission				
ORIG SIZE	A1	0 10 20 30 40 50 100mm	DSN	DRN	CHK	APP
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REFERENCES	SCALE	DESIGNED	UDLA
	1 : 2500 (@ A1)	DRAWN	Kurt Tanner
	DATUM	CHECKED	Scott Lang
	HORIZONTAL: PCG2020 VERTICAL: AHD71	APPROVED	Manoj Aravind
		DATE	13/08/21
			MORLEY ELLENBROOK LINE
			MALAGA STATION - LANDSCAPING
			LANDSCAPE SECTIONS
			PTA Drawing No: 25-A-287-LA0108 Rev: B01








MORLEY ELLENBROOK LINE (MEL) - STATION & PRECINCT - ARCHITECTURAL MASTER MATERIALS SCHEDULE

DOC NO: MEL-MLCX-AR-SCH-00007						13/08/2021	
STATION: MALAGA STATION						REV - B02	
CODE	ITEM	LOCATION	DESCRIPTION		IMAGE	NOTES	SWTC
ACCESSORIES (AC)							
AC:01	Not in Use						
AC:02	Accessible Grab Rail - Right / Left Hand	DDA Accessible Toilets - All stations	Manufacturer: Description: Model: Size: Finish:	Britex or equivalent Vandal Resistant SS Backrest w 90deg RHS Grab Rail Set BTX-BRC-R90_VR 870x700 140 Deg Grab Rail Satin Stainless Steel			
AC:03	Accessible Grab Rail - Straight	DDA Accessible Toilets - All stations	Manufacturer: Description: Model: Size: Finish:	Britex or equivalent 450mm SS Grab Rail Straight Concealed BTR-01-038 450mm L Satin Stainless Steel			
AC:04	Ambulant Grab Rail - Right / Left Hand	Ambulant Toilets - All stations	Manufacturer: Description: Model: Size: Finish:	Britex or equivalent SS 90deg Ambulant Grab Rail BTR-01-058 450 x 450 Satin Stainless Steel			
AC:05	Toilet Roll Holder	All public and staff toilets - All stations	Manufacturer: Description: Model: Size: Finish:	Britex or equivalent SS Jumbo Roll Toilet Tissue Dispenser BTX-06-046 273 x 273 x 120 304 Satin Stainless Steel			
AC:06	Clothes Hook	All staff toilets - All stations	Manufacturer: Description: Model: Size: Finish:	Britex or equivalent SS Double Robe Hook BTX-10-035 100 x 52 x 52 Satin Stainless Steel			
AC:07	Paper Towel Dispenser	All public and staff toilets - All stations	Manufacturer: Description: Model: Size: Finish:	Britex or equivalent Recessed Paper Towel Dispenser w 19L Waste Receptacle BTX-03-012 1397 x 333 x 115 Satin Stainless Steel			
AC:08	Shower Curtain Track	All shower areas: - All stations	Manufacturer: Description: Model: Size: Finish:	Argent or equivalent Shower Curtain Track Aluminium Kit RBA4177-1668 Polished Steel			

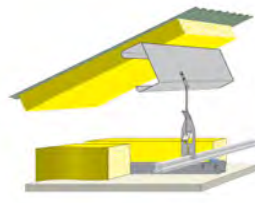

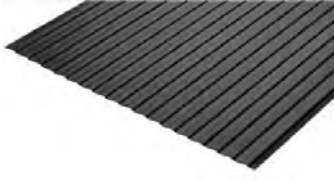


MORLEY ELLENBROOK LINE (MEL) - STATION & PRECINCT - ARCHITECTURAL MASTER MATERIALS SCHEDULE

DOC NO: MEL-MLCX-AR-SCH-00007						13/08/2021	
STATION: MALAGA STATION						REV - B02	
CODE	ITEM	LOCATION	DESCRIPTION		IMAGE	NOTES	SWTC
AC:09	Soap Dish Holder	All shower areas: - All stations	Manufacturer: Description: Model: Size: Finish:	Britex or equivalent Recessed HD Soap Dish SS BTX-05-017 188 x 152 x 63 Satin Stainless Steel			
AC:10	DDA Shower Seat	All shower areas: - All stations	Manufacturer: Description: Model: Size: Finish:	Britex or equivalent Accessible Folding Shower Seat with Support Legs BTX-11-014 960 x 410 x476 H. White Compact Laminate			
AC:11	Locker	Staff crib rooms: - All stations	Manufacturer: Description: Model: Size: Finish:	TBC			
AC:12	Baby change table	Parenting Room - All stations	Manufacturer: Description: Model: Size: Finish:	Britex or equivalent Stainless Steel Baby Change Tables BTX-09-013 Recessed mounted 940 x 590. Stainless steel with HDPE interior			
CLADDING (CD)							
CD:01	Aluminium Cladding - Standing seam steel wall cladding with concealed fixing	Cladding to external façade: - Malaga - Morley - Noranda - Whiteman Park Services Buildings	Material: Thickness: Finish: Fixing: Product: Manufacturer: Panel size:	Aluminium sheet cladding 3mm Colourbond. Colour: TBC Concealed clip fixings to structural tophats or studs fixed to block wall, to Manufacturer's requirements. LONGLINE 305 or similar approved Thickness: 0.70BMT Lysaght 2400 x 1150mm		Attributes: - Fire resistant, deemed non-combustible to AS1530.1 - High durability - anti-scratch, impact resistant - UV Stable - Graffiti resistant Sustainability: - TBC	
CD:02	Compressed Fibre Cement Cladding - Façade	Cladding to internal façade of station accommodation: - Malaga - Morley - Noranda - Whiteman Park	Material: Thickness: Finish: Fixing: Product: Manufacturer: Panel size:	Compressed fibre cement board. TBC Flush finish, painted Direct fixing to wall studs with sarking membrane ExoTec or equivalent BlueChip Group or equivalent 2400 x 1200mm			
CD:03	Fibre Cement Sheet Capping	Capping to all exposed steel structural columns: - All stations	Material: Thickness: Finish: Fixing: Product: Manufacturer: Panel size:	Pre-finished Fibre Cemenet panel 12mm PVDF Fluoropolymer coating system Colour: TBC Exposed colour matched screws or rivets fixed to welded angles to steel columns, to Manufacturer's requirements. Ultrapearl or similar approved BlueChip Group or equivalent 2400 x 1150mm		Attributes: - Fire resistant, deemed non-combustible to AS1530.1 - High durability - anti-scratch, impact resistant - Low Maintenance - UV Stable - Graffiti resistant Sustainability: - TBC	

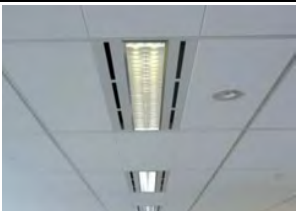



MORLEY ELLENBROOK LINE (MEL) - STATION & PRECINCT - ARCHITECTURAL MASTER MATERIALS SCHEDULE

DOC NO: MEL-MLCX-AR-SCH-00007						13/08/2021	
STATION: MALAGA STATION						REV - B02	
CODE	ITEM	LOCATION	DESCRIPTION		IMAGE	NOTES	SWTC
CD:04	Not in Use						
CEILINGS & SOFFITS (CL)							
CL:01	Plasterboard ceiling	General ceilings to station accommodation: - All stations	Material: Thickness: Finish: Fixing: Product: Manufacturer: Panel size:	Standard gypsum plasterboard ceiling 13mm thk Flushed finish, painted PA:02 Rondo or similar furring channel suspension system Gyprock or equivalent CSR or equivalent 2400 X 1200mm		Flush access panels where required.	
CL:02	Moisture Resistant Plasterboard ceiling	Ceilings to wet areas: - Public and Staff Bathrooms: - All stations	Material: Thickness: Finish: Fixing: Product: Manufacturer: Panel size:	Moisture resistant gypsum plasterboard ceiling 13mm thk Flushed finish, painted PA:02 Rondo or similar furring channel suspension system Gyprock Aquacheck or equivalent CSR or equivalent 2400 X 1200mm		Flush access panels where required.	
CL:03	Fire rated self-supporting ceiling system	Electrical and Services rooms: - All stations	Material: FRL: Finish: Fixing: Product: Manufacturer: Panel size:	Fyrchek FR plasterboard FRL 120/120/120 from both sides Painted PA:02. Fixed to 150 steel joists, as per system requirements Gyprock Fyrchek or equivalent CSR or equivalent 2400 x 1200mm		Joints and gaps to be fully sealed with FR sealant to achieve required FRL.	
CL:04	Profiled Colorbond steel cladding	Ceiling below pedestrian bridge at entrance building: - Malaga - Noranda	Material: Thickness: Finish: Fixing: Product: Manufacturer: Panel size:	Ribbed steel sheet metal cladding with low fluted profile. Nom. 0.42BMT, 4mm profile Colourbond coated, Colour: Basalt grey Face fixed with Tek screws with washers to sub framing Panel Rib or equivalent Lysaght or equivalent Custom L x 850mm W		Attributes: - Fire resistant, deemed non-combustible to AS1530.1 - Colorbond - high durability - Low maintenance - UV resistant Sustainability: - Recyclable	
CL:05	Fire rated suspended ceiling system	Ceiling to Store & Cleaners Rooms below Staircases: - All stations	Material: FRL: Finish: Fixing: Product: Manufacturer: Panel size:	Fyrchek FR plasterboard FRL 120/120/120 from below Painted PA:02, if visible. Fixed to furring channels, as per system requirements Gyprock Fyrchek or equivalent CSR or equivalent 2400 x 1200mm		Joints and gaps to be fully sealed with FR sealant to achieve required FRL.	




MORLEY ELLENBROOK LINE (MEL) - STATION & PRECINCT - ARCHITECTURAL MASTER MATERIALS SCHEDULE

DOC NO: MEL-MLCX-AR-SCH-00007						13/08/2021	
STATION: MALAGA STATION						REV - B02	
CODE	ITEM	LOCATION	DESCRIPTION		IMAGE	NOTES	SWTC
CL:06	Timber-look Cladding	Soffits to Station roofs, Entrance buildings and bus canopies: - All stations	Material: Thickness: Finish: Fixing: Product: Manufacturer: Panel size:	Timber-look Cladding TBC TBC Standard fixing system to tophats & sarking behind TBC TBC TBC			
CL:07	Suspended grid ceiling	To Staff rooms - All stations	Material: Size: Finish: Suspension: Product: Manufacturer:	Mineral fibre ceiling panels 1200 mm L x 300mm W x 19mm or similar Pre-finished smooth non-directional white finish Suprafine XL grid Ultima Plank - bevelled tegulr edge or equivalent Armstrong Ceilings or equivalent			
CL:08	Timber-look battens	Station Concourse Soffits	Material: Thickness: Finish: Fixing: Product: Manufacturer: Panel size:	Timber-look Cladding TBC TBC TBC TBC TBC TBC			
CONCRETE ENGINEERING (CE) - FINISHES ONLY							
CE:01	Prefabricated formwork concrete staircases	Concrete Staircases - All stations	Material: Thickness: Finish: Tread: Product: Manufacturer: Size:	Precast concrete staircase with permanent steel formwork As per Manufacturer's requirements Painted and galvanized Tiled with stair nosings to AS1428.1 Fast Tread or equivalent FTI Group or equivalent As per drawings		To comply with Luminance Contrast requirement of AS1428.1 for treads and risers.	
CE:02	Concrete Roof Slab	TBC	Material: Thickness: Finish: Fixing: Product:	TBC			
CE:03	Precast Concrete	Viaduct Structures - Whiteman Park Station	Material: Thickness: Finish: Fixing: Product:	TBC			
CASEWORK (CW)							
CW:01	Kitchenette	Staff & Driver's Crib - All stations	Material: Finish: Product: Manufacturer: Size: Colour:				






MORLEY ELLENBROOK LINE (MEL) - STATION & PRECINCT - ARCHITECTURAL MASTER MATERIALS SCHEDULE

DOC NO: MEL-MLCX-AR-SCH-00007						13/08/2021	
STATION: MALAGA STATION						REV - B02	
CODE	ITEM	LOCATION	DESCRIPTION		IMAGE	NOTES	SWTC
CW:02	Work Station	Staff Crib - All stations	Material: Thickness: Finish: Fixing: Product: Manufacturer: Panel size:	TBC			
CW:03	L-Shape Workstation	CSO - All stations	Material: Thickness: Finish: Fixing: Product: Manufacturer: Panel size:	TBC			
DOORS (DR)							
DR:01	Security roller grille	Concourse Secure Line Gate - All stations	Material: Thickness: Finish: Operation: Locking: Product: Manufacturer:	Steel roller grille shutter - heavy duty commercial for external applications 16mm dia.x 1.2mm galv steel tubes sleeved with 20mm dia x 1.2mm aluminium tube at 90mm ctrs, linked with 3mm steel links at 208mm ctrs in brick pattern. Anodized aluminium Motorized or chain operated with overhead roller drum & guides Motor locked or shootbolt mechanism Steel Roller Grille Airport Doors or equivalent Max. 8m W x 4.2m H		Attributes: - Heavy duty - Maximum vision and ventilation - Motorized operation Sustainability: - recyclable	
DR:02	Single Doors - Non FR	Standard doors to operational rooms (non-Fire Rated): - All stations	Material: FRL: Thickness: Frame: Finish: Acoustics: Locking: Product: Manufacturer: Size:	Flush panel solid-core timber doors n/a TBC Aluminium door frames TBC To Acoustic requirements To Security requirements Pyropanel non-FR doors or equivalent Pyropanel or equivalent As per drawings and AS1428.1 requirements		To comply with Luminance Contrast requirement of AS1428.1.	
DR:03	Single Doors - Glazed	Glazed door to CSO's: - All stations	Material: Glass: Thickness: Frame: Finish: Acoustics: Locking: Product: Manufacturer: Size:	Steel frame door with full glazed panel. Clear Grade A safety glass with protective film to AS1288 & SWTC requirements TBC Aluminium door frames TBC To Acoustic requirements To Security requirements TBC TBC As per drawings and AS1428.1 requirements		To comply with Luminance Contrast requirement of AS1428.1.	









MORLEY ELLENBROOK LINE (MEL) - STATION & PRECINCT - ARCHITECTURAL MASTER MATERIALS SCHEDULE

DOC NO: MEL-MLCX-AR-SCH-00007						13/08/2021	
STATION: MALAGA STATION						REV - B02	
CODE	ITEM	LOCATION	DESCRIPTION		IMAGE	NOTES	SWTC
DR:04	Single Doors - FR	Fire rated doors to electrical & store rooms: - All stations	Material: FRL: Thickness: Frame: Finish: Acoustics: Locking: Product: Manufacturer: Size:	Flush panel solid-core timber doors To suit wall FRL requirements TBC Pressed steel door frames (FR) TBC To Acoustic requirements To Security requirements Pyropanel FR doors or equivalent Pyropanel or equivalent As per drawings and AS1428.1 requirements		To comply with Luminance Contrast requirement of AS1428.1.	
DR:05	Louvered Doors	Louvered doors to mechanical rooms: - All stations	Material: FRL: Thickness: Frame: Finish: Acoustics: Locking: Product: Manufacturer: Size:	Aluminium doors with louvered panels n/a TBC Aluminium door frames TBC To Acoustic requirements To Security requirements TBC TBC As per drawings and AS1428.1 requirements		To comply with Luminance Contrast requirement of AS1428.1.	
DR:06	Double Doors - Non FR	Standard doors to operational rooms (non-Fire Rated) - All stations	Material: FRL: Thickness: Frame: Finish: Acoustics: Locking: Product: Manufacturer: Size:	Flush panel solid-core timber doors n/a TBC Aluminium door frames TBC To Acoustic requirements To Security requirements Pyropanel non-FR doors or equivalent Pyropanel or equivalent As per drawings and AS1428.1 requirements		To comply with Luminance Contrast requirement of AS1428.1.	
DR:07	Roller shutter with vision panels	Kiosks - All stations	Material: FRL Thickness: Finish: Operation: Locking: Product: Manufacturer: Size:	Fire rated interlocking steel slat roller shutter 2 hours FRL to Fire Engineer's requirements 75mm H x 18mm D x 1.0mm thk roll-formed steel slats. Powder coated Steel Motorized with overhead roller drum & guides Motor locked or shootbolt mechanism 2HR Fire Shutter Airport Doors or equivalent Max. 8.0m W x 5.0m H		Attributes: - Certified integrity for 2hr fire rated - Controlled descent mechanism Sustainability: - Recyclable	
DR:08	Fire Hydrant Cabinet Doors	Concourse areas - All stations	Material: FRL: Thickness: Frame: Finish: Acoustics: Locking: Product: Manufacturer: Size:	Flush panel solid-core timber or metal doors n/a TBC Aluminium door frames TBC n/a To Security requirements Pyropanel non-FR doors or equivalent Pyropanel or equivalent As per drawings and AS1428.1 requirements		DFES signage to be provided for ease of identification of Hydrant cabinets.	

EQUIPMENT (EQ)



MORLEY ELLENBROOK LINE (MEL) - STATION & PRECINCT - ARCHITECTURAL MASTER MATERIALS SCHEDULE

DOC NO: MEL-MLCX-AR-SCH-00007						13/08/2021	
STATION: MALAGA STATION						REV - B02	
CODE	ITEM	LOCATION	DESCRIPTION		IMAGE	NOTES	SWTC
EQ:01	Lighting poles - Mid-hinge type	Platform level - All stations	Material: Finish: Locking: Product: Manufacturer: Size:	Mid-hinged (breakback) lighting poles in CHS or tapered octagonal profile to Electrical Engineer's specifications. Powder coated Tamper & vandal resistant fixings & locks. Mid Hinged Poles & Columns G&S Industries or equivalent To Lighting & Electrical Engineer's requirements.			
EQ:02	Public telephone	Concourse unpaid zone: - All stations	Product: Manufacturer: Finish: Numbers:	TBC TBC Stainless steel To PTA SWTC requirements		At least one accessible telephone shall be an accessible type as prescribed in AS1428.2 1992 Clause 30.1. The accessible telephone shall be fitted with volume control and an in-built hearing aid coupler and identified with the international symbol for deafness.	
EQ:03	Bike Racks	Bicycle storage racks - All stations	Material: Finish: Product: Manufacturer: Size:	Tow-tier bicycle racking system Powder coated Easy-lift bicycle rack or equivalent VelopA or equivalent To suit bicycle numbers required			
EQ:04	Drink fountains	Concourse area: - All stations	Material: Finish: Product: Manufacturer: Size:	Stainless steel Satin 304 stainless steel finish Dado Round Double Drinking Fountain Britexor equivalent 1000 x 490		Dual mounting heights. AS1428 Compliant.	
EQ:05	Hand dryers	Staff & UAT Toilets - all stations	Material: Finish: Product: Manufacturer: Size:	Stainless steel Linished No.4 finish Airblade V Dyson or equivalent TBC		Not what has been specified in the Room Data Sheet.	
EQ:06	Hand dryers	Staff & UAT Toilets - all stations	Material: Finish: Product: Manufacturer: Size:	Stainless steel Linished No.4 finish Airblade V Dyson or equivalent TBC			
EQ:07	Fridge	Staff & Driver's Crib - All Stations	Material: Finish: Product: Manufacturer: Size:	TBC TBC TBC TBC TBC			

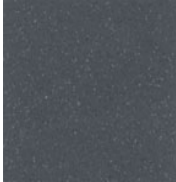
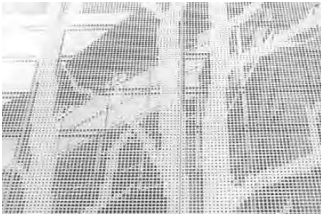




MORLEY ELLENBROOK LINE (MEL) - STATION & PRECINCT - ARCHITECTURAL MASTER MATERIALS SCHEDULE

DOC NO: MEL-MLCX-AR-SCH-00007						13/08/2021	
STATION: MALAGA STATION						REV - B02	
CODE	ITEM	LOCATION	DESCRIPTION		IMAGE	NOTES	SWTC
EQ:08	Microwave	Staff & Driver's Crib - All Stations	Material: Finish: Product: Manufacturer: Size:	TBC TBC TBC TBC TBC			
EQ:09	Television	Staff Crib - All stations	Material: Finish: Product: Manufacturer: Size:	TBC TBC TBC TBC TBC			
EQ:10	Computer	Staff Crib & Office - All stations	Material: Finish: Product: Manufacturer: Size:	TBC TBC TBC TBC TBC			
EQ:11	Ticket Machine	Concourse area: - All stations	Material: Thickness: Finish: Fixing: Product: Manufacturer: Panel size:	TBC			
EQ:12	ATM Machine	Concourse area: - All stations	Material: Thickness: Finish: Fixing: Product: Manufacturer: Panel size:	TBC			
FURNITURE (FN)							
FN:01	Dining Table	Staff Crib - All stations	Material: Finish: Product: Manufacturer: Size: Colour:				
FN:02	Dining Chairs	Staff Crib - All stations	Material: Finish: Product: Manufacturer: Size: Colour:				







MORLEY ELLENBROOK LINE (MEL) - STATION & PRECINCT - ARCHITECTURAL MASTER MATERIALS SCHEDULE

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STATION: MALAGA STATION						REV - B02	
CODE	ITEM	LOCATION	DESCRIPTION		IMAGE	NOTES	SWTC
FN:03	Work Table	Staff Crib - All stations	Material: Finish: Product: Manufacturer: Size: Colour:	600(w) x 1500(l)			
FN:04	Office Chairs	Staff Crib - All stations	Material: Finish: Product: Manufacturer: Size: Colour:				
FLOOR COVERINGS (FC)							
FC:01	Anti-static Sheet vinyl flooring	Staff Crib / Transit Guard Booth - CSO: - All stations	Material: Finish: Product: Manufacturer: Size: Colour:	Slip resistant Vinyl sheets flooring with matching skirting. P4 / R11 Slip resistance, Anti-static to services rooms Safeguard R12 or sim. equivalent. Armstrong Flooring or equivalent 2m x 20m x 2.00mm gauge sheet Slate		Vinyl flooring to suit specific area of use. To comply with DDA accessibility requirements.	
FABRICATED METALWORK (FM)							
FM:01	Perforated Aluminium Vertical Screening with Artwork Graphic by Artist	Concourse edge screening & Entrance building: - Noranda Platform level screening: - Whiteman Park	Material: Thickness: Finish: Pattern: Product: Manufacturer: Size: Colour:	Perforated solid aluminium panel. 3 - 4mm thick Anodized or Interpon D2525 powder coating Graphic perforations (<5mm diameter for safety). Pic Perf or equivalent Locker Group or equivalent 2440mm x 1220mm std TBC			
FM:02	Angled perforated vertical screening with Artwork Graphic by Artist	Concourse level, including Entrance Building bridge screening: - Malaga	Material: Thickness: Finish: Pattern: Product: Manufacturer: Size: Colour:	Perforated solid aluminium panel. 3 - 4mm thick Anodized or Interpon D2525 powder coating Standard perforations (<5mm diameter for safety). To be flat panels fixed to angled frames to create a 3D effect. Perforated Locker Group or equivalent 2440mm x 1220mm std; full height of opening TBC			
FM:03	Metal Screening	Barriers that are located adjoining vertical drops - All stations	Material: Thickness: Finish: Pattern: Product: Manufacturer: Size: Colour:	Perforated solid aluminium panel. 3 - 4mm thick Anodized or Interpon D2525 powder coating Standard perforations (<5mm diameter for safety). Perforated Locker Group or equivalent 2440mm x 1220mm std; 2400mm height TBC			







MORLEY ELLENBROOK LINE (MEL) - STATION & PRECINCT - ARCHITECTURAL MASTER MATERIALS SCHEDULE

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STATION: MALAGA STATION						REV - B02	
CODE	ITEM	LOCATION	DESCRIPTION		IMAGE	NOTES	SWTC
FM:04	Glass balustrades with stainless steel stanchions & LED handrails	Concourse voids, staircases and lift areas: - Malaga - Morley - Noranda - Whiteman Park	Material: Thickness: Finish: Protection: Handrail: Product: Manufacturer:	Grade A clear laminated safety glass sealed to 900 H Grade 316 stainless steel plate stanchions at 1200 - 1500 ctrs. Glass: TBC Stanchions: Nom. 8mm thk. No.4 /Linished /Hairline finish 3M Anti-Graffiti film AG-6 to inside face of glass. Nom. 42 dia. stainless steel with LED lighting Forrest range or equivalent Lumorail or equivalent			
FM:05	Handrails - with LED lighting	DDA Accessible areas: - All stations	Material: Fixing: Size: Finish: Product: Manufacturer:	Side mounted stainless steel handrails with LED lighting Bracket mounted to walls, posts and screening frames. Nom. 42mm dia. stainless steel circular rail Satin finish with 300mm section of yellow high visibility paint to ends. Forrest range Lumorail or equivalent			
FM:06	Not in Use						
FM:07	Weather protection glazed screens	Platforms, bust waiting areas - All stations	Material: Glass: Size: Finish: Product:	Steel RHS framing with glazed screen infill GL:03 As per drawings Linished No.4 Custom			
FM:08	Perforated Metal Cladding	Side of viaduct structure. - Whiteman Park					
FIRE PROTECTION (FP)							
FP:01	Fire Protection - Structural Steelwork	Structural steelwork - All stations	Material: Thickness: Finish: Product: Manufacturer:	Vermiculite Gypsum Based wet mix spray or Intumescent Paint To meet required FRL n/a CAFCO or equivalent, to Structural Engineer's specifications Promat or equivalent			
FP:02	Fire collars	Penetrations through suspended slabs: - Morley - Malaga - Noranda - Whiteman Park	Material: FRL: Product: Manufacturer:	Penetration Seals for Pipes As per floor FRL requirements Promaseal Retrofit Collar or equivalent PROMAT or equivalent			
GLAZING (GL)							




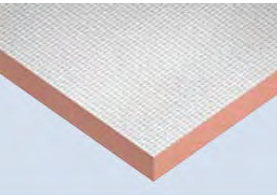




MORLEY ELLENBROOK LINE (MEL) - STATION & PRECINCT - ARCHITECTURAL MASTER MATERIALS SCHEDULE

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STATION: MALAGA STATION						REV - B02	
CODE	ITEM	LOCATION	DESCRIPTION		IMAGE	NOTES	SWTC
GL:01	Laminated Safety Glass - Glazed Windows and Doors	CSO, Offices and Rooms: - All stations	Material: Thickness: Colour: Framing: Fixing: ESD: Product: Glass Manufacturer: Panel size: Protection:	Clear laminated Grade A safety glass Nom. 17.52thk. TBC by Structural Engineer & to AS1288. Clear Aluminium - anodized Gasket or sealant within glazing pockets All Glazed Elements SHGC: 0.80 to ESD requirements. Laminated safety glass Cooling Brothers or equivalent Nom. 1200 - 1500mm W. 3M Anti-Graffiti film AG-6 to public face of glass.		All glass protected from graffiti by using an anti-graffiti film of 0.6mm, applied on the side that is prone to public reach.	
GL:02	Fritted Laminated Safety Glass - Skylights	Station and Platform roof skylights - All stations	Material: Thickness: Colour: Framing: Fixing: ESD: Product: Glass Manufacturer: Panel size:	Clear laminated Grade A safety glass Nom. 17.52thk. TBC by Structural Engineer & to AS1288 for trafficability. Clear with 75% solid white dot-matrix ceramic frit pattern. Aluminium - anodized Gasket or structural silicone sealant. All Glazed Elements to ESD and NCC Section J requirements. Laminated safety glass Cooling Brothers or equivalent Nom. 1200 - 1500mm W.			
GL:03	Laminated Safety Glass - Glazed Screens	Protective glass shelters & screens - All platforms Concourse edge - Malaga - Morley	Material: Thickness: Colour: Framing: Fixing: ESD: Product: Glass Manufacturer: Panel size: Protection:	Clear laminated Grade A safety glass Nom. 17.52thk. TBC by Structural Engineer & to AS1288. Clear Aluminium - anodized Gasket or sealant within glazing pockets n/a Laminated safety glass Cooling Brothers or equivalent Nom. 1200-1500mm W. x 2400mmH 3M Anti-Graffiti film AG-6 to public face of glass.			
GL:04	Laminated safety Glass - Lift Enclosure	Glass lifts - Morley - Malaga - Noranda - Whiteman Park	Material: Thickness: Colour: Framing: Fixing: ESD: Product: Glass Manufacturer: Panel size: Protection:	Clear laminated Grade A safety glass Nom. 17.52thk. TBC by Structural Engineer & to AS1288. Clear Stainless steel - Linished No.4 finish Gasket or sealant within glazing pockets All Glazed Elements SHGC: 0.80 to ESD requirements. Laminated safety glass Cooling Brothers or equivalent Nom. 1200 - 1500mm W. 3M Anti-Graffiti film AG-6 to public face of glass.			
INSULATION (IN)							



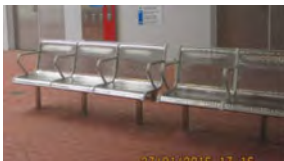



MORLEY ELLENBROOK LINE (MEL) - STATION & PRECINCT - ARCHITECTURAL MASTER MATERIALS SCHEDULE

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STATION: MALAGA STATION						REV - B02	
CODE	ITEM	LOCATION	DESCRIPTION		IMAGE	NOTES	SWTC
IN:01	Roof thermal insulation	Station & Accommodation roofs: - All stations	Material: Thickness: Fixing: ESD: Product: Manufacturer:	Rockwool Anticon insulation with HD Thermofoil or equivalent Nom. 60mm, TBC by ESD Engineer With Safebridge HP roof insulation system on mesh R-Value TBC by ESD Engineer Bradford or equivalent CSR or equivalent			
IN:02	Bulk Ceiling insulation	Ceilings: - All stations	Material: Thickness: Fixing: ESD: Acoustics: Product: Manufacturer:	Rockwool Anticon insulation with HD Thermofoil or equivalent Nom. 60mm, TBC by ESD Engineer With Safebridge HP roof insulation system on mesh R-Value TBC by ESD Engineer Rw TBC by Acoustic Engineer Bradford or equivalent CSR or equivalent			
IN:03	Wall and partition insulation	Accommodation building: - All stations	Material: Thickness: Fixing: ESD: Acoustics: Product: Manufacturer:	Rockwool Acoustigard insulation 11kg or equivalent Nom. 75 thk - TBC by ESD Engineer Laid within drywall partition between studs R-Value TBC by ESD Engineer Rw TBC by Acoustic Engineer Bradford or equivalent CSR or equivalent			
IN:04	Rigid Under slab Insulation	Elevated Concourse - Malaga - Morley - Noranda - Whiteman Park	Material: Thickness: Fixing: ESD: Acoustics: Product: Manufacturer:	Kooltherm K10 FM rigid insulation board w foil face or equivalent Nom. 75 thk - TBC by ESD Engineer Mushroom head fixing pins to underside of slab R-Value TBC by ESD Engineer n/a Kooltherm K10 FM Soffit Board or equivalent Kingspan or equivalent			
LOUVRES (LV)							
LV:01	Ventilation Louvers - Rain Defence	Mechanical rooms, electrical rooms, etc: - All stations	Material: Finish: Product: Manufacturer: Size:	Two stage aluminium louvers within aluminium framing Aluminium, anodized RSH-5700 Storm Resistant Louvre with 50mm blade pitch. Louvre performance TBC to Mechanical Engr's requirements CS Louvers or equivalent 1200mm W panels, as per drawing			
LV:02	Ventilation Louvers - Non rain defence	Protected mechanical rooms - All stations	Material: Finish: Product: Manufacturer: Size:	Single stage aluminium louvers within aluminium framing Aluminium, anodized Louvre with 50mm blade pitch. Louvre performance TBC to Mechanical Engr's requirements CS Louvers or equivalent 1200mm W panels, as per drawing			






MORLEY ELLENBROOK LINE (MEL) - STATION & PRECINCT - ARCHITECTURAL MASTER MATERIALS SCHEDULE

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STATION: MALAGA STATION						REV - B02	
CODE	ITEM	LOCATION	DESCRIPTION		IMAGE	NOTES	SWTC
MASONRY (MA)							
MA:01a	Brick Wall	Entrance building - Noranda Station - Whiteman Park Service Building - Ellenbrook Station	Material: Finish: Mortar: Colour: Product: Manufacturer: Size: Protection:	Clay face brick commons Smooth face Class M3 and M4, Concave mortar joints Estilo Nero Azul (Dark Charcoal). Spanish Collection or equivalent Midland Brick or equivalent 230mm x 110mm x 76mm Clear anti-graffiti coating			
MA:01b	Brick Wall	Accommodation buildings - Ellenbrook Station Ancillary buildings - linewide precincts	Material: Finish: Mortar: Colour: Product: Manufacturer: Size: Protection:	Clay face brick commons Smooth face Class M3 and M4, Concave mortar joints Restoration Red Coach or equivalent Midland Reds or equivalent Midland Brick or equivalent 230mm x 110mm x 76mm Clear anti-graffiti coating			
METALWORK (MW)							
MW:01	Folded Metal Shroud	Concourse and Platform Skylight - All stations	Material: Thickness: Finish: Product: Manufacturer:	Folded solid aluminium sheet to conceal structural beams to skylight. 3mm PVDF Fluoropolymer coated finish to match other cladding elements. Mondoclad or equivalent TBC			Note: Lower section of portal to be reinforced with backing board up to height of 1500mm for protection against impact damage.
MW:02	Door and Wall opening portals	Concourse - All stations	Material: Thickness: Finish: Product: Manufacturer:	Nom. 510 x 50mm wide folded solid aluminium sheet to form portal around door frames and recessed concourse openings. 3mm PVDF Fluoropolymer coated finish to match door frames and other cladding elements. Mondoclad or equivalent TBC			
MW:03	Balustrade	Fare Gates		Proprietary framed glass balustrade system with base mounted glazing channel			
MW:04	Bench Seating	Platform seating - All stations and precinct	Material: Thickness: Finish: Product: Manufacturer:	Stainless Steel Seats as Per PTA standard design			Seats located in positions where the arrival of services can be observed, without affecting the general flow of pedestrians. Seats should not allow visitors access to higher levels (i.e. adjoining stair voids) If the perforated sheeting is to be used as a seat base there should be no low level framing to the front or rear of the unit (cleaning access). Materiality: Stainless-steel
MW:05	Bins	Precinct, platform and concourse levels - All stations	Material: Thickness: Finish: Product: Manufacturer:	Stainless Steel Bins as Per PTA standard design			The bin lid is locked in place to prevent removal of the liner. Materiality: Perforated, stainless steel outer and liner



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CODE	ITEM	LOCATION	DESCRIPTION		IMAGE	NOTES	SWTC
MW:06	Service/ Refuge zones	Refuge zone railings - All stations	Material: Thickness: Finish: Product: Manufacturer:	Steel - hot dip galvanised safety fence			
MW:07	Steel staircase and railing	Platform level - All stations	Material: Thickness: Finish: Product: Manufacturer:	Mild steel - hot dip galvanised stair, grating and balustrade Nom 40 dia. rail Hot dipped galvanized finish Access Products or equivalent Webforge or equivalent			
MW:08	Not in Use						
MW:09	Not in Use						
MW:10	Safety Stair nosing	Concourse & Entrance Building Staircases - Malaga - Morley - Noranda - Whiteman Park	Material: Size: Finish: Product: Manufacturer:	Aluminium ribbed safety stair nosing 50mm Anodized, with 4 carborundum strips and safety yellow strip, R13 anti-slip rating. ProStep 5 or equivalent CTA Australia or equivalent		In compliance with Luminance Contrast requirement of AS1428.1.	
MW:11	Stainless steel mirror	Public toilets: - All stations	Material: Size: Finish: Product: Manufacturer:	Anti-vandal Polished stainless steel mirror 1000 x 450, High-polished No. 8 mirror finish Security Stainless Mirror or equivalent Anti-Vandal, anti-ligature, Disabled Compliant Britex -SMIR or equivalent			
PAINT (PA)							
PA:01	Paint to Metalwork	All stations and bus interchanges	Type: Product: Manufacturer: Colour:	Dulux high performance paint Weathermax HBR or equivalent Dulux or equivalent Black			
PA:02	Paint to Plasterboard Ceilings	All stations	Type: Product: Manufacturer: Colour:	Flat acrylic to plasterboard ceilings & bulkheads Dulux Porter's Ceiling Flat or equivalent Dulux or equivalent White			
PA:03	Anti Graffiti Coating	All stations	Type: Product: Manufacturer: Colour:	Anti graffiti coating SurfaceShield HD Clear or equivalent Dulux or equivalent TBC			






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CODE	ITEM	LOCATION	DESCRIPTION		IMAGE	NOTES	SWTC
PA:04	Paint to Interior Walls	All stations	Type: Product: Manufacturer: Colour:	Low Sheen acrylic to plasterboard Dulux Wash and Wear Low Sheen or equivalent Dulux or equivalent TBC			
PA:05	Paint to Exterior Walls	All stations	Type: Product: Manufacturer: Colour:	TBC TBC Dulux or equivalent TBC			
PA:06	Paint to Concrete	All stations	Type: Product: Manufacturer: Colour:	TBC TBC Dulux or equivalent TBC			
PA:07	Contrasting colour finish	All stations	Type: Product: Manufacturer: Colour:	TBC TBC Dulux or equivalent TBC			
PA:08	Bike Shelter paint	All stations	Type: Product: Manufacturer: Colour:	TBC TBC Dulux or equivalent TBC			
PA:09	Paint to Plasterboard Ceilings - Wet Areas	All stations	Type: Product: Manufacturer: Colour:	Flat acrylic to plasterboard ceilings & bulkheads Dulux Porter's Ceiling Flat or equivalent Dulux or equivalent White			
PARTITIONS & DRYWALLING (PD)							
PD:01	Standard partition	Accommodation building - All stations	Material: Height: Product: Manufacturer: Finish:	2x13mm Plasterboard lining both sides on 76 stud Full height / Ceiling Height Gyprock or equivalent CSR or equivalent Flushed and painted PA:XX			
PD:02	Lining	Accommodation building - All stations	Material: Height: Product: Manufacturer: Finish:	2x13mm Plasterboard lining one side only (risers/ducts) Full height / Ceiling Height Gyprock or equivalent CSR or equivalent Flushed and painted PA:XX			
PD:03	Fire rated partition - FRL120/120/120 both sides	Accommodation building - All stations	Material: FRL: Height: Product: Manufacturer: Finish:	2x16mm Fyrchek lining both sides on 76 stud FRL 120/120/120 Full height Fyrchek / MR Fyrchek or equivalent (MR where abutting Wet Areas) CSR or equivalent Flushed and painted PA:XX			
PD:04	Fire rated lining - FRL120/120/120 one side - Full height	Accommodation building - All stations	Material: FRL: Height: Product: Manufacturer: Finish:	3x16mm Fyrchek lining on 76 stud (risers/ducts/enclosed rooms) FRL 120/120/120 from one side only Full height lining Fyrchek or equivalent CSR or equivalent Flushed and painted PA:XX			





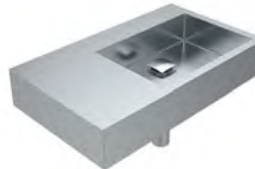





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PD:05	Fire rated partition - FRL-/90/90 both sides - Full height	Accommodation building - All stations	Material: FRL: Height: Product: Manufacturer: Finish:	16mm Fyrchek both sides on 76 stud (kiosk) FRL -/90/90 Full height Fyrchek or equivalent CSR or equivalent Flushed and painted PA:XX			
PD:06	Fire rated lining - FRL-/90/90 one side - Full height	Accommodation building - All stations	Material: FRL: Height: Product: Manufacturer: Finish:	3x13mm Fyrchek on 76 stud (kiosk at external wall) FRL -/90/90 from one side only, Full height lining Fyrchek or equivalent CSR or equivalent Flushed and painted PA:XX			
PD:07	Glazed partition	Lift Enclosure	Material: Glass:	Framed glazed partitions fixed to lift steel enclosure, with stainless steel trims GL:04			
PD:08	Brick Veneer Wall	Accommodation building - Ellenbrook	Material: Height: Product: Manufacturer: Finish:	110 Face brick w 2x13mm Plasterboard lining on one side of 76 studs Full height Gyprock or equivalent CSR or equivalent Flushed and painted PA:XX			
PD:09	Fire rated Brick Veneer Wall - FRL-/90/90	Accommodation building - Ellenbrook	Material: FRL: Height: Product: Manufacturer: Finish:	110 Face brick with 2x13mm Fyrchek lining on one side of 76 studs FRL -/90/90 Full height Fyrchek or equivalent CSR or equivalent Flushed and painted PA:XX			
PLUMBING SERVICES FIXTURES (PF)							
PF:01	Toilet Suite	Public Toilets - All stations	Manufacturer: Type: Model: Size: Finish:	Britex or equivalent Wall Mounted toilet suite PWM or equivalent 515mm x 350mm 304 Satin Stainless Finish		4Star WELS rating & Watermark Certified. Concealed cistern Automatic flush sensor Ultra Vandal resistant. Since this will be installed in the ambulant toilet, need to note: To be installed in compliance with AS1428.1	
PF:02	Vanity Basin	Public Toilets - All stations	Manufacturer: Type: Model: Size: Finish:	Britex or equivalent Wall Mounted Hand Basin or equivalent HBS or equivalent 500mm x 425mm 304 Satin Stainless Finish		Vandal resistant	
PF:03	Vanity Basin Mixer	Public Toilets - All stations	Manufacturer: Type: Model: Size: Finish:	Britex or equivalent Eco TIMED Flow Pillar Tap TW-9101 or equivalent 500mm x 425mm Stainless Finish	 TW-9101 Eco Timed Flow Pillar Tap	Vandal resistant	



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CODE	ITEM	LOCATION	DESCRIPTION		IMAGE	NOTES	SWTC
PF:04	Toilet Suite	Staff Toilets - All stations	Manufacturer: Type: Model: Size: Finish:	Argent or equivalent Vista Hygienic Flush Wall Hung Toilet 8991001S4B or equivalent 540mm x 370mm White ceramic			
PF:05	Vanity Basin	Staff Toilets - All stations	Manufacturer: Type: Model: Size: Finish:	Britex or equivalent 850 Ceramic Furniture Wash Basin 0 One Tap Hole BSW-FWB850-1 or equivalent 850mm x 480mm White Ceramic			
PF:06	Vanity Basin Mixer	Staff Toilets - All stations	Manufacturer: Type: Model: Size: Finish:	Britex or equivalent Hob Mounted Mixer Tap - Fixed Spout TW-MIX-01 or equivalent n/a Bright Chrome			
PF:07	UAT Toilet Suite	UAT & UAT Staff Toilets - All stations	Manufacturer: Type: Model: Size: Finish:	Britex or equivalent Accessible Toilet Suite PTSD or equivalent 800mm x 355mm 304 Satin Stainless Finish		4Star WELS rating & Watermark Certified. Ultra Vandal resistant AS1428 Compliant Automatic flush sensor	Is this also for UAT Staff?
PF:08	UAT Basin	UAT & UAT Staff Toilets - All stations	Manufacturer: Type: Model: Size: Finish:	Britex or equivalent Accessible Bellagio Basin w Integrated Side Shelf or equivalent HBBEL-DS or equivalent 500mm x 425mm 304 Satin Stainless Finish		Vandal resistant	
PF:09	UAT Basin Mixer	UAT & UAT Staff Toilets - All stations	Manufacturer: Type: Model: Size: Finish:	Britex or equivalent Eco Timed Flow Pillar Tap TW-9101 or equivalent 500mm x 425mm Stainless Finish	 TW-9101 Eco Timed Flow Pillar Tap	Vandal resistant	
PF:10	UAT Shower Mixer	UAT & UAT Staff Toilets - All stations	Manufacturer: Type: Model: Size: Finish:	Britex or equivalent Accessible Lever Activated Shower Mixer TW-MIX-22 or equivalent with 150mm accessible handle Bright Chrome		Vandal resistant	
PF:11	Urinals	Staff Toilets - All stations	Manufacturer: Type: Model: Size: Finish:	Britex or equivalent Ceramic Wall Mounted Urinal Pod BSW-UP or equivalent 270mm x 340mm White ceramic			

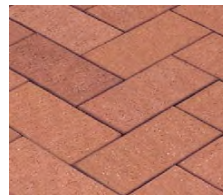
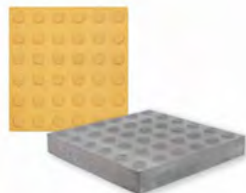

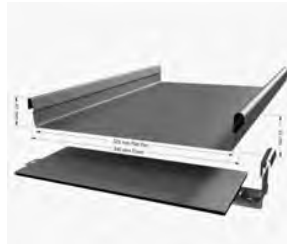
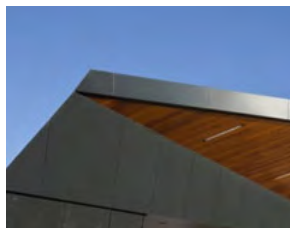



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STATION: MALAGA STATION						REV - B02	
CODE	ITEM	LOCATION	DESCRIPTION		IMAGE	NOTES	SWTC
PF:12	UAT Shower Rail & Hand Shower	UAT & UAT Staff Toilets - All stations	Manufacturer: Type: Model: Size: Finish:	Britex or equivalent Adjustable Height Hand Held Shower Set w Grab Rail BTR-01-062 or equivalent 500mm x 425mm Stainless Steel			
PF:13	Floor Waste - General	All wet areas & showers - All stations	Manufacturer: Type: Model: Size: Finish:	Storm Tech or equivalent Tile Insert Drain SQ100Ti20-80 or equivalent 130 x 130 Stainless Steel			
PF:14	Ambulant Toilet	Public & Staff Toilets - All stations	Manufacturer: Type: Model: Size: Finish:	Britex or equivalent Centurion Ambulant Pan PCAM or equivalent 650mm x 355mm 304 Satin Stainless Finish		4Star WELS rating & Watermark Certified. Vandal resistant AS1428 Compliant Automatic flush sensor	
PF:15	Urinals	Male Public & Staff Toilets - All stations	Manufacturer: Type: Model: Size: Finish:	Britex or equivalent Barren Waterless Urinal UBW or equivalent 360mm x 395mm 304 Satin Stainless Finish		Fully waterless urinal (no water connection) Vandal resistant	
PF:16	Kitchen Sink	Staff Crib / Tea Prep - All stations	Manufacturer: Type: Model: Size: Finish:	Britex or equivalent Laboratory Sink CAFE or equivalent 500mm x 900mm 304 Satin Stainless Finish			
PF:17	Kitchen Mixer	Staff Crib / Tea Prep - All stations	Manufacturer: Type: Model: Size: Finish:	Britex or equivalent Hob Mounted Mixer Tap - Swivel Spout TW-MIX-02 or equivalent n/a Bright Chrome			
PF:18	Cleaner's trough	Cleaner's Room - All stations	Manufacturer: Type: Model: Size: Finish:	Britex or equivalent Floor Mounted Cleaner's Sink CSF or equivalent 600mm x 590mm 316 Stainless Finish		With sand filter	
PAVING (PV)							

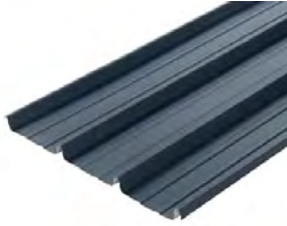
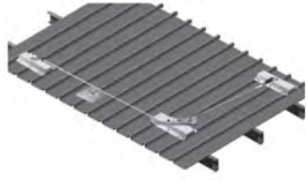
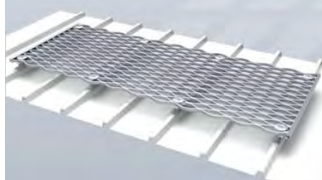
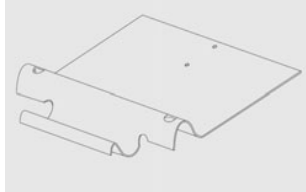




MORLEY ELLENBROOK LINE (MEL) - STATION & PRECINCT - ARCHITECTURAL MASTER MATERIALS SCHEDULE

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STATION: MALAGA STATION						REV - B02	
CODE	ITEM	LOCATION	DESCRIPTION		IMAGE	NOTES	SWTC
PV:01	Clay pavers	Platform level - All stations	Material: Size: Finish: Product: Manufacturer: Colour: Slip rating:	Solid clay segmented paver in Herringbone configuration. 230 x 114 x 60 .Finish: Kiln 9 (grain to run length of face). No sealer. Heavy Duty 60 or equivalent Midland Brick or equivalent Red trafficable type Lay on 1:6 cement/sand screed. Slip resistant CoF >0.4 wet.		1:100 minimum cross fall away from track	
PV:02	Safety Tactile TGSI Pavers - platform edge	Platform level - All stations	Material: Size: Finish: Product: Manufacturer: Colour: Slip rating:	Warning Integrated TGSI concrete paver 400 x 400 x 60 and 300 x 300 x 60 (bus stands) Tactile ground surface indicators TBC TBC Yellow/ Black/ Grey/ Red Non-slip, P5 rating to AS3661.1		To comply with Luminance Contrast requirement of AS1428.1.	
PV:03	Safety Yellow Edge Paving - platform edge conditions	Platform level - All stations	Material: Size: Finish: Product: Manufacturer: Colour: Slip rating:	Engineered high strength concrete paver 400 x 100 x 60 Non-slip TBC TBC Yellow Non-slip, P5 rating to AS3661.1		To comply with Luminance Contrast requirement of AS1428.1.	
ROOFING (RO)							
RO:01	Roof sheeting - Flat Pan	Main Station Roof & Bus Area canopies: - All stations	Material: Size: Fixing: Finish: Colour: Product: Manufacturer: Insulation:	Roof sheeting TBC TBC Colorbond Nom. Basalt TBC TBC TBC		All flashing and cappings to match roofing colour.	
RO:02	Profiled aluminium roof edge cladding	Main Station Roof & Bus Area canopies: - All stations	Material: Thickness: Fixing: Finish: Colour: Product: Manufacturer: Insulation:	Precoated solid aluminium cladding 3mm thk Mechanical cassette fixing to tophats on sub framing TBC To match roof sheeting Mondoclad or equivalent HVG Facades or equivalent n/a			
RO:03	Gutters	Main Station Roof & Bus Area canopies: - All stations	Material: Size: Thickness: Fixing: Finish: Insulation:	Marine grade Aluminium To Hydraulic Engineer's requirements TBC Supported on metal gutter boards and straps, with allowance for trafficability. Powder coated Anti drumming membrane			
RO:04	Rainwater Downpipe Shrouds	Where exposed/ not able to be concealed within cladding	Material: Thickness: Finish:	TBC TBC TBC			





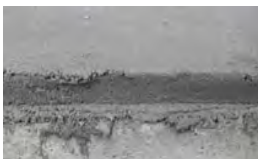


MORLEY ELLENBROOK LINE (MEL) - STATION & PRECINCT - ARCHITECTURAL MASTER MATERIALS SCHEDULE

DOC NO: MEL-MLCX-AR-SCH-00007						13/08/2021	
STATION: MALAGA STATION						REV - B02	
CODE	ITEM	LOCATION	DESCRIPTION		IMAGE	NOTES	SWTC
RO:05	Roof sheeting - Standard	Accommodation roof - All stations	Material: Size: Fixing: Finish: Colour: Product: Manufacturer: Insulation:	Profiled steel roof sheeting Nom. 700mm wide, 0.48-0.55BMT Concealed clip fixings, trafficable Colorbond Surfmist Klip-Lok 700 Hi-Strength or equivalent Lysaght or equivalent Refer to Insulation section, IN:XX With Safebridge HP roof insulation system on mesh		All flashing and cappings to match roofing colour.	
SAFETY & ACCESS SYSTEM (SA)							
SA:01	Static line System (Previously Stairs & Ramps)	High level accessible areas for maintenance to Roofs, canopies; - All stations	Type: Fixing: Finish: Colour: Product: Manufacturer:	Static Line system to Specialist's design To all Standards and Code requirements Powder coated To match roof colour. X-clerate Horizontal Static Line or equivalent SafeMaster or equivalent			
SA:02	Roof access walkway	High level accessible areas for maintenance to Roofs, canopies; - All stations	Type: Size: Fixing: Finish: Colour: Product: Manufacturer:	Aluminium access walkway grating 600mm W To all Standards and Code requirements Powder coated To match roof colour. Slipnot or equivalent SafeMaster or equivalent			
SA:03	Ladder Hook	High level accessible areas for maintenance to Roofs, canopies; - All stations	Type: Size: Fixing: Finish: Colour: Product: Manufacturer:	Aluminium access walkway grating TBC To all Standards and Code requirements Powder coated To match roof colour. Ladder Brackets SafeMaster or equivalent			
STEEL ENGINEERING (SE) - FINISHES ONLY							
SE:01	Structural Steel - Non-visible	Concealed structural steelwork - non visible to public & staff areas - All stations	Material:	Protective finish of structural steel to Structural Engineer's specifications.			
SE:02	Exposed structural & secondary steel - Semi visible	Structural & secondary steel - visible to staff areas - All stations	Material: Finish:	Protective finish of structural steel to Structural Engineer's specifications. To be primed and painted, PA:XX			

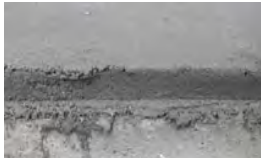

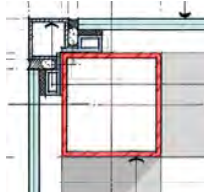

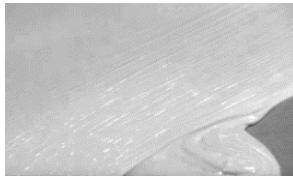



MORLEY ELLENBROOK LINE (MEL) - STATION & PRECINCT - ARCHITECTURAL MASTER MATERIALS SCHEDULE

DOC NO: MEL-MLCX-AR-SCH-00007						13/08/2021	
STATION: MALAGA STATION						REV - B02	
CODE	ITEM	LOCATION	DESCRIPTION		IMAGE	NOTES	SWTC
SE:03	Structural Steel Columns	All structural steel columns - All station buildings	Material: Finish:	Protective finish of structural steel to Structural Engineer's specifications. TBC			
SIGNAGE & GRAPHICS (SN)							
SN:xx	Station Signage	All PTA Station Signage - All stations & precinct	REFER TO PTA SIGNAGE GUIDE				
TILING (TL)							
TL:01	Vitrified tiles.	All stations - Concourse level - Fully enclosed areas (Refer PV:04 for Open Areas)	Material: Size: Finish: Product: Manufacturer: Colours: Slip rating:	Vitrified tiles. TBC Charcoal epoxy grout Granito 'Optima' Eureka 'Boulevard' or equivalent Granito or equivalent Light grey, Steel grey, Black, Alabaster, Charcoal. R12			
TL:02	Vitrified tile floor finish	Public and Staff Bathrooms - all stations	Material: Size: Finish: Product: Manufacturer: Colour: Slip rating:	non-slip vitrified tiles. 200x200 Charcoal epoxy grout Granito: 'Optima' or equivalent Granito or equivalent Light Grey, Steel Grey, Black R12		Of dark grout to minimise any residual impact of graffiti of suitable coefficient to prevent slip hazards when wet	
TL:03	Vitrified tile wall finish	Public and Staff Bathrooms - all stations	Material: Size: Finish: Product: Manufacturer: Colours: Slip rating:	Ceramic tiles 200x200 mm Gloss finish to Staff bathrooms only. Charcoal epoxy grout. Tiles should be butt jointed and cover strips of stainless steel should be added to external angles. TBC TBC ultra-white plain, Ultra-white ripple R12		Full height from floor to ceiling (including cubicles) in public bathrooms. Floor height to minimum 2700mm in Staff bathrooms	
TOPPING & SCREEDS (TP)							
TP:01	Screed to Slab	Concourse floor slab - All stations	Material: Application: Product: Manufacturer:	Sand cement screed - premixed To manufacturer's requirements, provide reinforcement mesh of screeds over 40mm thk. Ardex A36 Abascreed or equivalent ARDEX Australia or equivalent			



MORLEY ELLENBROOK LINE (MEL) - STATION & PRECINCT - ARCHITECTURAL MASTER MATERIALS SCHEDULE

DOC NO: MEL-MLCX-AR-SCH-00007						13/08/2021	
STATION: MALAGA STATION						REV - B02	
CODE	ITEM	LOCATION	DESCRIPTION		IMAGE	NOTES	SWTC
TP:02	Screed to Toilets	Toilets and Wet Areas - All stations	Material: Application: Product: Manufacturer:	Rapid Set Screed Cement To manufacturer's requirements, provide reinforcement mesh of screeds over 40mm thk. Ardex A38 or equivalent ARDEX Australia or equivalent			
TRIM (TR)							
TR:01	Skirtings	Accommodation building - CSO, Staff Crib, etc - All stations	Material: Size: Finish: Product: Manufacturer:	Stainless steel skirting 150mm H Linished No. 4 finish, flush with wall lining. TBC TBC			Skirting material shall resist the following, without noticeable change in surface appearance: i. vandalism; ii. heavy impacts; and iii. abrasion from cleaning methods and maintenance systems. The materials and finishes for skirting in public areas shall be selected from the following range: 316 stainless steel; and / or Material to match floor finish.
TR:02	Lift Enclosure - Corner & Door Trims	DDA Lifts - Malaga - Morley - Noranda - Whiteman Park	Material: Size: Finish: Product: Manufacturer:	Stainless steel corner & door trims To lift details Linished No. 4 finish, flush with glazing. TBC TBC			
WINDOWS (WD)							
WD:01	Windows	Station accommodation building - All stations	Material: Size: Finish: Colour: Glass: Product: Manufacturer: ESD:	Extruded aluminium framing As per drawings Anodized finish TBC Clear laminated glass, GL:01 419 SG Flushline system (Single Glazed) or equivalent Capral or equivalent In compliance with ESD Engineer's requirements for NCC Section J 2019.			
WATERPROOFING (WP)							
WP:01	To external floor slab	Elevated Concourse - Malaga - Morley - Noranda - Whiteman Park	Material: Finish: Product: Manufacturer:	Liquid Applied Water Based Epoxy Membrane Undertile to external areas WPM300 (HydrEpoxy 300) or equivalent Two component water based epoxy polyamide membrane. ARDEX Australia or equivalent			
WP:02	To wet areas	Toilets, showers, Changerooms - All stations	Material: Finish: Product: Manufacturer:	Liquid applied Undertile PU Acrylic Hybrid Membrane Under tile to Wet Areas WPM155 Rapid or equivalent Water-based polyurethane acrylic hi-performance membrane ARDEX Australia or equivalent			

Appendix D - Acoustic Report



METRONET Stage 1: Morley-Ellenbrook Line

Malaga Station Acoustic Design Report

MEL-MLCX-AR-RPT-00033

Rev	Date	Purpose of Issue	Prepared	Reviewed	Approved
A01	2021-08-12	Issued for Information	A Deivasigamani	L Zootjens	

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Client	Public Transport Authority
PTA Contract Number	PTA200001
Laing O'Rourke Project No.	K97

Document revision history

Rev	Date	Purpose of Issue	Sections revised	Reason for updates
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1. Executive Summary

This document discusses noise and vibration levels expected with operation of the proposed Malaga Station and the extent to which those levels comply with applicable statutory and project requirements.

On the basis of the assessment undertaken it is concluded that:

- Overall environmental rail noise levels, when assessed at nearby potential noise sensitive premises are expected to comply with applicable state noise regulations and planning policy. Rail vibration levels are expected to be compliant with recommended levels.
- Noise from car parking areas, local vehicle traffic and bus movements will increase significantly in the area from current conditions but are expected to remain compliant with relevant state policies.
- Car parking areas should avoid the use of speed humps, loose laid road coverings or smooth concrete surfaces to minimise noise emissions.
- Design of the station plant and facilities such as mechanical services, public address and crowding areas to meet applicable environmental noise regulations may be achieved through conventional / industry standard design approaches and therefore is not anticipated to require specialist design input.

Acknowledgement of Country

MELconnx acknowledges the Whadjuk People of the Noongar Nation as the Traditional Custodians of the land and waters on which the Morley-Ellenbrook Line Project is located. We pay our respect to their Elders, both past and present and thank them for their continuing connection to the country, culture and community.

2. Project overview

2.1 METRONET Vision and Objectives

As Perth's single largest investment in public transport, METRONET will transform the way people commute and connect. It will create jobs and business opportunities and stimulate local communities and economic development to assist communities to thrive. The METRONET vision is for a well-connected Perth with more transport, housing and employment choices.



In delivering METRONET, the WA Government has considered peoples' requirements for work, living and recreation within future urban centres with a train station at the heart.

The objectives are to:

- Support economic growth with better connected businesses and greater access to jobs
- Deliver infrastructure that promotes easy and accessible travel and lifestyle options
- Create communities that have a sense of belonging and support Perth's growth and prosperity
- Plan for Perth's future growth by making the best use of our resources and funding
- Lead a cultural shift in the way government, private sector and industry work together to achieve integrated land use and transport solutions for the future of Perth.

2.2 Morley-Ellenbrook Line overview

As Perth grows, so does the need for rail infrastructure and METRONET is a critical element of the State Government's infrastructure agenda. The Morley-Ellenbrook Line (MEL) Project will improve connectivity between the north east metropolitan area and the rest of the city and unlock economic development in these local community areas.

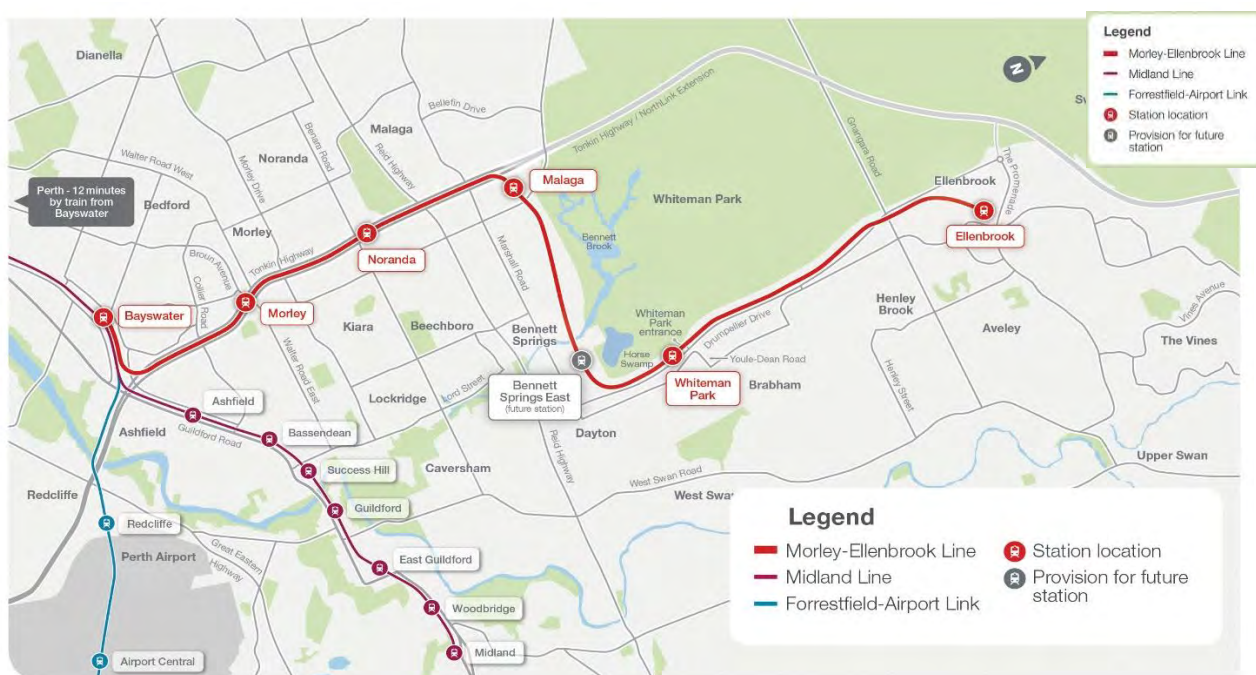


Figure 1: Morley-Ellenbrook Line © METRONET

The Public Transport Authority (PTA) is the lead agency delivering the MEL Project, with Main Roads WA (MRWA) undertaking some enabling works.

2.2.1 Project features

Transport infrastructure works for the Project include:

- A 21km rail line spurring from the Midland Line east of Bayswater Station, travelling north in the Tonkin Highway median, east through land north of Marshall Road and north on the western side of New Lord Street into Ellenbrook
- Stations at Morley, Noranda, Malaga, Whiteman Park and Ellenbrook with future-proofing for a station at Bennett Springs East
- Parking and bus interchanges/facilities at stations
- Significant grade separations at key road crossings
- Underpasses to allow the rail line to enter and exit the Tonkin Highway median
- Principal shared paths for walking and cycling access along the rail line
- Track and associated infrastructure to connect to the existing Midland Line
- Road and bridge reconfiguration works
- Integration across the packages of works and other nearby projects.

2.2.2 General scope of works

The Project's general scope of works includes the design and delivery of rail infrastructure and ancillary works to support operational passenger rail between Bayswater and Ellenbrook, including stations with inter-modal bus and rail with parking and associated road works at Bayswater, Morley, Noranda, Malaga, Whiteman Park and Ellenbrook stations.

The Project activities include all investigation, design, approvals, construction, testing and commissioning, Entry Into Service (EIS), training and operational readiness required to incorporate the new railway to Ellenbrook, and tie into the existing network including the associated road, utilities and other required works to interface with adjacent works and contracts. This will include bulk earthworks and retaining structures, grade separations, roads and drainage.

The design and delivery of the main works package for the Project is broken into three distinct stages:

- Alliance Development Stage
- Project Alliance Reference Design Stage
- Project Alliance Delivery Stage (Detailed Design through to Project close-out).



Figure 2: Architect's Impression of Malaga Station © MELconnx

2.2.3 Key Project Objectives, Key Compliance Objectives and Critical Success Factors

The PTA and MELconnx's single Non-Owner Participant (NOP) Laing O'Rourke Construction Australia Pty Ltd, have formed an integrated, collaborative Project Alliance to successfully deliver rail infrastructure that reflects our absolute commitment to achieving the Project Objectives and delivering positive outcomes for the State.

The following image demonstrates how we have mapped each Key Project Objective in the Project Alliance Agreement (PAA) against the Critical Success Factors to achieve best-for-project outcomes, underpinned by the Key Compliance Objectives.









Key Project Objectives		Critical Success Factors for Successful Project Delivery (abbreviated)
Implementation of a robust, cooperative team culture.		<ul style="list-style-type: none"> Development of a culture that results in all Participants developing behavioural values and driving principles to achieve Alliance goals and project objectives Longevity and stability of key Alliance personnel i.e. Alliance Manager, ALT and AMT.
Timely delivery of Works to achieve project milestones in accordance with agreed program.		<ul style="list-style-type: none"> Development of a final proposal with a sufficiently developed design and accurate TOC Subsequent cash flow management and financial forecasting, scheduling and value-earned calculation and determination Implementation of PTA mandated systems i.e. TeamBinder, Primavera P6, TILOS and a finance system accepting the PTA's cost breakdown structure Timely completion of design, construction and commissioning through to practical completion Timely progress towards construction milestones and completion of close-out to achieve final asset acceptance compliance.
Inclusion of processes that embrace/promote open tendering and promotion of work package development that encourages/enables second and third tier tendering.		<ul style="list-style-type: none"> For professional service providers, implement a proven and mature supply-chain engagement process, including tender review, contract award and project integration. Ensure that it offers opportunity and security of payment relative to services delivered in an effort to achieve best-for-project outcomes For material suppliers and other subcontract service providers, implement a proven and mature supply-chain engagement process, including tender review, contract award and project integration that offers opportunity and security of payment relative to service delivered Proven and mature supply-chain engagement process for labour hire services, compliant with industrial and safety laws, maintained employee standards/conditions and security of employee payments Ability to develop contracts and terms and conditions in the spirit of the Alliance values and principles, appropriate and commensurate with the size, complexity and value of packages in accordance with industry best practice.
Compliance with WAIPs.		
Optimisation of operational and whole of life costs.		<ul style="list-style-type: none"> Sustainability considerations and outcomes for the whole of life of the works.
Ensuring appropriate consultation/integration with stakeholders and community.		<ul style="list-style-type: none"> Constant and effective engagement with relevant stakeholders, particularly utilities/services, Main Roads, third party asset owners and relevant unions Effective management of PTA interfaces and PTA contractors Constant/effective engagement with the PTA in design reviews, work planning and possessions/shutdowns.
Providing passengers with safe and secure services and facilities.		<ul style="list-style-type: none"> Compliance with ONSR requirements Completed rail line, stations and bus transfer infrastructure are able to deal successfully with the movement of people, including the disabled.
Minimising disruption to current and anticipated rail operations.		<ul style="list-style-type: none"> Minimise impact on public transport services disruption Liaison and interaction with PTA rail operations personnel tasked with determining network closures, to confirm available network shutdowns and implement contingency plans Effective management of interfaces with others in heavily constrained areas Effective management/staging of works to reflect staged/constrained site access Effective management of existing rail infrastructure asset protection.
Recognising the State's desired industrial relations objectives.		<ul style="list-style-type: none"> Develop a project-specific Industrial Relations Management Plan based on a proven and successful industrial relations approach that delivers a collaborative worksite, genuine collective agreement, making good faith in negotiations and dispute resolution, and respect for trade union rights of entry.
Key Compliance Objectives (abbreviated)		
Compliance with all Statutory requirements and State Government policy requirements for construction work.	Compliance with the SWTC.	Protecting and minimising disruption to all existing facilities, infrastructure, properties or public utility services.
		Meeting all obligations to impacted stakeholders and demonstrating genuine sensitivity.
		Compliance with all environmental conditions and minimise adverse environmental impact.

Figure 3: Key Project Objectives, Critical Success Factors and Key Compliance Objectives

Figure 5: MELconnx Alliance Vision. Purpose and Values

2.4 Purpose of the Report

Malaga Station is proposed as a key station where all trains will slow down and stop at the station (no non-stop 'through' traffic).

The project will also involve the construction of car parks, bus and car drop off points and pedestrian facilities, the operation of which may involve a change in noise levels at nearby residential and other sensitive locations.

This document discusses noise and vibration levels expected with operation of the proposed Malaga Train Station and the extent to which those levels comply with applicable statutory and project requirements.

This Design Report identifies any interdependencies between each Design Package and how those dependencies have been accommodated within the document. The Design Report describes the relationship between each of the Package(s) engineering lifecycle and the assurance gates throughout the Project.

2.5 Changes Since Previous Design Submission

2.5.1 Alliance Development Stage to Reference Design Stage

Not applicable at this Design Stage.

2.5.2 Reference Design to Interim Detailed Design

Not applicable at this Design Stage.

2.5.3 Interim Detailed Design to Final Detailed Design

Not applicable at this Design Stage.

2.5.4 IFC Design Finalisation

Not applicable at this Design Stage.

3. Design Description

3.1 Scope of this Design Package

The scope of this Design Package is outlined as follows.

- A schedule of recommended controls where required to be considered and reviewed for design optimisation and design/statutory planning approval within the packages is described in Section 3.3.
- No development of software and application data for systems.
- No specific computer hardware resources including processor type, operating systems, development environment, capacity, interfaces and timing diagrams.

The details of the future masterplan (i.e. buildings in the vicinity of the station and car park) are currently unknown, and hence they cannot be assessed in detail at this stage. The indicative future development masterplan show that the future sensitive uses may be in the order of 70 m from the station transformers located in the north of the service road, and is directly adjacent to the traction power station located at the south end of the service road. It is anticipated that compliance with the Noise Regulations can be achieved via careful unit orientations and shielding (such as screens and enclosures) where necessary. Detailed impacts and mitigation measures (if required) to this future development will be assessed once more details are available during the course of the design.

3.2 Design Description

The following subsections discuss the key project noise and vibration issues assessed in further detail.

3.2.1 Rail operations

Treatments to the railway sections involved at Malaga Station are considered not required. Speeds in the immediate vicinity of the station are too low for rolling noise levels to be above State Planning Policy 5.4 (SPP5.4) targets that may be assessable at nearby development.

Note that compliance with SPP5.4 does not prevent community complaint. Subjectively, residents in the area may notice noise from low speed rail movements and the braking system air release as trains depart. Train air conditioning systems may also be noticeable on unusually hot days. These noise emissions are modelled to be within SPP5.4 targets.

Given the expected speeds in the immediate vicinity of the station, vibration levels are expected to be within recommended criteria applicable at anticipated future development sites nearby.

3.2.2 Station and associated infrastructure

Asphaltic or bitumen-based road and vehicle parking surfaces should be used instead of smooth concrete or heavily painted surfaces which can result in strong sound reflections and tyre squeal under cornering.

Speed bumps or sudden changes in road level (e.g. loose gutters, expansion control joints) should be avoided.

From Section 5.2 it can be seen that noise impacts at adjacent future development areas from road vehicles can be managed to levels compliant with applicable criteria.

On the basis of a screening assessment of proposed public address systems (Section 4.8.1) and likely crowd noise (Section 4.8.2), compliance with relevant assigned noise levels is expected.

The station is expected to comply with SWTC requirements with regards to internal reverberation levels provided on the basis of hard diffusive internal walls and the open 'sawtooth' style ceiling and roof system which provides significant access to open air.

3.2.3 Electrical transformer noise

The transformer located at the north-end of the service road, west of the proposed car park is more than 200 metres from the nearest noise sensitive (residential) premises. The traction power substation is located at the south of the station precinct north of Marshall Road is also more than 150 m away from the closest (residential) receiver. Based on expected loading and sound power levels for transformers, it is expected that noise emissions will be compliant with applicable noise regulations.

3.2.4 Mechanical noise

A basic screening assessment has been undertaken considering the minimum distance to potential future noise sensitive development and the proposed mechanical plant and equipment. Given the equipment comprises small enclosed fan coil units and domestic level air conditioning outdoor condensers, compliance with applicable noise regulations is expected.

3.2.5 Local road traffic and new roundabouts

Local road vehicle traffic noise may vary due to the introduction of the proposed train station but is not assessable within the criteria outlined.

3.3 Relationship with other Design Packages

The relationship and/or reliance of this design package on other MEL design packages is derived from the N2 Matrix and is outlined in the Table below.

Relationship with other Design Packages	Description/Title	Interface Elements	Integration Strategy
E018	Line wide - Permanent Way and Stabling & Track – Transit Space & Structure /Ballast Interface	Trackform Rail web dampers Under ballast matting	Confirm trackform Review rail web damper options

E016	LW Urban Design - Urban Design - Architecture	Noise walls	Confirm spatial inputs and coordinate implementation of recommended treatments
E017	Linewide Urban Design - Landscape	Noise walls	Confirm spatial inputs and coordinate implementation of recommended treatments
E007	Malaga Precinct – Urban Design – Architecture	Noise walls	Confirm spatial inputs and coordinate implementation of recommended treatments
E087	Malaga Precinct Civil - Fencing and Gates, Retaining Walls & Minor Structures, Noise Walls	Noise walls	Confirm spatial inputs and coordinate implementation of recommended treatments
E090	Malaga Station – Electrical - Lighting & LV & Comms & Security	Electrical plant noise emissions	Confirm inputs and coordinate implementation of any recommended treatments
E093	Malaga Station – Mechanical and BMSC	Mechanical plant noise emissions	Confirm inputs and coordinate implementation of any recommended treatments

3.4 External Interfaces

The relationship and/or reliance of this design package on external interfaces and details of integration strategies are outlined in the Table below.

Item	External Party	Interface Elements	Integration Strategy
	N/A		

4. Design Inputs

4.1 Project Design Requirements

The following design inputs, loads combinations, standards and other key design inputs have been used in preparation of this report;

4.1.1 Environmental noise regulations

Refer to Section 4.5.1 below.

4.1.2 SWTC Requirements

Refer to Section 4.5.3 below.

4.1.3 Operational Scenarios

Normal operations are expected to result in 74 train movements per day (6am to 10pm) and 16 movements per night (10pm to 6am) at the Malaga Station.

The “PTA Concept Train Operating Plan” described as being within Book 5 of the SWTC could not be accessed. In lieu of this information, these volumes are used from the Reference Design.

4.1.4 Stations and Infrastructure

Stations and infrastructure have been assessed on the basis of supplied drawings to date and 16 buses per hour typical day scenario.

We note that the design of each station utilises natural ventilation strategies, with significant openings at roof level throughout the station.

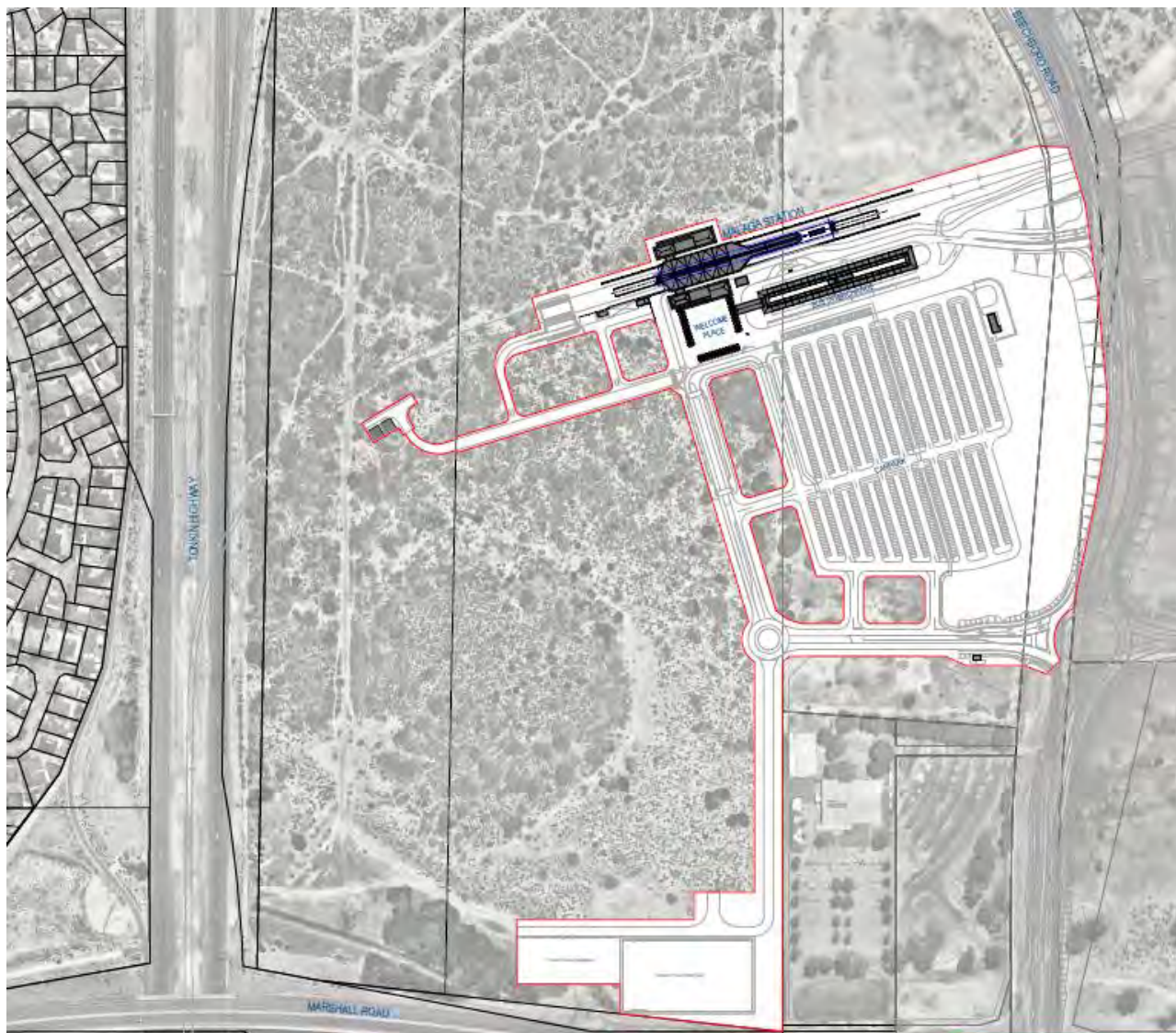


Figure 6: Extract of architectural location plan 25-A-287-AR0012_B01 indicating site locality.

4.1.5 Electrical transformers

From the supplied drawings, it can be seen that the transformers associated with the station are approximately 150 metres or more from the nearest noise sensitive residential premises (south of Marshall Road) and more than 100 m from Potter's House Christian Centre. By inspection of the likely transformer sound power level / loading and the proposed screening elements, compliance with the relevant assigned noise levels is expected.

4.1.6 Electrical pumps

From the supplied drawings, it can be seen that the pumps within the station precinct are approximately 200 metres or more from the nearest noise sensitive premises. By inspection of the likely pump sound power level / loading and the proposed screening elements, compliance with the relevant assigned noise levels is expected.

1 AND 1 ACCESSIBLE DROP OFF/PICK UP BAYS
3 & 3 RIDE BAYS - STANDARD
1 & 1 RIDE BAYS - SHORT TERM

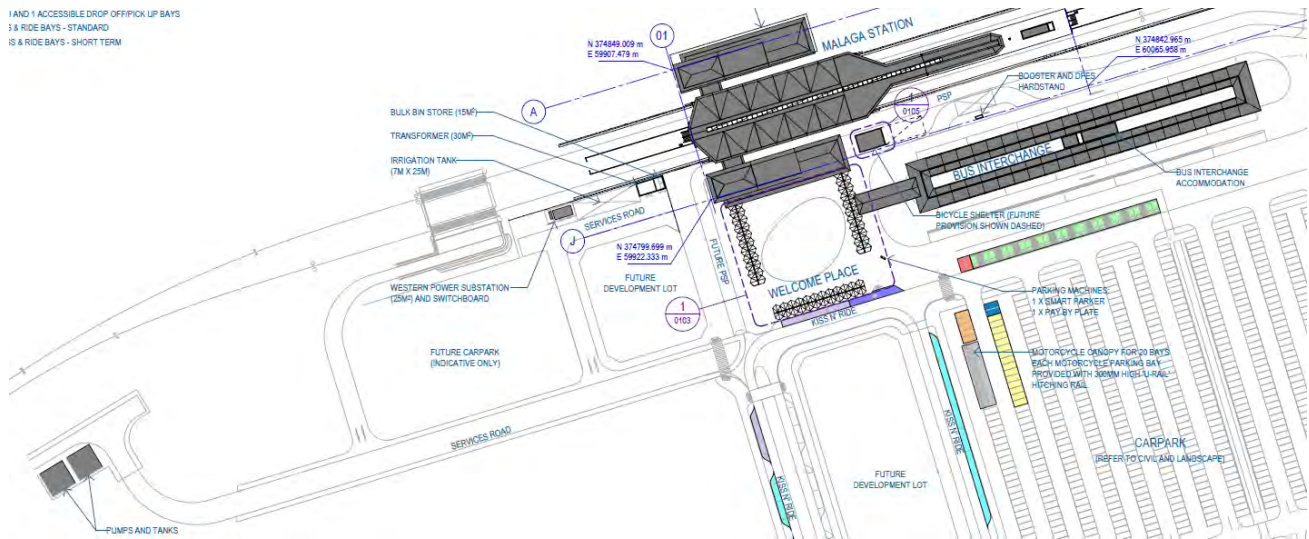


Figure 7: Extract of architectural plan 25-A-287-AR0015_B01

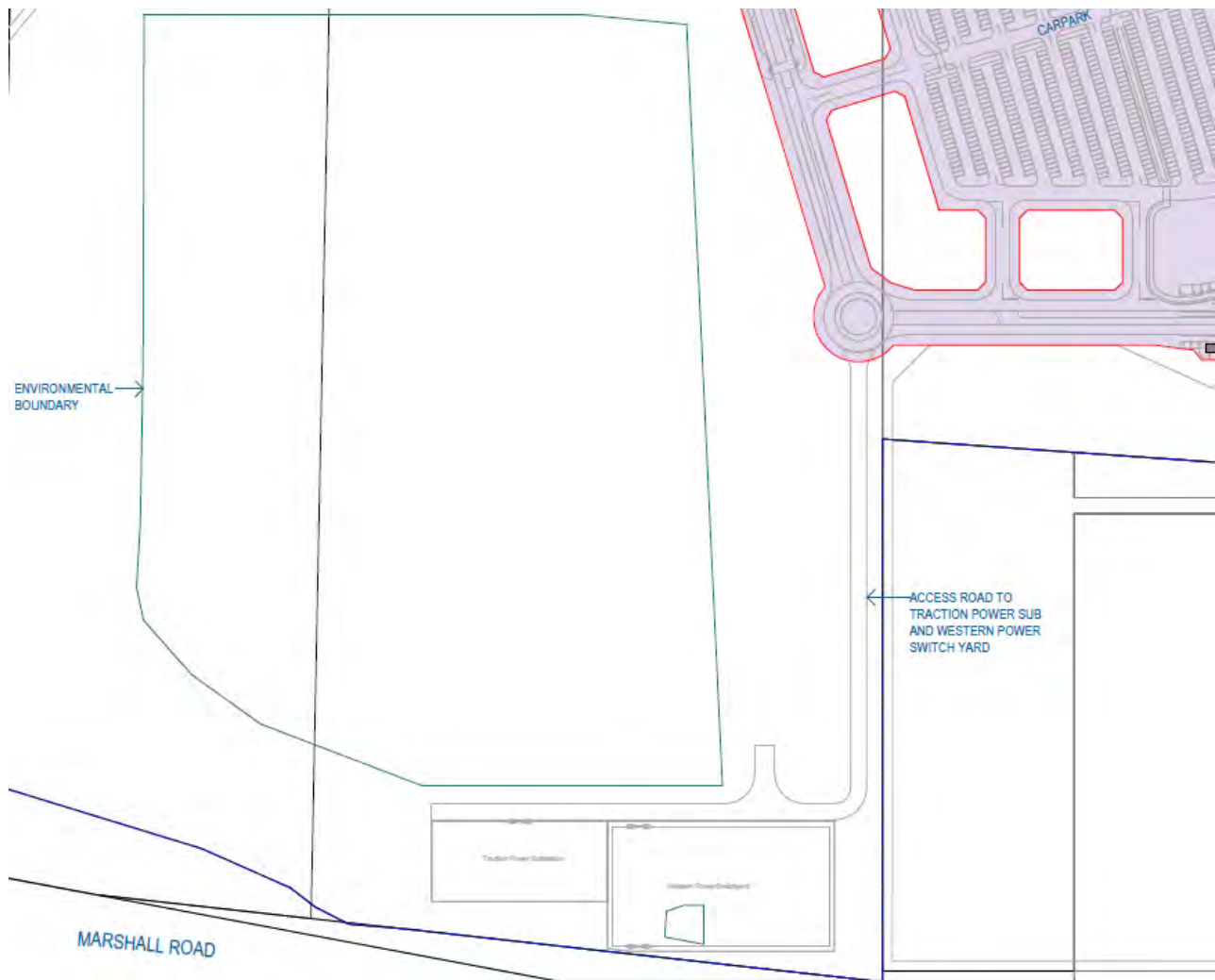


Figure 8: Extract of architectural overall plan 25-A-287-AR0014_B01

4.1.7 Mechanical outdoor plant

Drawings 25-A-287-ME0008 to -ME0014 indicate that the outdoor mechanical plant comprise condenser units. Based on rooms served, each would have capacities the order of 6 kW or less (similar to domestic residential air conditioning systems). These units, assessed in cumulative terms, are considered compliant with the assigned noise levels defined in Section 4.5.1 at the nearest noise sensitive premises.

4.2 Design Software Used for this Package

Computer software used to develop this package is outlined in the Table below.

Reference	Supplier	Usage
MS Office 2013	Microsoft Inc. (with proprietary SLR code)	Calculation of in-car noise levels Calculation of 3D receiver distances Calculation of 1D vibration propagation Consolidation and presentation of results 1D propagation / noise analyses
SoundPLAN v8.1	SoundPLAN GmbH	Calculation of site wide airborne noise emissions according to prescribed standards

4.3 Applicable Codes and Standards

Applicable standards, codes and guidelines to this design package (at time of project commencement) including identification of specific provisions, criteria and classifications are provided in the Table below.

Reference	Description/Title	Compliance (Specific Provisions, Criteria and Classifications)
Australian and Other Standards and Guidelines		
CR NOI TSI	Technical specification for interoperability relating to the subsystem 'rolling stock – noise' of the trans-European conventional rail system, adopted by the Commission Decision 2011/229/EU, April 2011	
SPP5.4	State Planning Policy No. 5.4 Road and Rail Noise 2019	
EPNR	Western Australia Environmental Protection (Noise) Regulations 1997	
AS 2670.1	Evaluation of human exposure to whole-body vibration - General requirements	
AS 2670.2	Evaluation of human exposure to whole-body vibration - Continuous and shock-induced vibration in buildings (1 to 80 Hz)	
ISO GUIDE 98-3	Uncertainty of measurement — Part 3: Guide to the expression of uncertainty in measurement (GUM:1995)	
ISO 2631-1:1997	Mechanical vibration and shock - Evaluation of human exposure to whole-body vibration - Part 1: General requirements.	

Reference	Description/Title	Compliance (Specific Provisions, Criteria and Classifications)
AS ISO 2631.2:2014	Mechanical vibration and shock - Evaluation of human exposure to whole-body vibration - Vibration in buildings (1 Hz to 80 Hz).	
ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc, 2011 ASHRAE Handbook - Heating, Ventilating, and Air-Conditioning APPLICATIONS - SI Edition, Atlanta GA http://www.ashrae.org	
FTA	C.E. Hanson, D.A. Towers, and L.D. Meister 2006, Transit Noise and Vibration Impact Assessment, Office of Planning and Environment, Federal Transit Administration, Report FTA-VA-90-1003-06, Washington DC	
Nord2000	Jonasson HG, Storeheier S. Nord 2000. New Nordic prediction method for rail traffic noise [Internet]. 2001. (SP Rapport).	
Green Star	Green Star Design and As-built Requirements for Railway Stations (v1.1)	
ISCA	Infrastructure Sustainability Council of Australia (ISv2.0) Design and As Built	
PTA Standards and Specifications		

4.4 Reference Information

The project specific reference information and reports that have been used as inputs into the development of the detailed design are included in the table below.

Document Reference	Description/Title	Revision
25-A-287-AR0001 to - AR0180	E007 Malaga Station - Urban Design - Architecture	A, A01
25-A-287-EG0001 to - EG0195	E090 Malaga Station - Electrical - Lighting & LV & Comms & Security	A, A01
25-A-287-ME0001 to - ME0017	E093 Malaga Station – Mechanical and BMSC	A, A01
25-A-287-EC0151	MEL - MLCX - MALAGA STATION - COMMUNICATIONS - EASE ACOUSTIC MODEL - SHEET 01	A
25-A-287-EC0152	MEL - MLCX - MALAGA STATION - COMMUNICATIONS - EASE ACOUSTIC MODEL - SHEET 02	A
25-A-287-EC0153	MEL - MLCX - MALAGA STATION - COMMUNICATIONS - EASE ACOUSTIC MODEL - SHEET 03	A

Document Reference	Description/Title	Revision
GCOR-LOR-LW-00096	Track Inputs for Noise Modelling	02-Jun-2021 13:10 AWST
GCOR-LOR-PW-00193	Design data for SLR noise modelling	07-May-2021 19:02 AWST
GCOR-LOR-PW-00166	MELconnx CAD issue to SLR	30-Apr-2021 09:42 AWST
GCOR-LOR-LW-00047	Latest WIP rail strings	19-Apr-2021 11:51 AWST
GCOR-LOR-PW-00128	Update to Health Safety Environmental Management System	06-Apr-2021 15:56 AWST
GCOR-LOR-PW-00071	Aerial Imagry (sic)	01-Apr-2021 15:48 AWST
GCOR-LOR-PW-00067	Project AD Design Information On ASite	23-Feb-2021 11:16 AWST
(TBA)	<Architectural and Civil Drawing packages>	
	Baseline Noise and Vibration Measurements (SLR Consulting)	(in preparation)

4.5 Design Criteria

The design criteria utilised in the development of this report are outlined below.

4.5.1 Environmental Noise Regulations

Environmental noise emissions (excluding trains and some emissions from road vehicles) from various premises to nearby noise receiving premises are covered by legislation in the form of the *Western Australia Environmental Protection (Noise) Regulations 1997*, which operate under the *Environmental Protection Act 1986*. For this project, these regulations apply to stations and ancillary operational equipment, and specifically do not apply to narrow gauge trains.

To achieve compliance, received noise levels at nearby premises including noise sensitive premises (for example, residential, commercial and industrial premises) are not to exceed specified noise limits in the form of assigned noise levels. The Act gives state authorities powers to order financial penalties and closure of plant that are in excess of assigned noise levels through a formal investigation process. There are methods within the Regulations by which assets found to be producing excessive noise be managed on an ongoing basis in consultation with the Department of Water and Environment Regulation (DWER), say through noise management plans and/or alternative criteria, however at its core of any such agreement is that the proponent will exercise all reasonable and practicable measures to minimise noise.

The assigned noise levels, as shown in Table 1, vary for each noise sensitive receiver, as they are determined from consideration of Influencing Factors (IF) which takes into account the amount of commercial, industrial and road transport infrastructure within specific distances to the receiving noise sensitive premises.

Table 1 Table of Assigned Noise Levels, dB

Part of premises receiving noise	Time of day	LA10	LA1	LAmx
Noise Sensitive premises at locations within 15 metres of a	0700 to 1900 hours Monday to Saturday	45 + IF	55 + IF	65 + IF

Part of premises receiving noise	Time of day	LA10	LA1	L _{Amax}
building directly associated with a noise sensitive use	0900 to 1900 hours Sunday and public holidays	40 + IF	50 + IF	65 + IF
	1900 to 2200 hours all days	40 + IF	50 + IF	55 + IF
	2200 hours on any day to 0700 Monday to Saturday and 0900 hours Sunday and public holidays	35 + IF	45 + IF	55 + IF
Noise Sensitive premises at locations further than 15 metres from a building directly associated with a noise sensitive use.	All hours	60	75	80
Commercial premises	All hours	60	75	80
Industrial and utility premises	All hours	65	80	90

Regulation 7 of the *Environmental Protection (Noise) Regulations 1997* requires that, if noise emitted from any premises when received at any other premises cannot reasonably be free of intrusive characteristics of tonality, modulation and impulsiveness, then a series of adjustments must be added to the emitted levels (measured or calculated) and the adjusted level must comply with the assigned level. The adjustments are detailed in Table 2 and are further defined in Regulation 9(1) of the *Environmental Protection (Noise) Regulations 1997*.

Note that the following adjustments (Table 2) generally apply to fixed plant and infrastructure only.

Table 2 Table of adjustments for intrusive characteristics

Application	Where tone(s) are present	Where modulation is present	Where impulsiveness is present
Adjustment where noise emission is not music (These adjustments are cumulative to a maximum of 15 dB)	+5dB	+5dB	+10dB

Tones are defined in Regulation 9(1) as being present where the difference between the A weighted sound pressure level in any one third octave band and the arithmetic average of the A-weighted sound pressure levels in the two adjacent one third octave bands is greater than 3dB in terms of $L_{Aeq,T}$ where the time period T is greater than 10% of the representative assessment period, or greater than 8dB at any time when the sound pressure levels are determined as LAS levels.

Modulation is defined as a variation in the emission of noise that —

- is more than 3 dB L_{AF} or is more than 3 dB L_{AF} in any one third octave band;
- is present for at least 10% of the representative assessment period; and
- is regular, cyclic and audible.

Impulsiveness is defined as present where the difference between L_{Apeak} and L_{ASmax} is more than 15dB when determined for a single representative event.

During the assessment process the above adjustments have been applied to relevant noise sources, taking into account specific intrusive characteristics of these noise sources based on SLR's in-house noise database. It is unlikely that modulation or impulsiveness characteristics would apply to PTA fixed assets being typically electrical power transformers or air handling plant

4.5.2 SPP5.4

SWTC 13.6.1-3 states that

The Alliance must design and construct the operating passenger railway and any associated noise mitigation controls to meet the requirements of "State Planning Policy No. 5.4 Road and Rail Noise (SPP 5.4)" (WAPC, 2019).

The Alliance must design and construct the operating passenger railway to ensure that the LA_{max} applicable to the 95th percentile train passby event is 80 dB or less at buildings with a noise sensitive use located on noise sensitive premises.

The table below outlines the adopted noise objective levels in regard to airborne noise during road and rail operations. Noise mitigation must be provided where the noise level is above these targets

Table 3 SPP5.4 criteria

Metric	Application	Value(s)	Notes
Period average noise levels	Major upgrade of existing railway	L _{Aeq,day} 60 dB	SPP5.4
	<i>Applied where emissions from MID and FAL lines are considered significant (Bayswater area)</i>	L _{Aeq,night} 55 dB	
	New railway	L _{Aeq,day} 55 dB	
	<i>(All other locations)</i>	L _{Aeq,night} 50 dB	
Maximum noise levels	Line wide	L _{Amax} 80 dB	95 th percentile. SWTC

These objectives are assessed outdoors, 1 metre from the main building on a lot associated with a noise sensitive usage. Consistent with SPP5.4, the criteria are assessed

- Only at premises that are occupied or designed for occupation or use for residential purposes (including dwellings, residential buildings or short-stay accommodation), caravan parks, camping grounds, educational establishments, child care premises, hospital, nursing home, corrective institution; or place of worship (Note that this excludes recreational parks, commercial and industrial premises along the alignment – results will be determined for these locations, but mitigation would not be recommended); and
- at all floor levels where identified from surveys, noting that sufficient mitigation (in the context of the targets) may not be reasonable or practicable at higher floors.

4.5.3 Stations and Associated Infrastructure

Section 13.7 of Book 5 of the SWTC details the noise and vibration Technical Criteria requirements for the design and operation of the station and associated infrastructure, and includes the following statements:

The Alliance must address noise and vibration impacts associated with station noise impacts, inclusive of any new road infrastructure to service the stations, to surrounding sensitive receivers, occupational health and amenity for PTA staff and patrons.

[.] Noise and Vibration Criteria for Impacts to Surrounding Sensitive Premises at Stations and associated infrastructure (eg. car parks, plant rooms etc.) must be designed to comply with the requirements of the Environmental Protection (Noise) Regulations 1997 (WA).

[.] The Alliance shall determine the noise criteria for impacts from Station entry roads and grade separations and design roads and any associated noise mitigation controls to meet the requirements of Western Australia State Planning Policy No 5.4, Road and Rail Noise 2019.

4.5.3.1 Ambient Noise Levels within Passenger Station Areas

Section 13.7.1 of the SWTC defines acceptable noise levels via the following table, as defined in AS 1055.1:1997 and assessed according to AS/NZS 2107:2000. In accordance with the SWTC it is proposed to follow this the 2000 version of AS/NZS 2107 and not the more recent 2016 version.

Table 4 Ambient noise level criteria

Area	Scenario	Minimum acceptable noise level (dB)	Maximum acceptable noise level (dB)
Ticket sales area	Building services and plant	-	L _{Aeq} 45
General office areas	Building services and plant	-	L _{Aeq} 45
Staff crib rooms	Building services and plant	-	L _{Aeq} 45
Public waiting areas, kiosks	Building services and plant	-	L _{Aeq} 45
Toilets and amenities	Building services and plant	L _{Aeq} 45	L _{Aeq} 55
Parking and waste storage areas	Building services and plant	-	L _{Aeq} 65
Platforms, at any position within 1.5m of platform edge or centreline (whichever is closer to track), and more than 8 metres from Portals	Stationary trains, auxiliary equipment operating as normal	-	L _{Aeq} 70
	Moving trains	-	L _{ASmax} 80
	Building services and plant (ventilation, escalators, etc.)	-	L _{Aeq} 55
	Emergency smoke fan systems	-	L _{Aeq} 85
Plantrooms	Building services and plant	-	L _{Aeq} 85
All other areas	All	-	Table 1, AS/NZS 2107:2000 'Satisfactory' values plus 5dB

Section 13.7.1 of the SWTC also states that

For enclosed rooms containing plant, equipment and electrical power Assets, noise levels must be assessed at no less than 1 metre from any item of equipment; and noise levels from mechanical ventilation systems serving the room must not exceed L_{Aeq} 65dB.

The criteria listed above in this section do not apply to systems or components operating in emergency mode. In this situation, noise generated by the systems or their components must comply with AS 1670.4 and AS 1668.1, and not exceed levels that affect speech intelligibility in egress paths, evacuation assembly areas, or operational or emergency control rooms or areas.

4.5.3.2 Noise and Vibration Ingress into Passenger Station Areas

Section 13.7.2 of the SWTC states that the Alliance shall comply with the following requirements:

External noise ingress from all associated road and rail traffic sources controlled according to the requirements of the WAPC State Planning Policy No 5.4 Road and Rail Noise (SPP 5.4) 2019.

Floor vibration levels within publicly accessible areas from plant, equipment or external sources not exceed L_{v, RMS,1s} 112dB.

4.5.3.3 Reverberation within Passenger Station Areas

Section 13.7.3 of the SWTC states that the Alliance shall comply with the following requirements:

Within platform areas, the spatial average reverberation time (RT60) values for the full octave bands with centre frequencies 500Hz and 1kHz not exceed 1.3 seconds for the scenario where 100 patrons are present, or 1.6 seconds when empty.

At all other areas, spatial average reverberation time (RT60) values for the full octave bands with centre frequencies 500Hz and 1 kHz be in accordance with AS/NZS 2107:2000 given the usage of each space.

4.5.3.4 Public Address Systems within Passenger Station Areas

Section 13.7.4 of the SWTC states that:

The Alliance must ensure that the PA systems achieve the minimum sound level and speech intelligibility requirements of clause 4.3.4 and 4.3.6 of AS 1670.4 for all representative locations, environmental conditions and passenger levels

External noise ingress from adjacent road traffic sources must be assessed and considered when designing and constructing all stations to ensure that the public address systems within passenger station Areas achieve the minimum sound level and speech intelligibility requirements of clause 4.3.4 and 4.3.6 of AS 1670.4 for all representative locations, environmental conditions and passenger levels.

4.5.3.5 Acoustic Sound Insulation within Passenger Station Areas

Section 13.7.5 of the SWTC states that:

Airborne sound insulation targets are given in terms of the weighted level difference, D_w between two spaces. The Alliance must ensure that design complies with the following general in-situ airborne sound insulation targets:

- $D_w \geq 35\text{dB}$ between normally occupied enclosed spaces.*
- $D_w \geq 28\text{dB}$ between normally occupied spaces where the common partition includes a door.*

The following table presents criteria that supersede these general requirements for specific occupied spaces. Where two different space types are adjacent to one another, the Alliance must ensure that the more onerous target applies.

Table 5 Vibration criteria (SWTC Book 5 Table 31: Airborne Sound Insulation Requirements)

	Space Type / Occupancy	Minimum Weighted Sound Level Difference, D_w , dB
Between normally occupied back of house offices and crib rooms	Generally	40
	Where the common partition at the interface includes a door	30
Toilets and amenities to nearby public areas	Generally	42
	Where the common partition at the interface includes a door	25
	Where the common partition at the interface has no door	16

SWTC 13.7.5 also states that

Where receiving spaces are not fully enclosed, the closest point of assessment must be at least 4 metres from the nearest door or window or the nearest scheduled seating position, whichever is closest.

Noise from hydraulic services associated with toilet amenities (e.g. flushing) must not be audible in any other publicly accessible area.

Noise from hand dryers within toilets and amenities should not be audible at any position more than 2 metres from the entrance, and must not be audible at any commercial retail or patron seating areas.

4.6 Design Life

Not applicable.

4.7 Durability Requirements

Not applicable.

4.8 Specialist Technical Inputs

4.8.1 Public Address (PA) Systems

The public address system will need to be designed to be sufficiently audible (involving both sound level and speech intelligibility) to meet relevant provisions of Australia Standard 1670.4, Fire Detection, Warning, Control and Intercom Systems - System Design, Installation and Commissioning - Sound Systems and Intercom Systems for Emergency Purposes (AS 1670.4) such that patrons can be advised in case of emergencies.

By inspection of each station arrangement, supplied 'EASE' model outputs and distancing to the nearest residential receivers (screening assessment), it can be seen that there is a range of sound levels which can meet both the minimum sound level limit requirements of AS 1670.4 and the maximum noise level limits listed.

An active PA system which regulates speaker volume depending on actual ambient sound level conditions to maintain intelligibility is recommended for the Malaga Station.

4.8.2 Crowd / Patron Noise

Average crowd and patron noise levels in the context of the design criteria and other environmental noise sources are considered insignificant.

The arrangement of the station has passenger waiting areas on the platform, busway waiting areas and pick up points at distances over 200 metres from sensitive premises and/or generously spaced open environments.

Providing this level of distance separation and low crowd densities is expected to ensure that any sustained crowd / patron noise levels (conversations, walking) as individually L_{Aeq} 60dB @ 1 metre and therefore below L_{Aeq} 30dB @ 40 metres will be at a cumulative level that is inaudible at nearby residential locations against other background environmental noise.

4.8.3 Vehicle Car Parking

EU Parking Area Noise 2007¹ guidelines have been used to provide an indicative level of noise emissions on surrounding areas.

- Vehicle movement rate for P&R facilities over 12km from CBD. A vehicle entering or exiting a parking bay is one movement, so the same vehicle arriving and departing on the same day completes two movements.
 - 0.30 per hour per parking bay (6am to 10pm).
 - 0.10 per hour per parking bay (10pm to 6am).
- Random fill across all parking lots.²

¹ Bayer, Landesamt für Umwelt 2007, Parking Area Noise - Recommendations for the Calculation of Sound Emissions of Parking Areas, Motorcar Centers and Bus Stations as well as of Multi-Storey Car Parks and Underground Car Parks, Bayerisches Landesamt für Umwelt, Parkplatzlärmstudie 6, Aufl., August 2007.

² Random fill assumed in the absence of a specific car parking traffic analysis. Fill patterns in practice may vary due to proximity to train station, and presence of ticketed parking and/or reserved parking.

- Impulse correction K_1 4dB.
- L_{w0} 63dB (standardised vehicle sound power level).

4.8.4 Bus movements

Bus vehicles have been modelled using Nord2000 methodologies with the following parameters:

- Bus movements of up to 4 buses per stand per hour during the day (up to 48 buses/hour in total), and 0.5 bus per stand per hour during the night (up to 6 buses/hour in total) has been assumed for the assessment.
- Changes in level from arriving / idling / departure at stations (as assessed at nearest noise sensitive location) have been determined insignificant and not modelled. Publicly accessible road sections beyond the loop or its intersections are not included.
- Ground class F (compacted dense ground).
- Category 2a vehicles (up to 12.5m length and 2 axles, e.g. Volgren OC500LE), approximately L_{Amax} 75dB, L_{AE} 78dB at 7.5m and 35km/hr.
- Traffic case F (35km/hr max).
- Asphalt concrete surface, any increases in noise level due to gradients was included on the basis of the ground topography provided.

4.8.5 Kiss and Ride

Car movements have been modelled using Nord2000 methodologies with the following parameters:

- Movements of up to 40 vehicles per hour during the day, and up to 10 vehicles per hour during the night has been assumed for the assessment.
- Changes in level from arriving / idling / departure at stations (as assessed at nearest noise sensitive location) have been determined insignificant and not modelled. Publicly accessible road sections beyond the loop or its intersections are not included.
- Ground class F (compacted dense ground).
- Category 1 vehicles approximately L_{AE} 78dB at 7.5m and 40km/hr.
- Traffic case F (40km/hr max).
- Asphalt concrete surface, any increases in noise level due to gradients was included on the basis of the ground topography provided.

4.8.6 Noise Propagation Effects

4.8.6.1 Path Attenuation Factors

Outside the rail reserve, the environmental factors relevant to noise propagation were modelled as follows:

- Topography dataset of existing conditions for the assessment area was sourced from Landgate and adapted to the provided alignment in 3D dwg format.
- Given the relatively short propagation distances, weather conditions for each time period were considered neutral, with 20°C ambient temperature and no prevailing wind or temperature gradient effects.
- Existing noise barrier and fence heights and locations were reviewed with necessary corrections being made to reflect their realistic existing conditions. The modelling was then carried out on the basis that these fences and barriers are acoustically solid, i.e. they perform as effective noise barriers, being of suitable construction to sufficiently reduce noise transmission.

4.8.6.2 Air Attenuation and Diffraction

The propagation of railway noise from source to nearby sensitive areas has been estimated using industry standard numerical code that has been validated through field measurements.

- 'N2k': The Nord2000 Rail prediction method is an update to the Kilde formulation based on advancements in the late 1990s. The main benefit comes from the fact that the N2k methodology calculates in terms of one-third octave bands, rather than a single number to represent all frequencies. This is critical in regards to the design of noise walls, because their effectiveness is strongly frequency dependent – the difference in noise reduction at higher frequencies is vastly different compared to low frequencies.
- The ISO 9613 Industrial Prediction Model has been used for predicting noise from stationary assets with noise sources including sirens and bells. Various weather conditions can be taken into account in this modelling algorithm.

Stationary noise sources are modelled according to the parameters outlined in the following Table.

Parameter	Day period	Night period
Wind speed	Nil (ISO 9613, $C_{met} = 0\text{dB}$)	Nil (ISO 9613, $C_{met} = 0\text{dB}$)
Temperature inversion lapse rate	Nil (ISO 9613)	Nil (ISO 9613)
Temperature	20°C	15°C
Relative humidity	50%	50%
Mean barometric pressure	1013hPa	1013hPa

These sources are generally those assessed under the Regulations, such as crowd noise, public address systems, fixed mechanical plant and idling buses not on public roads.

4.8.6.3 Ground absorption

The table below summarises the ground absorption rates modelled.

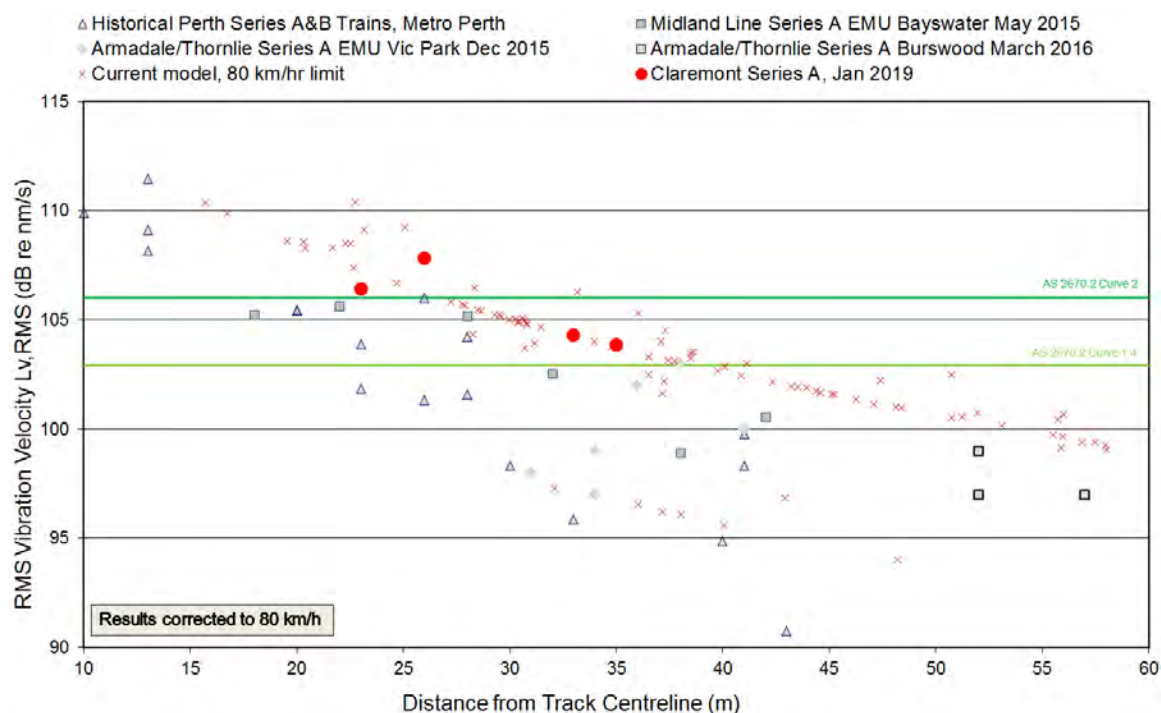
Parameter	Value	Comments
Default	0	Hard ground
Rail reserve generally	0	Hard ground
Undeveloped sites, loose soil	0	Conservatively assuming future development / sealed surfaces
Significant road and sealed concrete surfaces	0	Conservatively 100% hard reflective
Established parks and reserves	0.6	60% sound absorptive

4.8.7 Vibration source levels

Vibration emissions from the site will be mainly controlled by rail traffic. Road vehicles will also contribute where speed humps, loose panels (e.g. gutter or pit covers) or sudden variations in road surface are introduced.

This assessment acknowledges that typical rail vibration levels in the immediate area will decrease from corresponding decreases in rail speeds when all trains pass through Malaga (rather than pass through the area at or near the track section limit).

On a number of previous projects in Perth, ground vibration measurements have been carried out by SLR adjacent to surface rail track carrying passenger trains at a variety of distances from the rail centreline at each site.



Adjusting for speeds around 40 km/hr, which would be the highest speed that could be expected in the vicinity of the station, typical vibration levels will comply with Curve 1.4 (Residential) at approximately 30m from the nearest track centreline. Curve 2 will be complied with at approximately 20m from the nearest track centreline. For reduced speeds associated with stopping trains, rail vibration levels applicable to station areas are also considered to meet the $L_{v,RMS,1s}$ 112dB requirement referenced in Section 4.5.3.2.

Actual results will vary from these estimates according to rail condition, in situ soil and terrain profiles; however even after allowing for such variation, vibration levels are expected to be compliant.

On the basis of the above, the project provisions for vibration mitigation may be limited to avoiding road speed humps and loose coverings for buses and heavy vehicle traffic.

4.9 Constructability Requirements

Not applicable.

4.10 Environmental & Sustainability Design Criteria

Not applicable.

4.11 Future Proofing

Not applicable.

4.12 Value Engineering

Not applicable.

4.13 Third Party Operational Stakeholders

Not applicable.

4.14 Design Input from Stakeholders and Community Involvement Process

Not applicable.

4.15 Design Risks, Assumptions, Issues, Dependencies, Opportunities, and Constraints (RAIDOC)

Detailed of design risks, assumptions, issues, dependencies, opportunities and constraints are outlined below.

4.15.1 Design Risk Register

Design risks related to this design package are detailed in the Table below;

ID	Description	Status	Evidence of Validation
	Not applicable at this design stage		

4.15.2 Design Assumptions

Design assumptions related to this design package are detailed in the Table below;

ID	Description	Status	Evidence of Validation
	Rough / diffusive wall finishes. If walls are hard reflective, then wall extents may need to be revised.		
	Existing residential walls and noise walls relevant to the report outcomes are acoustically sound, continuous / without gaps.		

4.15.3 Design Issues

Design issues related to this design package are detailed in the Table below;

ID	Description	Status	Evidence of Validation
	Not applicable at this design stage		

4.15.4 Design Dependencies

Design dependencies related to this design package are detailed in the Table below;

ID	Description	Status	Evidence of Validation
	Noting Rail Systems Australia appears to have already constructed EASE models for Malaga and Ellenbrook (25-A-287-EC0151, 25-A-287-EC0152, 25-A-287-EC0153, 25-A-291-EC0151, 25-A-291-EC0152), responsibility for production of Speech Transmissibility Index (STI) contours and design of loudspeaker arrangements to be submitted as part of the various Station packages will rest with Rail Systems Australia.		

	Until directed to undertake such modelling as per agreement SK97/0018, SLR has not undertaken such calculations to independently verify these claims.		

4.15.5 Design Opportunities

Design opportunities related to this design package are detailed in the Table below;

ID	Description	Status	Evidence of Validation
	Not applicable at this design stage		

4.15.6 Design Constraints

Design constraints related to this design package are detailed in the Table below;

ID	Description	Status	Evidence of Validation
	Not applicable at this design stage		

4.16 **Requests for Information (RFI)**

Requests for information submitted in relation to this design package are outlined in the Table below. Copies of the RFIs are provided in Appendix W of this report.

RFI	Description/Title	Response
062 CRFI-SLR-PW-00001	Noise and Vibration - Baseline Measurements	Closed
063 CRFI-SLR-PW-00002	Noise and Vibration Assessments - Data Input Log / Requests	Closed
068 CRFI-SLR-PW-00003	Conversion of federated model 25-B-00-0001.4.0.IFI to AutoCAD	Closed

5. **Design Outputs**

5.1 **Deliverables List**

Not applicable.

5.2 **Drawings and Models**

5.2.1 Bus and car parking activities

The below figure gives an example of potential noise levels in the vicinity of the station as a result of modelled bus operations and car parking facilities according to Section 4. It can be seen that the predicted levels from car park

and bus movements at the station are within the targets outlined in Section 4.5.2 to the nearest receivers, including the potential future development.

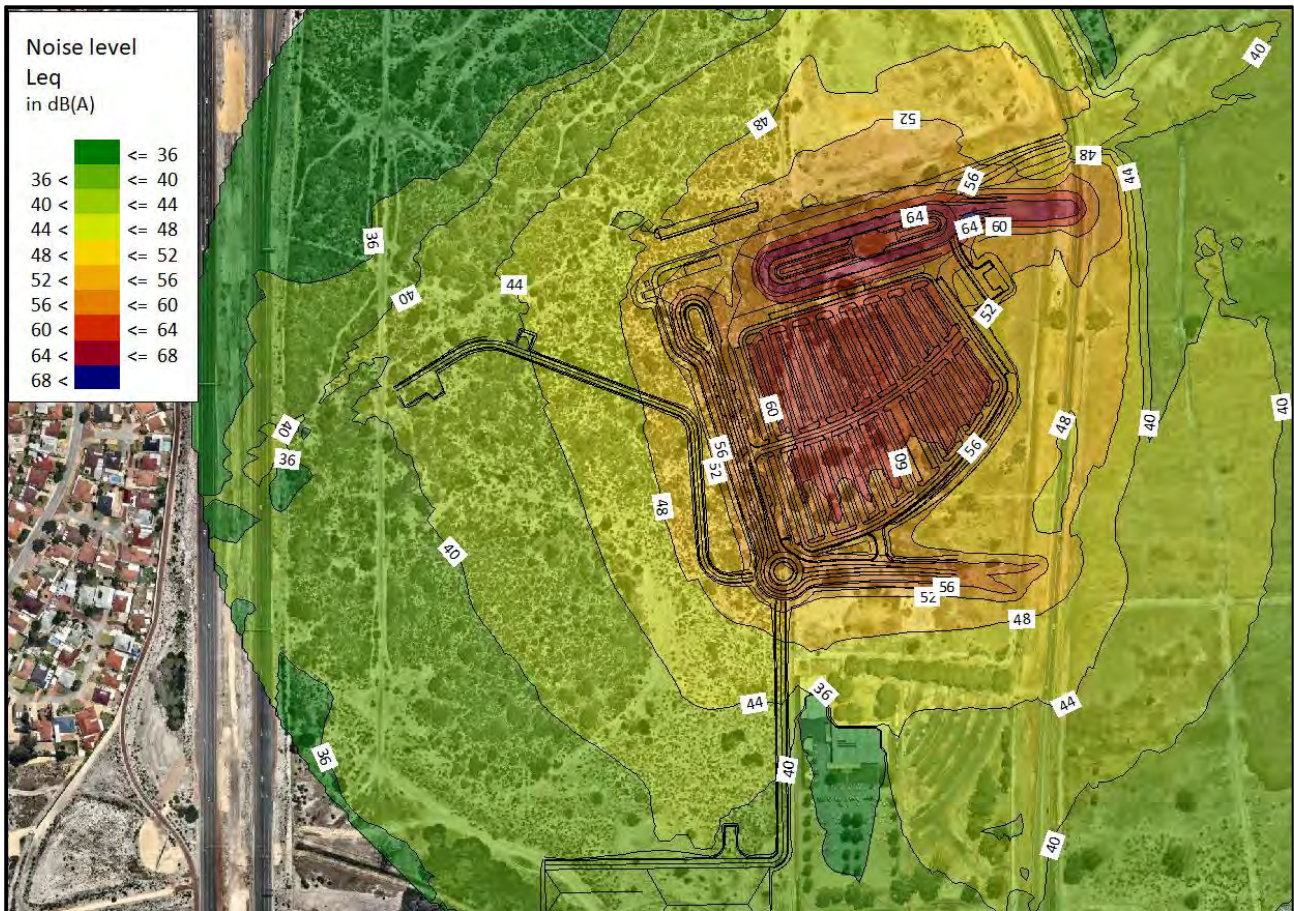


Figure 9: Indicative distribution in airborne noise from station, bus and car parking areas for comparison with L_{Aeq} day criteria

5.3 Specifications

Not applicable at this design stage.

5.4 Standard Reference Drawings

Not applicable.

5.5 System Coordination Drawings and Models

Not applicable.

5.6 Type Approvals

Not applicable.

5.7 Calculations

Not applicable.

5.8 Schedules

Not applicable.

6. Competence for Design

Not applicable at this Design Stage.

7. Design Reviews and Certification

7.1 Interdisciplinary Design Check (IDC) Review

Not applicable at this Design Stage.

7.2 IDC Certificate

Not applicable at this Design Stage.

7.3 Design Verification

Not applicable at this Design Stage.

7.4 Independent Verification

Not applicable at this Design Stage.

7.5 BCA

Not applicable at this Design Stage.

7.6 DDA

Not applicable at this Design Stage.

7.7 PTA Design Submission Reviews.

Not applicable at this Design Stage.

8. Design Compliance

The demonstration of compliance with the requirements of the Project Definition Documents, including any non-conformances of concessions is summarised on the following sections.

8.1 Standards & Guidelines

Not applicable at this Design Stage.

8.2 SWTC

Not applicable at this Design Stage.

8.3 Planning & Environmental Approvals

Not applicable at this Design Stage.

8.4 Third Party Requirements

Not applicable at this Design Stage.

8.5 Deviation Register

Not applicable at this Design Stage.

8.6 Non-Compliances Register

Not applicable at this Design Stage.

9. External Interface Work Packages

9.1 Project Interface Control Plan

Not applicable at this Design Stage.

10. Effects of the Works

Not applicable.

11. Safety in Design

11.1 Overview

Not applicable.

11.2 Systems Safety Assurance Plan.

Not applicable.

11.3 Compliance with Safety Assurance Plan

Not applicable.

11.4 Safety Analysis

Not applicable.

11.5 Safety Argument

Not applicable.

11.6 Hazard Analysis

Not applicable.

11.7 Satisfaction of Safety Integrity Level Targets

11.8 Satisfaction of GSN Requirements

Not applicable.

11.9 Management of Safety Requirements

Not applicable.

11.10 Transfer of Residual Risks and Safety Related Operational Conditions

Not applicable.

11.11 Safety Assurance Statement

Not applicable.

12. Systems Engineering

12.1 Sub-system Allocation

Not applicable.

12.2 Requirements Management

Not applicable.

12.3 Engineering Assurance Summary

Not applicable.

13. Sustainability in Design

Not applicable.

14. Testing & Commissioning Requirements

Not applicable.

14.1 ITP's

Not applicable.

14.2 Hold Points

Not applicable.

14.3 Witness Points

Not applicable.

15. Human Factors

Not applicable.

16. Reliability, Availability and Maintainability (RAM)

16.1 General RAM Provisions

Not applicable.

16.2 RAM Targets

Not applicable.

17. Construction Methodology

17.1 Construction Methods

Not applicable.

17.2 Operational Staging

Not applicable.

17.3 Works in Track Occupancies

Not applicable.

18. Asset Maintenance Strategy

Not applicable.

18.1 RTO Assets

18.2 Other Assets

Not applicable.

19. Asset Operations Strategy

The following operational strategy has been assumed in this design package:

19.1 Normal Modes of Operations

19.2 Degraded Modes of Operations

20. Decommissioning Strategy

Not applicable.

20.1 Capability to Modify

20.2 Decommissioning Strategy

21. Project Actions Register

A list of outstanding issues and assumptions that may affect the design are outlined in the Table below.

ID	Outstanding Issues	Potential Effect	Status
	Final arrangement of loudspeakers / PA systems	Increased noise emissions	
	Land use of future development	Noise sensitive premises within the indicated future development may introduce additional receivers closer to the station and car park areas, thereby requiring potential mitigation measures (such as transformer and pump enclosures, car park screening, etc). Refer to Section 5.2.1 above for comment in this regard.	

Appendix E – Transport Impact Assessment

To be provided as a separate addendum

Appendix F – Stormwater

Technical Note

To:	MELConnx	Date:	9/08/2021
Copies:	-	Doc No.:	MELMEL-MLCX-CI-NTE-81002
Sender:	JAJV	Revision:	A
Discipline:	CI - Civil and Drainage		
Subject:	Malaga Station Precinct – Stormwater Drainage Strategy		

1. Purpose

This document forms part of the Design Documentation for the Morley-Ellenbrook Line (MEL) in relation to the Malaga Station Precinct Civil Engineering Design. The precinct stormwater strategy design is intended for space planning purposes to allocate space for the different drainage systems and Water Sensitive Urban Design (WSUD) initiatives, as per the requirements stated on *SWTC Book 3: Part A- Scope of Works* and ensure there are no fatal flaws in precinct geometry design and associated drainage strategy. Furthermore, it highlights constraints, risks and opportunities which will inform the detailed design phase of design.

The purpose of this document is to provide a description on the design development of the stormwater drainage elements in response to the proposed station precinct masterplan. This includes precinct geometry and associated stormwater drainage for the following:

- Precinct overall layout, including vehicular access and circulation areas
- Bus interchange
- Pick-up and Drop-off
- Parking

The intent is that this Technical Note is to support the Development Application for Malaga Station.

2. Background

The Morley-Ellenbrook Line (MEL) Project will improve connectivity between the Perth north east metropolitan area and the rest of the city and unlock economic development in these local community areas.

The Public Transport Authority (PTA) is the lead agency delivering the MEL Project, with Main Roads WA (MRWA) undertaking some enabling works.

2.1. General scope of works

The Project's general scope of works includes the design and delivery of rail infrastructure and ancillary works to support operational passenger rail between Bayswater and Ellenbrook, including stations with inter-modal bus and rail with parking and associated road works at Bayswater, Morley, Noranda, **Malaga**, Whiteman Park and Ellenbrook stations.

The design and delivery of the main works package for the Project is broken into three distinct stages:

- Alliance Development Stage
- Project Alliance Reference Design Stage
- Project Alliance Delivery Stage (Detailed Design through to Project close).

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Figure 1 Architect's Impression of Malaga Station © MELconnx

3. Technical

3.1. General

In accordance with the SWTC, Book 3: Part A – Scope of Works, Section 3.4 Malaga Station Surrounds, the scope of this technical note outlines the development of a stormwater management strategy for managing stormwater/surface water and groundwater across the entire Station Surrounds for retention and/or detention to maximise the absorption of rainfall and surface runoff within the site, and treatment (where required) and conveyance of stormwater.

The basis of the design and the specific design methodologies adopted for the stormwater drainage design are described below. This section outlines the design considerations associated with the stormwater strategy development of the Malaga Station including carpark, bus interchange and associated precinct.

The design is documented on the following sketch MEL-MLCX-CI-SKT-81000.

3.2. Existing Drainage

Malaga Precinct development is located in an area that is generally graded in a south easterly direction towards Beechboro Road North. Stormwater runoff spreads over the land, ponds in low spots and dissipates through infiltration.

3.3. General Design Strategy

The impermeability of the area will be increased as a result of the proposed development, therefore the post development stormwater runoff will exceed the pre-development runoff. The general drainage strategy for the precinct is as follows:

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- Capture and treat the 1EY 1hour runoff.
- Minor Storm: 10% AEP. The drainage system shall be capable of carrying and controlling flow from the minor storm event. The flood level to be kept below the pavement level.
- Major Storm: 1% AEP. Safe, well-defined overland flow paths will be incorporated in the surface design. Above ground storage will be kept away from critical infrastructure (i.e., buildings, major roads) with a minimum of 300mm freeboard. All drainage infrastructure will be approved by the relevant local council. A maximum flood depth on the pavement to be kept to maximum of 200mm.
- Major Storm: 1% AEP. Station building and platform runoff to be captured and dissipated on site.

Furthermore, where management of superficial groundwater is required as part of the project work, groundwater to be managed consistent with the DWER's publication "Water resource considerations when controlling groundwater levels in urban development, DoW, April 2013", and the requirements specified in the SWTC Book 3: Part A: Scope of Works.

3.4. General Design Input

The key drainage design inputs for the station precincts are noted as:

- Design Intensity-Frequency-Duration (IFD) Rainfall – BOM 2016 IFD
- 2% AEP Ground Water Levels
- Geotechnical investigation and report
- Climate change factor applied to the IFD
- Infiltration rate for the site has been adopted as 1m/day for the minor and major analysis.

3.5. Drainage Design

The stormwater drainage strategy for the site is documented on sketch MEL-MLCX-CI-SKT-81000 and is separated into six components as follows:

- Bus interchange
- SER, carpark north, and kiss and ride north (pick up and drop off)
- Carpark south
- Pick up and drop off south, access roads and roundabout
- Station platform and building

The design was completed using DRAINS and 12D. In the detailed design stage, the swales will be modelled as "basin with infiltration" in DRIANS and the pipe network size will be checked using ILSAX method in 12D. The basins are sized for the respective major catchment, modelled in DRIANS. The effect of the attenuation in the swales within the carpark has been neglected for this exercise.

Refer Table 1 (below) for the catchment areas and discharge points for each major catchment.

3.5.1. Bus Interchange

The bus interchange arrangement includes the active bays at the inner edge and the lay over bays along the outer edge. The area is sloped towards the outer kerb line. The proposed drainage system for the bus interchange comprises a pit and pipe network that drains into an infiltration basin on the south eastern side of the area, Basin 1. The basin is formed by a surround bund with a 3m wide access track on top of the bund for maintenance purposes.

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The basin includes an overflow weir connecting to a downstream basin, Basin 2. The latter is described further in the “carpark” section.

3.5.2. SER and Carpark North, Pick Up and Drop Off North

The pick-up and drop-off road comprises a central median swale with runoff draining to this central feature. Noting the space available for the proposed swale, this drainage feature is too narrow to accommodate and infiltrate the resulting design flow. Catchpits are proposed within the swale to direct flow to the carpark area, continuing along the central access road in the carpark towards Basin 2 on the eastern side of the Precinct.

The runoff resulting on the development lots have not been included in the design and have been assumed to be managed on site when developed.

The carpark is graded north west to south east. The area is generally crowned in the center of each vehicular aisle to direct the runoff to the swales proposed between each parking lane. There is a raised catchpit at the lower end of the swales. The runoff will be attenuated and infiltrated within the swales then overflow through the raised catchpits into the pipe network. The pipe network is located along the central access road in the carpark and graded towards Basin 2 on the eastern side of the Precinct

The SER is located on the eastern side of the carpark. A grated gully is proposed for the SER area that will discharge to Basin 2.

Basin 2 receives runoff from the SER, pick-up and drop-off north and carpark north catchments, as well as overflow from Basin 1. Basin 2 is equipped with an overflow weir to Basin 3.

According to the DRAINS model, Basin 1 and Basin 2 will overflow for the design event (10% AEP). However, as the design progresses through detailed design this will be reviewed and confirmed. Basin 3 does not receive any direct inflow from the Precinct catchments and is only sized to contain the design event (10% AEP) overflow from Basin 2. Basin 3 is anticipated to have 350mm freeboard to the top bund level for the design event (10% AEP).

3.5.3. Carpark South

Carpark south is also graded north west to south east with the lowest point at the south eastern corner. The area is generally crowned in the center of each vehicular aisle to direct the runoff to the swales proposed between each parking lane. There is a raised catchpit at the lower end of the swales. The runoff will be attenuated and infiltrated within the swales. Overflow is proposed to be captured through the raised catchpits and into the pipe network. The pipe network is located in the southern access road and graded toward Basin 4. Basin 4 also receives runoff from the pick-up and drop-off south, access road and roundabout which is discussed further in the following section.

3.5.4. Pick up and Drop Off South, Access Road and Roundabout

The pick-up and drop-off south of the central access road to the carpark has been designed with a high point located approximately halfway along the central median. The northern portion drains towards catchpits connecting via a pit and pipe system to the drainage infrastructure proposed for the central car park access road. The southern portion, consistent to the above slopes towards the median island, but in this case the runoff will be collected in a proposed swale and overflows into a raised catchpit in the swale. The pit is proposed to be connected to the piped network along the eastbound carriageway of the access road that will gravitate towards Basin 4.

The roundabout and westbound carriage are drained via pit and pipe to Basin 4. Basin 4 is sized to cater for the design event. An overflow weir is designed for the major runoff release from Basin 4.

3.5.5. Station Platform and building

The train station roof and platform drainage systems include 4 separate catchments as follows:

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- Northern roof drainage: 590 m²
- Platform and eastern roof drainage: 1230 m²
- Southern roof drainage: 760 m²
- Access to the station building: 400 m²

The roof drainage on the northern section is directed to the ground level via downpipes. The downpipes will discharge to the open drain (toe drain) that is proposed along the northern boundary of the site. The downpipe discharge locations are highlighted in the Hydraulic design package.

The platform and eastern roof catchment are piped towards the allocated drainage storage cells in the platform. Proposed drainage cells must be located between the canopy piers with a suitable clearance to the pier structure. The proposed solution is the Stormbrixx chamber system for its highest void ratio and suitability for use in these conditions due to spatial constraints. The unit is sized for 1% AEP with infiltration through the base. The base is kept as 200mm above the 2% AEP groundwater level.

The southern roof drainage will be directed to the proposed Stormbrixx unit in the landscape area at the southern side of the building.

Downpipes for the roof on the access ramp to the building are designed to be discharged into individual soakwells, proposed close to the southern edge of the access ramp.

Table 1 Catchment Areas and Discharge Points

Area	Catchment Area (ha)	Discharge Point	1% AEP Flow Management
Bus Interchange	Impervious: 1.44 ha Pervious: 0.36 ha	Basin 1	Overflow via top weir to Basin 2
SER and Carpark North	Impervious: 2.9 ha Pervious: 0.72 ha	Basin 2	Overflow via top weir to Basin 3 *
Carpark South and Access Road and Roundabout	Impervious: 2.3 ha Pervious: negligible	Basin 4	Overflow via top weir towards the major flow path to culvert under Beechboro Road North *
Station Building	Impervious: 0.31 ha	Underground storage Soakwells Downpipes to the northern swale	Underground storages are sized for major events.

**Basin 3 accommodates overflow from Basin 2 and does not receive direct flow from the Precinct area. There is no overflow for 10% AEP from Basin 3. The 1% AEP overflow will be conveyed through an overflow weir to downstream open drain and directed via a culvert across Beechboro Road North. The proposed culvert will be designed as part of Beechboro Road North package. The location of the culvert and the discharge area across the road will be presented in this design once the design for Beechboro Road North is developed further.*

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3.5.6. Design groundwater level

The design groundwater adopted for this strategy is the 2% AEP groundwater that has been modelled as a tin across the area.

3.6. Reference Documents

List any supporting documents that relate to this report, or are referenced within it, including document reference numbers.

The following documents support this report:

Table 2: Reference document

Reference Number	Name
25-B-00-CI001	Rail Model
25-B-287-AR0001	Architectural Model
MEL-ADV-GE-RPT-00008	Geotechnical Report
TIN_Grndwater_Full_Align_AEP002	Groundwater Model
MEL-MLCX-SV-MDL-00001	Topographical Survey

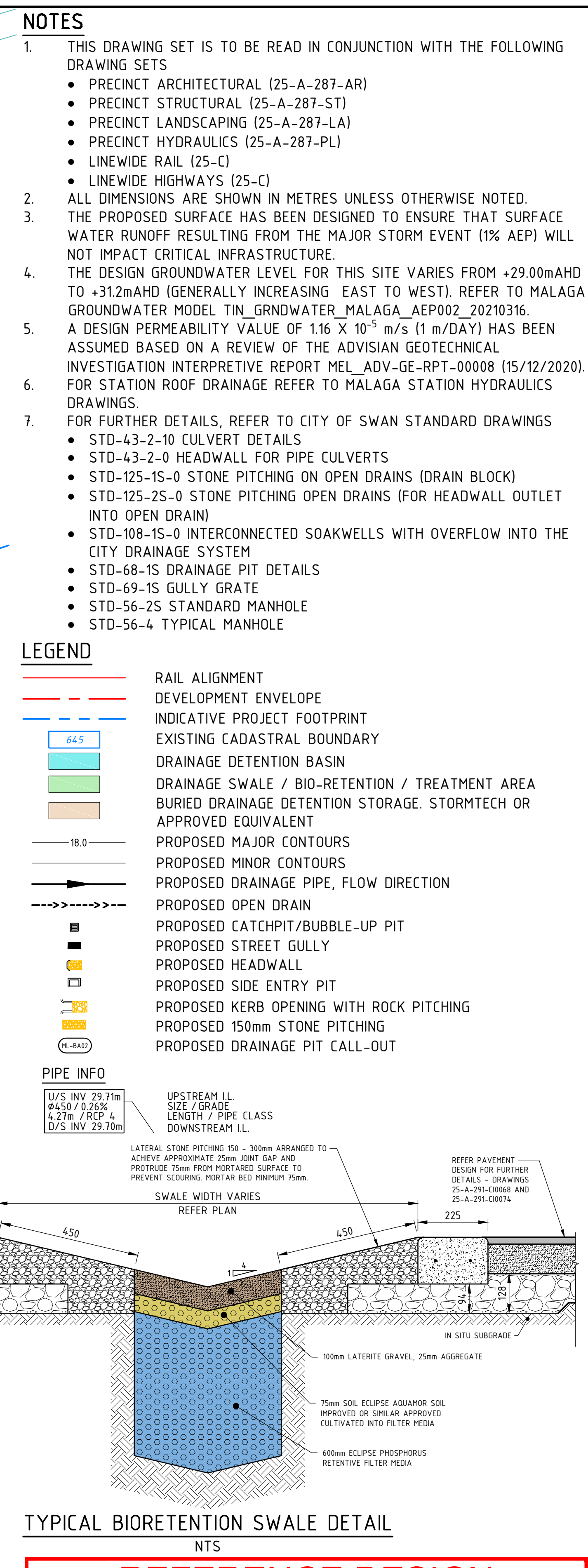
DOCUMENT CHECKING


	Prepared by	Checked by	Approved by
Name	Maryam Khamesi (Senior Drainage Engineer)	Miguel Monteiro (Civil Engineering SRE) Alistair Avern-Taplin (Stations Package Manager)	Sunil Bhogal (Design Manager)



Technical Note

Appendix A – Stormwater Strategy Plan



REFERENCE DESIGN	
 Government of Western Australia Public Transport Authority	MORLEY ELLENBROOK LINE
MALAGA STATION	
CIVIL - DRAINAGE AND FINISHED SURFACE	
PLAN SHEET 1	
PTA Drawing No: MEL-MLCX-CI-SKT-81000	Rev: A

MATCH								JOINS DRG No. 25-A-287-CI0015								LINE A					
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																				DRAWN P.POURHAMZ	
																CHECKED M.MONTEIRO					
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Appendix G – EPA Ministerial Statement

THIS DOCUMENT

This document has been produced by the Office of the Appeals Convenor as an electronic version of the original Statement for the proposal listed below as signed by the Minister and held by this Office. Whilst every effort is made to ensure its accuracy, no warranty is given as to the accuracy or completeness of this document.

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Published on: 15 December 2020

Statement No. 1156

STATEMENT THAT A PROPOSAL MAY BE IMPLEMENTED
(*Environmental Protection Act 1986*)

MALAGA TO ELLENBROOK RAIL WORKS

Proposal: The proposal is to construct and operate a new 13 kilometre railway line between Malaga and Ellenbrook in the City of Swan. The proposal includes the construction of new train stations and associated facilities at Malaga, Whiteman Park and Ellenbrook and a potential future station at Bennett Springs.

Proponent: Public Transport Authority of Western Australia
Australian Business Number 61 850 109 576

Proponent Address: Public Transport Centre, West Parade
PERTH WA 6000

Assessment Number: 2238

Report of the Environmental Protection Authority: 1690

Pursuant to section 45 of the *Environmental Protection Act 1986*, it has been agreed that the proposal described and documented in Table 1 of Schedule 1 may be implemented and that the implementation of the proposal is subject to the following implementation conditions and procedures:

1 Proposal Implementation

1-1 When implementing the proposal, the proponent shall not exceed the authorised extent of the proposal as defined in Table 2 of Schedule 1, unless amendments to the proposal and the authorised extent of the proposal have been approved under the *Environmental Protection Act 1986*.

2 Contact Details

2-1 The proponent shall notify the CEO of any change of its name, physical address or postal address for the serving of notices or other correspondence within twenty-eight (28) days of such change. Where the proponent is a corporation or an association of persons, whether incorporated or not, the postal address is that of the principal place of business or of the principal office in the State.

3 Time Limit for Proposal Implementation

- 3-1 The proponent shall not commence implementation of the proposal after five (5) years from the date of this Statement, and any commencement, prior to this date, must be substantial.
- 3-2 Any commencement of implementation of the proposal, on or before five (5) years from the date of this Statement, must be demonstrated as substantial by providing the CEO with written evidence, on or before the expiration of five (5) years from the date of this Statement.

4 Compliance Reporting

- 4-1 The proponent shall prepare, and maintain a Compliance Assessment Plan which is submitted to the CEO at least six (6) months prior to the first Compliance Assessment Report required by condition 4-6, or prior to implementation of the proposal, whichever is sooner.
- 4-2 The Compliance Assessment Plan shall indicate:
 - (1) the frequency of compliance reporting;
 - (2) the approach and timing of compliance assessments;
 - (3) the retention of compliance assessments;
 - (4) the method of reporting of potential non-compliances and corrective actions taken;
 - (5) the table of contents of Compliance Assessment Reports; and
 - (6) public availability of Compliance Assessment Reports.
- 4-3 After receiving notice in writing from the CEO that the Compliance Assessment Plan satisfies the requirements of condition 4-2 the proponent shall assess compliance with conditions in accordance with the Compliance Assessment Plan required by condition 4-1.
- 4-4 The proponent shall retain reports of all compliance assessments described in the Compliance Assessment Plan required by condition 4-1 and shall make those reports available when requested by the CEO.
- 4-5 The proponent shall advise the CEO of any potential non-compliance within seven (7) days of that non-compliance being known.
- 4-6 The proponent shall submit to the CEO the first Compliance Assessment Report fifteen (15) months from the date of issue of this Statement addressing the twelve (12) month period from the date of issue of this Statement and then annually from the date of submission of the first Compliance Assessment Report, or as otherwise agreed in writing by the CEO.

The Compliance Assessment Report shall:

- (1) be endorsed by the proponent's Chief Executive Officer or a person delegated to sign on the Chief Executive Officer's behalf;
- (2) include a statement as to whether the proponent has complied with the conditions;
- (3) identify all potential non-compliances and describe corrective and preventative actions taken;
- (4) be made publicly available in accordance with the approved Compliance Assessment Plan; and
- (5) indicate any proposed changes to the Compliance Assessment Plan required by condition 4-1.

5 Public Availability of Data

5-1 Subject to condition 5-2, within a reasonable time period approved by the CEO of the issue of this Statement and for the remainder of the life of the proposal, the proponent shall make publicly available, in a manner approved by the CEO, all validated environmental data (including sampling design, sampling methodologies, empirical data and derived information products (e.g. maps)), management plans and reports relevant to the assessment of this proposal and implementation of this Statement.

5-2 If any data referred to in condition 5-1 contains particulars of:

- (1) a secret formula or process; or
- (2) confidential commercially sensitive information;

the proponent may submit a request for approval from the CEO to not make these data publicly available. In making such a request the proponent shall provide the CEO with an explanation and reasons why the data should not be made publicly available.

6 Bennett Brook – Social Surroundings (Aboriginal Heritage), Inland Waters, Terrestrial Fauna

6-1 The proponent shall design and manage the implementation of the proposal to meet the following environmental objective:

- (1) maintain the hydrological regime and water quality in Bennett Brook that supports:
 - (a) important Aboriginal cultural associations and heritage;
 - (b) Carter's freshwater mussel (*Westralunio carteri*); and

- (c) the **ecological integrity** of Bennett Brook, incorporating **Conservation Category Wetland** Unique Feature Identifier 15259.

- 6-2 To ensure that the objective of condition 6-1 is being met, the proponent shall:
- (1) construct bridge footings or pillars, drainage structures and abutments outside of the bed and banks of Bennett Brook;
 - (2) ensure no excavation activities occur within the bed of Bennett Brook;
 - (3) not dispose or discharge dewatered effluent to the Bennett Brook or its tributaries;
 - (4) not allow access for the purposes of construction activities within the bed of Bennett Brook with the exception of tree removal necessary for bridge construction, unless agreed in writing by the CEO; and
 - (5) within twelve (12) months following construction of the proposal, undertake **rehabilitation** of areas temporarily disturbed during construction with locally native species to reinstate fauna habitat.

7 Social Surroundings (Aboriginal Heritage)

- 7-1 The proponent shall consult with appropriate and relevant Whadjuk Noongar representatives regarding how access to **Registered Sites** 551 and 552 can be maintained for the purpose of cultural practice.
- 7-2 The proponent shall undertake consultation with appropriate and relevant Whadjuk Noongar representatives and Registered Knowledge Holder families of Bennett Brook prior to and during construction of the Bennett Brook rail bridge regarding the retention of **paperbark trees** at and adjacent to the Bennett Brook crossing.
- 7-3 Prior to commencement of construction activities at Bennett Brook, the proponent shall provide evidence to the CEO of the consultation required by condition 7-2, including how input received was addressed.

8 Construction Impacts – Flora and Vegetation, Terrestrial Fauna, Inland Waters

- 8-1 During construction of the proposal the proponent shall:
- (1) not clear more than:
 - (a) 10.05 ha of Banksia woodlands of the Swan Coastal Plain priority ecological community;
 - (b) 81.4 ha of Carnaby's cockatoo (*Calyptorhynchus latirostris*) **foraging habitat**;

- (c) 68.1 ha of forest red-tailed black cockatoo (*Calyptrorhynchus banksii naso*) **foraging habitat**; and
 - (d) 423 **black cockatoo** potential breeding trees.
- (2) implement hygiene protocols, consistent with the ***Management of Phytophthora cinnamomi for Biodiversity Conservation in Australia, Part 2 National Best Practice Guidelines*** as amended or replaced from time to time;
 - (3) manage soil and groundwater disturbing activities in accordance with the Acid Sulfate Soil Guideline Series *Identification and investigation of acid sulfate soils and acidic landscapes* (2015) and *Treatment and management of soils and water in acid sulfate soil landscapes* (2015), or any approved update of these guidelines;
 - (4) not dispose of dewatered effluent to **Conservation Category Wetlands** or **Resource Enhancement Wetlands**;
 - (5) not locate **abstraction bores** within fifty (50) metres of:
 - (a) identified Banksia woodlands; or
 - (b) **Conservation Category Wetlands**,
that are located adjacent to the **development envelope** or within native vegetation retention areas (**NVRA**);
 - (6) ensure that no refuelling, chemical storage or stockpiling occurs within fifty (50) metres of a **Conservation Category Wetland**;
 - (7) undertake weed control and management measures to prevent the introduction or spread of weeds;
 - (8) implement measures to ensure there are no direct or **indirect impacts**, when compared to pre-construction **baseline conditions**, to native vegetation or wetlands in **NVRA**, or directly adjacent to the **development envelope** from dewatering activities; and
 - (9) implement measures to minimise indirect threatening processes, including grazing, on native vegetation within the **Patch 1 Malaga NVRA**.

8-2 Following construction of the proposal, the proponent shall:

- (1) ensure there are no direct or **indirect impacts**, when compared to pre-construction **baseline conditions**, to native vegetation within the **NVRA** within five (5) years post construction that are attributable to the proposal;

- (2) undertake weed control and management for five (5) years post construction within:
 - (a) the **NVRA**;
 - (b) Bush Forever site 304 in the **development envelope**; and
 - (c) Bush Forever site 304 within twenty (20) metres of the **development envelope**.
 - (3) implement measures for three (3) years post construction to manage indirect threatening processes, including grazing, within the **Patch 1 Malaga NVRA**, to ensure vegetation structure and condition is maintained when compared to pre-construction **baseline conditions**;
 - (4) within twelve (12) months, undertake **rehabilitation** of native vegetation with locally native species to achieve pre-construction vegetation densities in all areas disturbed during construction activities that are not required for the ongoing operation of the proposal; and
 - (5) undertake annual monitoring and any remedial measures to ensure **rehabilitation** required by condition 8-2(4) will successfully establish within five (5) years post construction.
- 8-3 The proponent shall prepare and submit a report to demonstrate that the requirements of condition 8-2 have been met. The first report shall be submitted within three (3) months of the completion of construction and then annually with the Compliance Assessment Report, until the CEO has confirmed by notice in writing that the requirements of condition 8-2 have been met.

9 Malaga Dive Structure – Inland Waters and Flora and Vegetation

- 9-1 The proponent shall manage dewatering, excavation activities, and the treatment, re-use and disposal of acid sulfate soils at the **Malaga dive structure** to meet the following environmental objective:
- (1) maintain the quality and hydrological regime of groundwater that supports the biological diversity and **ecological integrity** of:
 - (a) Banksia woodlands of the Swan Coastal Plain priority ecological community;
 - (b) **Conservation Category Wetlands**; and
 - (c) **Resource Enhancement Wetlands**.
- 9-2 Prior to excavation or dewatering activities associated with construction of the **Malaga dive structure**, whichever occurs first, the proponent shall:

- (1) undertake appropriate investigations for acid sulfate soils in accordance with the Department of Water and Environmental Regulation's acid sulfate soil guidelines for the identification and investigation of acid sulfate soils and acidic landscapes;
 - (2) prepare and submit an Acid Sulfate Soils and Dewatering Management Plan based on the findings of the investigations required by condition 9-2(1) and in accordance with the Department of Water and Environmental Regulation's acid sulfate soil guidelines for the treatment and management of soils and water in acid sulfate soil landscapes; and
 - (3) specify the measures to meet the objective in condition 9-1(1) in the Acid Sulfate Soils and Dewatering Management Plan.
- 9-3 The proponent shall implement the Acid Sulfate Soils and Dewatering Management Plan required by condition 9-2(2) which the CEO has advised in writing satisfies the requirements of condition 9-2(2).
- 9-4 Following the completion of construction of the **Malaga dive structure**, the proponent shall:
 - (1) within thirty (30) days, prepare, in accordance with the Department of Water and Environmental Regulation's acid sulfate soil guidelines for the treatment and management of soils and water in acid sulfate soil landscapes, and submit, a report to demonstrate compliance with the Acid Sulfate Soils and Dewatering Management Plan required by condition 9-2(2);
 - (2) undertake post-dewatering monitoring for a minimum of six (6) months to determine whether the environmental objective specified in condition 9-1(1) is being met; and
 - (3) within thirty (30) days of the last monitoring event required by condition 9-4(2), prepare and submit a post-dewatering monitoring report to demonstrate compliance with the environmental objective specified in condition 9-1(1).
- 9-5 The proponent:
 - (1) may review and revise the Acid Sulfate Soils and Dewatering Management Plan; or
 - (2) shall review and revise the Acid Sulfate Soils and Dewatering Management Plan as and when directed by the CEO by a notice in writing.
- 9-6 The proponent shall implement the latest revision of the Acid Sulfate Soils and Dewatering Management Plan, which the CEO has confirmed by notice in writing, satisfies the requirements of condition 9-2(2).

10 Terrestrial Fauna

10-1 The proponent shall undertake the following actions to minimise impacts to terrestrial fauna:

- (1) within seven (7) days prior to clearing, using a qualified and licensed terrestrial **fauna spotter(s)** with experience in surveying for **black cockatoos**, inspect all **potential nesting trees** with hollows within the **development envelope** to determine if any hollows are being used for nesting by **black cockatoos**; and
- (2) if any hollows are in use by **black cockatoos** for nesting, the proponent shall not **disturb** or clear the nesting tree, or vegetation within a ten (10) metre radius of the nesting tree, until after the cockatoos have naturally completed nesting (young have fledged and dispersed) and an appropriately qualified and licensed terrestrial **fauna spotter** has verified that the hollow(s) are no longer being used by the **black cockatoos**.

10-2 During activities associated with the construction of the proposal, the proponent shall undertake as required the following actions to minimise impacts to terrestrial fauna:

- (1) ensure the use of appropriately qualified and licensed terrestrial **fauna spotter(s)** during clearing activities;
- (2) ensure that during **trenching activities** inspection for, and clearing of, fauna from open trenches by appropriately qualified and licensed terrestrial fauna rescue personnel occurs at least twice daily and not more than one (1) hour prior to backfilling of trenches, with the first daily inspection and clearing to be undertaken no later than three (3) hours after sunrise prior to any construction, and the second inspection and clearing to be undertaken daily between the hours of 3:00 pm and 6:00 pm;
- (3) ensure that open trench lengths do not exceed a length capable of being inspected and cleared by appropriately qualified and licensed fauna rescue personnel within the required times set out in condition 10-2(2); and
- (4) provide egress points, ramps and/or fauna refuges that provide suitable shelter from the sun and predators for trapped fauna in open trenches at intervals not exceeding fifty (50) metres.

11 Social Surroundings (Noise)

11-1 The proponent shall implement the proposal to meet the following environmental objective:

- (1) minimise operational noise and vibration impacts on existing noise sensitive receptors **as far as practicable**.
- 11-2 At least three (3) months prior to the operation of the proposal, in order to meet the requirements of condition 11-1(1), the proponent shall submit a further revision of the Morley-Ellenbrook Rail Line Part 2 Malaga to Ellenbrook Noise and Vibration Management Plan (Reference: 675.11323-R05, June 2020) to include:
 - (1) the details of relevant noise mitigation measures to confirm that noise and vibration criteria will be met;
 - (2) an update to Section 5 Management Measures, to show the locations and minimum heights of noise walls; and
 - (3) demonstration that the design and construction of noise mitigation measures will meet the noise and vibration objectives set out in Section 2 Transport noise and vibration objectives.
- 11-3 The proponent shall implement the revised Morley-Ellenbrook Rail Line Part 2 Malaga to Ellenbrook Noise and Vibration Management Plan, or the most recent version, which the CEO has confirmed by notice in writing satisfies the requirements of condition 11-2.
- 11-4 The proponent shall continue to implement the revised Morley-Ellenbrook Rail Line Part 2 Malaga to Ellenbrook Noise and Vibration Management Plan, or any subsequently approved revisions until the CEO has confirmed by notice in writing that the proponent has demonstrated that the objective in condition 11-1(1) is being and will continue to be met.
- 11-5 In the event of failure to implement management actions detailed in the approved Morley-Ellenbrook Rail Line Part 2 Malaga to Ellenbrook Noise and Vibration Management Plan, the proponent shall meet the requirements of condition 4-5 (Compliance Reporting) and shall implement the measures outlined in the approved Morley-Ellenbrook Rail Line Part 2 Malaga to Ellenbrook Noise and Vibration Management Plan, including, but not limited to, actions and investigations to be undertaken.

12 Offsets

- 12-1 The proponent shall undertake offsets to achieve the objective of counterbalancing the significant residual impact on the following environmental values as a result of the implementation of the proposal:
 - (1) 10.05 ha of Banksia woodlands of the Swan Coastal Plain priority ecological community;
 - (2) 81.4 ha of Carnaby's cockatoo (*Calyptorhynchus latirostris*) **foraging habitat**;

- (3) 68.1 ha of forest red-tailed black cockatoo (*Calyptorhynchus banksii naso*) **foraging habitat**;
- (4) 423 **black cockatoo** potential breeding trees;
- (5) 1.9 ha of **Conservation Category Wetlands**;
- (6) 0.5 ha of **Resource Enhancement Wetlands**; and
- (7) 17.2 ha of Bush Forever site 304,

On-ground Management Offset Plan

12-2 Within twelve (12) months of the publication of this Statement or as otherwise agreed by the CEO, the proponent shall prepare and submit an On-ground Management Offset Plan to the requirements of the CEO, with the environmental objective of counterbalancing the significant residual impact to:

- (1) 1.9 ha of **Conservation Category Wetlands**;
- (2) 0.5 ha of **Resource Enhancement Wetlands**; and
- (3) 17.2 ha of Bush Forever site 304.

12-3 The On-ground Management Offset Plan required by condition 12-2 shall:

- (1) spatially define and map the vegetation condition of an area or areas within Whiteman Park, or other suitable location as agreed by the CEO, where **on-ground management** actions are proposed to counterbalance the significant residual impacts to the environmental values specified in condition 12-2;
- (2) detail the proposed **on-ground management** actions to be implemented, objectives and targets to be achieved, a timeframe for the actions to be undertaken, completion criteria, funding arrangements for these actions and any **contingency actions** to be undertaken within Whiteman Park, or other suitable location as agreed by the CEO;
- (3) define the role of the proponent and/or any relevant management authority or other third party involved in delivering the offset;
- (4) include evidence of consultation with stakeholders including:
 - (a) Department of Biodiversity, Conservation and Attractions;
 - (b) Department of Planning, Lands and Heritage; and
 - (c) Friends of Bennett Brook;
- (5) demonstrate how the **on-ground management** actions to be undertaken within Whiteman Park, or other suitable location as agreed

by the CEO, will result in a tangible improvement to the environmental values being offset;

- (6) demonstrate how the **on-ground management** actions counterbalance the significant residual impact to the environmental values identified in condition 12-2 through application of the principles of the WA Environmental Offsets Policy 2011 and completion of the WA Offsets Template, as described in the WA Environmental Offsets Guidelines 2014 or any subsequent revisions of these documents; and
- (7) detail the monitoring, reporting and evaluation mechanisms for actions identified under conditions 12-3(2).

12-4 The proponent:

- (1) may review and revise the On-ground Management Offset Plan; or
- (2) shall review and revise the On-ground Management Offset Plan as and when directed by the CEO by notice in writing.

12-5 The proponent shall implement the latest revision of the On-ground Management Offset Plan approved by the CEO by notice in writing.

12-6 The proponent shall continue to implement the On-ground Management Offset Plan until the CEO has confirmed by notice in writing that the proponent has demonstrated that the objective in condition 12-2 has been met.

12-7 The proponent shall notify the CEO within twenty-one (21) days if any of the actions or outcomes set out in the On-ground Management Offset Plan are unable to be achieved, and provide the detail and timing of **contingency actions** to be undertaken.

Offset Strategy

12-8 Within six (6) months of the publication of this Statement, or as otherwise agreed by the CEO, the proponent shall prepare and submit an Offset Strategy to the requirements of the CEO, with the environmental objective of counterbalancing the significant residual impact to:

- (1) 10.05 ha of Banksia woodlands of the Swan Coastal Plain priority ecological community;
- (2) 81.4 ha of Carnaby's cockatoo (*Calyptorhynchus latirostris*) **foraging habitat**;
- (3) 68.1 ha of forest red-tailed black cockatoo (*Calyptorhynchus banksii naso*) **foraging habitat**; and
- (4) 423 **black cockatoo** potential breeding trees.

12-9 The Offset Strategy required by condition 12-8 shall:

- (1) demonstrate that the objective in condition 12-8 will be met;
- (2) identify an area, or areas, (the **Proposed Offset Conservation Area**) to be **acquired** with **on-ground management**, managed for conservation purposes, and contains the environmental values identified in condition 12-8;
- (3) demonstrate how the environmental values within the **Proposed Offset Conservation Area** counterbalances the significant residual impact to the environmental values identified in condition 12-8(1), condition 12-8(2) and condition 12-8(3) through application of the principles of the WA Environmental Offsets Policy and completion of the WA Offsets Template, as described in the WA Environmental Offsets Guidelines 2014, and the *Environment Protection and Biodiversity Conservation Act 1999* Environmental Offsets Policy Assessment Guide (October 2012), or any subsequent revisions of these documents;
- (4) demonstrate that the **Proposed Offset Conservation Area** contains at least 1,269 **black cockatoo** breeding trees or potential breeding trees;
- (5) demonstrate how the **Proposed Offset Conservation Area** aligns with:
 - (a) Approved conservation advice (incorporating listing advice) for the Banksia woodlands of the Swan Coastal Plain Ecological Community 2016;
 - (b) Carnaby's Cockatoo (*Calyptorhynchus latirostris*) Recovery Plan 2013; and
 - (c) Forest Black Cockatoo (Baudin's Cockatoo *Calyptorhynchus baudinii* and Forest Red-tailed Black Cockatoo *Calyptorhynchus banksia naso*) Recovery Plan 2008,or any subsequent revisions of these documents;
- (6) identify how the **Proposed Offset Conservation Area** will be **acquired** and specify:
 - (a) a timeframe and quantum of works associated with establishing the **Proposed Offset Conservation Area**, including a contribution for maintaining the offset for at least seven (7) years after completion of purchase and details pertaining to monitoring, evaluating and reporting; and
 - (b) the **relevant management body** for the on-going management of the **Proposed Offset Conservation Area**, including its role,

and the role of the proponent, and confirmation in writing that the **relevant management body** accepts responsibility for its role.

(7) where **on-ground management** is proposed:

- (a) state the objective(s) and target(s) to be achieved, including completion criteria, which result in a tangible improvement to the environmental value(s) being offset;
- (b) demonstrate the consistency of the objective(s) and target(s) with the objectives of any relevant conservation advice and recovery plans;
- (c) detail the **on-ground management** actions with associated timeframes for implementation, including **contingency actions**, to achieve the objective(s) and target(s) identified above; and
- (d) detail the monitoring, reporting and evaluation mechanisms for the objective(s), target(s) and actions identified above.

12-10 The proponent:

- (1) may review and revise the Offset Strategy; or
- (2) shall review and revise the Offset Strategy as and when directed by the CEO by a notice in writing.

12-11 Where research project(s) are proposed to offset the significant residual impacts to Carnaby's cockatoo and forest red-tailed black cockatoo, the proponent shall prepare and submit with the Offset Strategy required by condition 12-8, a Black Cockatoo Research Plan to the requirements of the CEO that will increase the scientific knowledge of black cockatoos relevant to improving conservation and management of the species and its habitat in the Perth and Peel regions. The Black Cockatoo Research Plan shall:

- (1) demonstrate how the research project(s) will provide a positive and long-term conservation outcome for Carnaby's cockatoo and forest red-tailed black cockatoo and addresses agreed research priorities, considering key knowledge gaps identified in the EPA Technical Report: Carnaby's Cockatoo in Environmental Impact Assessment in the Perth and Peel Regions (2019), the relevant black cockatoo recovery plans and/or other research priorities agreed with the Department of Biodiversity, Conservation and Attractions;
- (2) identify the objectives and intended outcomes, and details of success criteria;

- (3) provide an implementation schedule including an outline of key activities, deliverables, stages of implementation, and milestones towards completion;
- (4) identify the agreed governance arrangements including stakeholder responsibilities for implementing the research, and agreements with any third parties involved and legal obligations;
- (5) identify any potential risks involved and appropriate **contingency actions**;
- (6) identify monitoring activities to assess progress with research implementation and for compliance purposes;
- (7) provide details on the:
 - (a) financial and financial auditing arrangements including project budget and recipients of funds if project(s) are to be undertaken by any third parties;
 - (b) funding arrangements including the methodology to determine the amount of funding to be spent on research project(s); and
 - (c) timing of funding for the research project(s);
- (8) identify procedures for reporting to the CEO and Department of Biodiversity, Conservation and Attractions, including the content, format, timing and frequency for reporting and provisions of data and information against the objectives and outcomes identified in condition 12-11(2); and
- (9) identify how the results of the research offset will be communicated and/or published in an **open access** format for the benefit of future assessments and public understanding of the species.

12-12 The proponent:

- (1) may review and revise the Black Cockatoo Research Plan; or
- (2) shall review and revise the Black Cockatoo Research Plan as and when directed by the CEO by notice in writing.

12-13 Within six (6) months of receiving notice in writing from the CEO, on advice of the Department of Biodiversity, Conservation and Attractions, that the Offset Strategy satisfies the requirements of conditions 12-8, 12-9 and/or 12-11 the proponent shall implement the actions in accordance with the approved Offset Strategy.

12-14 The proponent shall implement the latest version of the Offset Strategy, which the CEO has confirmed by notice in writing, satisfies the requirements of conditions 12-8, 12- 9 and/or 12-11.

12-15 The proponent shall notify the CEO within twenty-one (21) days if any of the actions or outcomes set out in the Offset Strategy are unable to be achieved, and provide the detail and timing of **contingency actions** to be undertaken.

[signed on 15 December 2020]

Hon Stephen Dawson MLC
MINISTER FOR ENVIRONMENT

Draft

Table 1: Summary of the proposal

Proposal title	Malaga to Ellenbrook Rail Works
Short description	The proposal is to construct and operate a new 13 kilometre dual railway line from Malaga to Ellenbrook in the City of Swan. The proposal includes the construction and operation of new intermodal transit stations at Malaga, Whiteman Park and Ellenbrook, with provision for a future station at Bennett Springs East. The proposal includes construction of a principal shared path, bridge infrastructure (including over Gnangara Road), a dive structure, and construction laydown and access areas.

Table 2: Location and authorised extent of physical and operational elements

Column 1	Column 2	Column 3
Element	Location	Authorised extent
Clearing and disturbance for construction of the railway, stations, principal shared path, dive structure, drainage structures, fencing, bridges, noise walls, and construction laydown and access areas.	Located within the development envelope as shown in Figure 1.	Clearing and disturbance of no more than 249 ha of which 152.1 ha is native vegetation within a 463.8 ha development envelope.

Table 3: Abbreviations and Definitions

Acronym, Term or Abbreviation	Definition
Abstraction bores	Bores used for construction water supply.
Acquired	The protection of environmental values on an area of initially unprotected land for the purpose of conservation through improved security of tenure or restricting the use of land (e.g. ceding land to the Crown or perpetual conservation covenants). This includes upfront costs of establishing the offset site and the on-going management of costs of maintaining the offset for the long term.
As far as practicable	As far as reasonably achievable or feasible as determined by the CEO having regard to, among other things, local conditions and circumstances (including costs) and to the current state of technical knowledge.
Baseline conditions	The environmental conditions prior to being subject to pressures from a development or operation of concern. This may include natural environmental conditions that are largely un-impacted by human influences or state of the environment just prior to influences and effects of development.

Acronym, Term or Abbreviation	Definition
Black cockatoos	Includes Carnaby's cockatoo (<i>Calyptrorhynchus latirostris</i>), forest red-tailed black cockatoo (<i>Calyptrorhynchus banksii naso</i>) and Baudin's cockatoo (<i>Calyptrorhynchus baudinii</i>).
Foraging habitat	Foraging habitat described in <i>EPBC Act referral guidelines for three threatened black cockatoo species</i> (Commonwealth of Australia 2012), or any subsequent revisions of this document.
CEO	The Chief Executive Officer of the Department of the Public Service of the State responsible for the administration of section 48 of the <i>Environmental Protection Act 1986</i> , or his delegate.
Conservation Category Wetland	As identified in the Geomorphic Wetlands of the Swan Coastal Plain (DBCA-019) dataset as updated from time-to-time.
Contingency actions	Actions to be implemented when monitoring determines that a management target may not be met, and where the actions will bring the impact within the management target.
Development envelope	The area within the yellow line marked in Figure 1 of this Statement and defined by coordinates in Schedule 2.
Disturb	Is to be defined as per the definition of 'disturb' in section 5 [subsection disturb — (a)(i)(ii)(iii) and (iv)] of the <i>Biodiversity Conservation Act 2016</i> .
Ecological integrity	Ecological integrity is the composition, structure, function and processes of ecosystems, and the natural variation of these elements.
Fauna spotter	A person who is qualified and licenced under section 40 of the <i>Biodiversity Conservation Act 2016</i> .
ha	Hectare
Indirect impacts	Any potential impacts outside the development envelope or to NVRA as a result of the clearing and disturbance authorised in Table 2 of Schedule 1. This includes but is not limited to: hydrological change, weed invasion, altered fire regimes, introduction or spread of disease, changes in erosion/deposition/accretion and edge effects.
Malaga dive structure	Where the railway extends below ground surface west of the Malaga station and connects to the Bayswater to Malaga rail line.

Acronym, Term or Abbreviation	Definition
<i>Management of <u>Phytophthora cinnamomi</u> for Biodiversity Conservation in Australia, Part 2, National Best Practice Guidelines</i>	E O’Gara, K Howard, B Wilson and GESTJ Hardy (2005) <i>Management of <u>Phytophthora cinnamomi</u> for Biodiversity Conservation in Australia: Part 2 – National Best Practice Guidelines</i> . A report funded by the Commonwealth Government Department of the Environment and Heritage by the Centre for Phytophthora Science and Management, Murdoch University, Western Australia, or any subsequent revisions of this document.
NVRA	Native vegetation retention areas, as shown in Figure 2 and defined by coordinates in Schedule 2
On-ground management	This includes revegetation (re-establishment of native vegetation in degraded areas) and rehabilitation (repair of ecosystem processes and management of weeds, disease or feral animals) with the objective to achieve a tangible improvement to the environmental values in the offset area.
Open access	The provision of free access to peer-reviewed, scholarly and research information to all, that removes restrictions on use and reuse.
Paperbark trees	<i>Melaleuca</i> tree species within the riparian zone or channel of Bennett Brook.
Patch 1 Malaga NVRA	Patch of Banksia woodlands of the Swan Coastal Plain priority ecological community located within the development envelope near the location of the proposed Malaga station, that will be retained within a NVRA, as shown in Figure 3 and defined by coordinates in Schedule 2.
Potential nesting trees	Any existing tree of a species known to support black cockatoo breeding which has a hollow and therefore may be being used for nesting.
Proposed Offset Conservation Area	The area of land identified in condition 12-9(2).
Registered Sites	Means a place to which the <i>Aboriginal Heritage Act 1972</i> applies by the operation of section 5 of that Act.
Rehabilitation	Repair of ecosystem processes and management of weeds, disease or feral animals.
Relevant management body	A party that is directly responsible for the on-going management of the Proposed Offset Conservation Area.
Resource Enhancement Wetlands	As identified in the Geomorphic Wetlands of the Swan Coastal Plain (DBCA-019) dataset as updated from time-to-time.

Acronym, Term or Abbreviation	Definition
Trenching activities	Trenches used for utilities such as communications. Trenches do not include excavation for the sinking of the railway line.

Figures (attached)

- Figure 1 Malaga to Ellenbrook Rail Works development envelope and disturbance footprint (This figure is a representation of the co-ordinates shown in Schedule 2)
- Figure 2 Native vegetation retention areas relevant to condition 8 (This figure is a representation of the co-ordinates shown in Schedule 2)
- Figure 3 Native vegetation retention area at Patch 1 Malaga relevant to condition 8-1(9) and condition 8-2(3) (This figure is a representation of the co-ordinates shown in Schedule 2)



Figure 1: Malaga to Ellenbrook Rail Works development envelope and disturbance footprint



Figure 2: Native vegetation retention areas relevant to condition 8



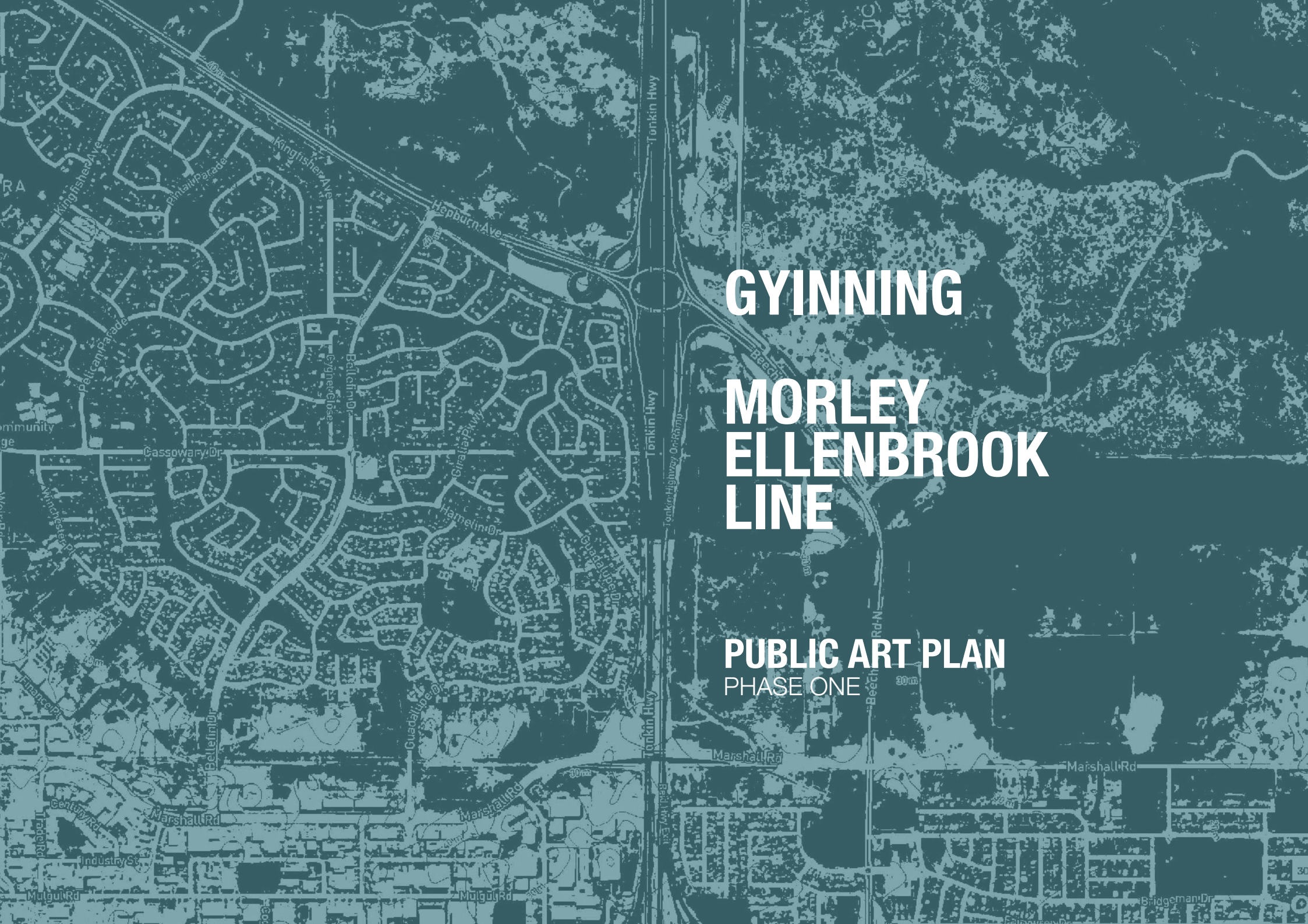
Figure 3: Native vegetation retention area at Patch 1 Malaga relevant to condition 8-1(9) and condition 8-2(3)

Schedule 2

Coordinates defining the Malaga to Ellenbrook Rail Works development envelope and disturbance footprint in Figure 1 and coordinates defining the Native Vegetation Retention Areas in Figures 2 and 3 are held by the Department of Water and Environmental Regulation, Document Reference Number DWERDT349019.

Draft

Appendix H – Public Art Plan

An aerial photograph of a suburban area, likely in Western Australia, showing a mix of residential streets, green spaces, and some commercial or industrial areas. The map is overlaid with a semi-transparent blue layer. Street names are visible, including Kingfisher Ave, Pelican Parade, Cassowary Dr, Girardin Dr, Hamelin Dr, and Marshall Rd. A major road, Tonkin Hwy, runs vertically through the center. The text 'GYRNING MORLEY ELLENBROOK LINE' is prominently displayed in white, bold, sans-serif font on the right side of the image.

GYRNING MORLEY ELLENBROOK LINE

PUBLIC ART PLAN
PHASE ONE



Public Art Consultant
Malcolm McGregor

TITLE	AUTHOR	REVISION	DATE
PUBLIC ART PLAN	M MCGREGOR	A	1 JUN 21
	M MCGREGOR	B	14 JUL 21

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Acknowledgement of Country

We acknowledge the People of the Noongar Nation as the Traditional Custodians of the land and waters on which the MELconnx program of projects is located.

We pay our respect to their Elders, both past, present and emerging and thank them for their continuing connection to country, culture and community.

We acknowledge that Noongar languages are oral in nature and this can result in the same word being spelt in multiple ways.



01

INTRODUCTION

1.1 PURPOSE

PUBLIC ART PLAN

The Public Art Plan (the Plan) will guide the planning and delivery of public artworks undertaken as part of the Morley-Ellenbrook Line project.

The Public Art Plan: Phase One addresses the three northern stations at Ellenbrook, Whiteman Park and Malaga, that are currently more advanced in their design.

The Public Art Plan: Phase Two will address the remaining southern stations at Noranda and Morley.

It is envisioned that the Plan will be used by artists, architects, landscape architects, project managers, contractors, LGA's and community groups, as part of the Morley-Ellenbrook Line's program of works.

The Plan acknowledges existing local, state government and private sector plans and policies. It will act as a guide for organisations such as the City of Bayswater, City of Swan, Development WA and private developers involved in public art commissioning within the greater station precincts. It will:

- ▶ Outline METRONET's expectations for integration of public artworks into the planning and delivery of the Morley Ellenbrook Line.

- ▶ Provide a curatorial framework to assist in the preparation of artist briefs and to ensure consistency across the METRONET public art program.
- ▶ Develop the Sense of Place Statements, with input from the broader project team, for inclusion in the Final Place Plans and to guide the artwork briefs.
- ▶ Identify a variety of art types for each station and common elements across stations that can be developed as a coherent suite of artworks along the line.
- ▶ Identify the forms, locations and budget allocations for public art across the project;
- ▶ Outline the artwork procurement process through to delivery, including commissioning, contracts, management and review.
- ▶ Identify strategies for incorporating artworks from emerging artists, or other creatives unfamiliar with public art commissioning processes; and
- ▶ Identify stakeholder engagement associated with the METRONET public art process, including, but not limited to, Noongar Reference Group, METRONET Office, LGAs, community and other stakeholders.

1.2 BACKGROUND

METRONET

METRONET is the State Government's vision to integrate transport and land use planning and provide a framework to support sustainable growth in Perth over the next 50 to 100 years.

More than just a rail infrastructure program of works, METRONET planning goes beyond the station forecourts to shape and support development of communities within the surrounding walkable catchments.

Stage One of METRONET is proposed to deliver approximately 72km of new passenger rail and up to 18 new stations which represents the single largest investment in public transport in Perth's history.

METRONET will create the opportunity to transform Perth through an expanded rail network that will see urban intensification in more than 5,000 hectares of land within walking distance of the stations, supporting delivery of the State's metropolitan growth strategy for Perth and Peel.



MORLEY-ELLENBROOK LINE

The Morley-Ellenbrook Line will give people living and working in Perth's north-eastern suburbs more transport choice and will be a catalyst for future urban growth.

The project will provide 21km of new track spurring from the existing Midland Line east of Bayswater Station and includes five new integrated station precincts.

The new rail line extends from the existing Bayswater Station, enters the median of Tonkin Highway where it heads north to include new stations at Morley and Noranda. The line then dives under Tonkin Highway north of Marshall Road and runs east to Malaga Station, before turning north along Drumpellier Drive to Whiteman Park Station.

The line ends at the new station within the town centre of Ellenbrook. Future-proofing also includes provision for an additional station at Bennett Springs. In addition to the station and station precincts, the project incorporates site wide civil and rail works within the rail corridor and Tonkin Highway median.

Major new structural elements include grade separated structures such as ramps, viaducts, dives, tunnels and bridges extending over and under the new rail

The MELconnx Consortium has been awarded the contract to build the Morley Ellenbrook Line. Laing O'Rourke Australia Construction is leading the consortium.



02

CONTEXT

2.1 GUIDING DOCUMENTS

OVERVIEW

The early planning stage has involved DevelopmentWA and PTA, led by METRONET and the Department of Local Government Sports & Cultural Industries (DLGSC).

Complementary documents have been developed to guide ongoing planning and delivery of key elements of the METRONET program, including.

- ▶ METRONET Public Art Strategy;
- ▶ METRONET Public Art Guide;
- ▶ METRONET Gnarla Biddi Aboriginal Engagement Strategy;
- ▶ METRONET Noongar Cultural Context Document; and
- ▶ METRONET Station Precinct Design Guide.

The documents support a holistic and integrated design approach, with each discipline contributing to the overarching project vision.

METRONET Public Art Strategy

The METRONET Public Art Strategy guides decision making and selection of public art across the METRONET program for both transport infrastructure and station precincts.

The strategy provides a thematic guide and identifies program level art opportunities that will be refined and developed for each project in the Public Art Plan. The strategy aims to:

- ▶ Delivery of a diverse program of high-quality public art;
- ▶ Support the legibility of public spaces connected to stations and other transport infrastructure;
- ▶ Animate public spaces, showcase local cultures and build place identity;
- ▶ Promote Aboriginal connection to place, culture and community;
- ▶ Encourage creativity and innovation;
- ▶ Support employment opportunities for professional and emerging artists; and
- ▶ Leave a positive and enduring legacy.

METRONET Public Art Guide

The Public Art Guide provides details for how the METRONET Lead Agency will meet the requirements outlined in the Public Art Strategy by:

- ▶ Inspiring the project's overall design and delivery to ensure the infrastructure connects with place and community;
- ▶ Creating a Sense of Place Statement, that recognises the histories, stories, beliefs and value of Noongar and non-Noongar people;
- ▶ Identifying public art themes and approaches;
- ▶ Describing public art types and allocations;
- ▶ Providing line-wide and station priorities;
- ▶ Identifying stakeholders and engagement processes;
- ▶ Describing the expected management, procurement and review processes; and
- ▶ Completing the Public Art Plan to guide the forms, locations and budget allocation for public artworks.

GNARLA BIDDI

Aboriginal Engagement Strategy

The METRONET Aboriginal Engagement Strategy outlines the WA State Government commitment to embed genuine engagement with the Aboriginal community across the METRONET program.

It recognises that appropriate and authentic Aboriginal engagement can contribute to the delivery of enhanced place and project delivery outcomes, whilst also achieving significant community, social and economic benefits through cultural contribution and participation.

The strategy supports outcomes that align with the METRONET vision, purpose and objectives by ensuring:

- ▶ Noongar culture is reflected in the infrastructure designed and built as part of the METRONET program;
- ▶ Education for those involved in the METRONET program on the significance of Noongar culture;
- ▶ Ongoing Noongar input into project planning and delivery processes; and
- ▶ Workforce and industry participation for Noongar and other Aboriginal people.

METRONET

Noongar Cultural Context

The Noongar Cultural Context document has been developed in close consultation with the METRONET Noongar Reference Group (MNRG).

The group provided input and comment on the document to convey a Noongar 'sense of place' for the Gyinning / Morley-Ellenbrook Line by sharing stories and cultural themes behind each place and its people.

The document summarises both publicly available content and stories for the project area and seeks to:

- ▶ Facilitate early and ongoing engagement between METRONET, the Public Transport Authority and the Noongar Reference Group;
- ▶ Describe the 'sense of place' by mapping the storylines that have created the place or other relevant cultural themes;
- ▶ Inspire project designers, architects and artists to develop themes and concepts during the design process; and
- ▶ Promote artwork opportunities for Noongar artists.

METRONET

Station Precinct Design Guide

The METRONET Station Precinct Design Guide (Station Precinct Guide) outlines key objectives and specific design advice to be considered in the design and planning of station precincts across the Perth metropolitan rail network as part of the METRONET program.

The intent is to provide guidance for decision making, planning and design of newly developing and redeveloping station precincts.

It aims to embed best practice sustainable place-making principles into the design, development and ongoing function of station precincts.

The Station Precinct Guide introduces design objectives that are fundamental to supporting the delivery of all METRONET station precinct and provides long-term expectations for station precincts based on a range of place types.

2.2 PUBLIC ART POLICIES

WA STATE GOVERNMENT

Percent for Art Scheme

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, police stations and hospitals.

The scheme is managed by the Department of Finance in partnership with the Department of Local Government, Sport and Cultural Industries, which is responsible for arts policy in the State.

The scheme requires up to one percent of the construction budget for new works over \$2 million, to be spent on public artwork.

It has established industry standards for public art, including procurement models and 'fit for purpose' artist contacts that have been adopted by other State Government agencies such as Main Roads WA, PTA, DevelopmentWA and LandCorp.

CITY OF BAYSWATER

Percent for Public Art (2017)

The City of Bayswater's 'Percent for Public Art' policy relates to the provision of public art for development proposals and provides guidance on how and where the City of Bayswater will apply the policy to enhance and promote the public realm and streetscape to:

- ▶ Facilitate public art that contributes towards creating a strong sense of place, which promotes the expression of local identity and responds to the culture and character of the community.
- ▶ Facilitate public art that positively contributes to its streetscape.
- ▶ Improve legibility by introducing public art which assists in making streets and buildings more identifiable.

The policy applies where a development proposal on private land has a construction cost of \$1 million or greater and is a commercial, non-residential or mixed use development.

The cost of any public art provided under this policy is to be no less than 1% of the construction value of the eligible development proposal.

CITY OF SWAN

Public Art Policies

The City of Swan's policy supports public art by:

- ▶ Developing and locating public artworks in areas of significance and meaning to the community;
- ▶ Ensuring public artworks are sensitive to their local environment and communities of interest;
- ▶ Installing public artworks on sites selected specifically for their suitability with regard to the conception, development and installation of a work of art;
- ▶ Where possible, supporting and promoting high calibre local artists;
- ▶ Building strong partnerships with the Federal Government, State Government, other Local Governments, and the City's Art sector to ensure that the opportunities for quality public art are maximised;
- ▶ Funding public artwork through the City's capital works program and operational budget processes; and
- ▶ Utilising private developer cash-in-lieu contributions as per policy POL-LP-1.10 Provision of Public Art.

03

APPROACH

3.1 GUIDING PRINCIPLES

CONNECTIONS AND PATHWAYS

Transport infrastructure projects can be complex, with delivery occurring over an extended timeframe. The five stations and associated civil infrastructure provide numerous public art opportunities.

The success of these projects will be largely dependent on an art procurement model that is equitable and responsive to evolving project needs. Along with other objectives, the public art program aims to:

- ▶ Deliver a diverse program of high-quality public art;
- ▶ Encourage creativity and innovation;
- ▶ Support opportunities for professional and emerging artists;
- ▶ Promote Noongar cultural input into place making; and
- ▶ Ensure commissioning, mentoring and training opportunities for Noongar and Aboriginal artists.

Meeting these goals requires an art procurement approach that is equally creative, flexible and innovative. It enlists a number of strategies to enable the participation of a wide range of artist and creatives over the duration of the project.

OPEN AND EQUITABLE

The Expression of Interest will be widely promoted to Western Australian artists and creatives. The aim is to establish a creative pool that can be drawn upon as art projects are developed.

The pool will include highly experienced and emerging artists, as well as other creatives that may contribute to the art program.

PARTNERSHIPS

The art program will foster connections between artist, creatives design professionals, suppliers and fabricators. One of the biggest challenges for emerging artists is access to the skills, specialist expertise and resources needed to undertake a public art project.

The procurement process will explore ways of up skilling artists through strategic partnerships. The Alliance team can assist by providing information on designers, materials, suppliers, fabricators and installers.

MENTORING

The art program will include mentorship opportunities designed to provide career pathways that build new skills and employment opportunities for Aboriginal artists, with a focus on Noongar artists.

Collaborative design workshops will allow Aboriginal artists to develop their skills through a structured and supported process. More detail is provided in the following sections.

OPEN COMPETITION

Open competition is fair and equitable in that it allows all artists and creatives to be considered for station projects. The Expression of Interest can be widely promoted to Western Australian artists and creatives, with submission requirements tailored to achieve the best outcome for the project.

The open competition process can establish a creative pool of suitably qualified artists and creatives that can be drawn upon as art projects are developed.

The pool will include highly experienced and emerging artists, as well as other creative that may contribute to the program. Artists can submit Expressions of Interest as individuals or as part of a creative team that includes the requisite skills and capabilities.

NOONGAR PROJECTS

The procurement model seeks to minimise potential barriers to participation by new and emerging Noongar artists, in line with other State Government initiatives.

The public art program will explore multiple pathways for Noongar artists to contribute to the project. This may include open competition, limited invitation, direct engagement or a structured workshop process.

The Expression of Interest for Noongar artists will allow for a targeted response to project requirements and support a collaborative approach to Noongar place making. Selected artists may participate through the following pathways:

- ▶ Shortlisted artists invited to prepare a Design Concept, or
- ▶ Selected artists invited to participate in design workshops for 'design only' elements, or
- ▶ Selected artists invited to participate in mentoring opportunities.

ABORIGINAL ENGAGEMENT FRAMEWORK

The METRONET Aboriginal Engagement Framework sets targets for engagement with Noongar and other Aboriginal stakeholders during planning and delivery. The Plan establishes actions to address the relevant engagement streams.

STREAM ONE

Noongar Cultural Recognition

- ▶ Ensure 'Welcome to Country' occurs at all appropriate art events in accordance with advice provided by the METRONET Noongar Reference Group;
- ▶ Include Acknowledgement of Country in the design of built form and/or landscape for all five stations

STREAM TWO

Noongar Cultural Input into Place Making

- ▶ Initiate a collaborative design process that allows the local community to be involved in identifying appropriate themes;
- ▶ Enable Noongar artists to contribute to the architectural and landscape design of stations;
- ▶ Embed themes and stories contained within the Noongar Cultural Context Document within the architectural and landscape design,
- ▶ Liaise with the METRONET Noongar Reference Group, through the development of designs and approval.

STREAM THREE

Aboriginal Procurement

- ▶ Encourage Noongar artists and creatives to register as Aboriginal Businesses with the Aboriginal Business Directory WA (ABDWA) and Supply Nation;
- ▶ Explore opportunities for Noongar suppliers and fabricators in delivering the public art program;

STREAM FOUR

Aboriginal Employment

- ▶ Facilitate career development opportunities for Noongar artists and creatives;
- ▶ Engage Noongar cultural advisors to contribute to the interdisciplinary design approach
- ▶ Enable skills development and capacity building for Noongar artists through structured mentoring opportunities.

PUBLIC ART PRINCIPLES

The METRONET Public Art Strategy identifies six public art principles that will guide decision making through the planning and delivery of the Public Art Program.



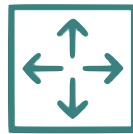
Place Making

Public art contributes to place making and interpretation of place. It can aid the understanding of the area's history or cultural heritage, assist how people currently understand or use a space, or provide new interpretations and meanings.



Site Specific

Artworks are to be designed specifically for the site and are to be responsive to the site context - its surrounds, its use and users, and reflecting the relevant precinct art themes.



Scale and Fit

The scale of artwork needs to be consistent with the artwork brief and intent. Artwork scale also needs to be responsive to the site context - such as the surrounding landscape and buildings and pedestrian circulation.



Well Considered & 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.



Attractor

Public art can be used as an attractor for visitors and tourists – particularly places with landmark artworks or seasonal art programs.



Sustainable

Public art is designed to consider key environmental, social and economic opportunities for both procurement/delivery and ongoing function and use.

3.2 CURATORIAL FRAMEWORK

The curatorial framework identifies themes and narratives to encourage a cohesive approach to public art across the five stations.

The framework responds to planning, place-making and station design principles established across the Morley-Ellenbrook Line. It acknowledges METRONET's attitudes towards site context, urban character, landscape values and the station's architectural typology.

The curatorial framework acknowledges the values and future aspirations of all stakeholders, local community members and transport users. It includes a vision for public art, describing what it aspires to achieve within the project.

CURATORIAL VISION

The curatorial vision is a resource for artists in developing site-specific responses to culture, landscape and place. It provides contextual inspiration and a starting point for artistic exploration.

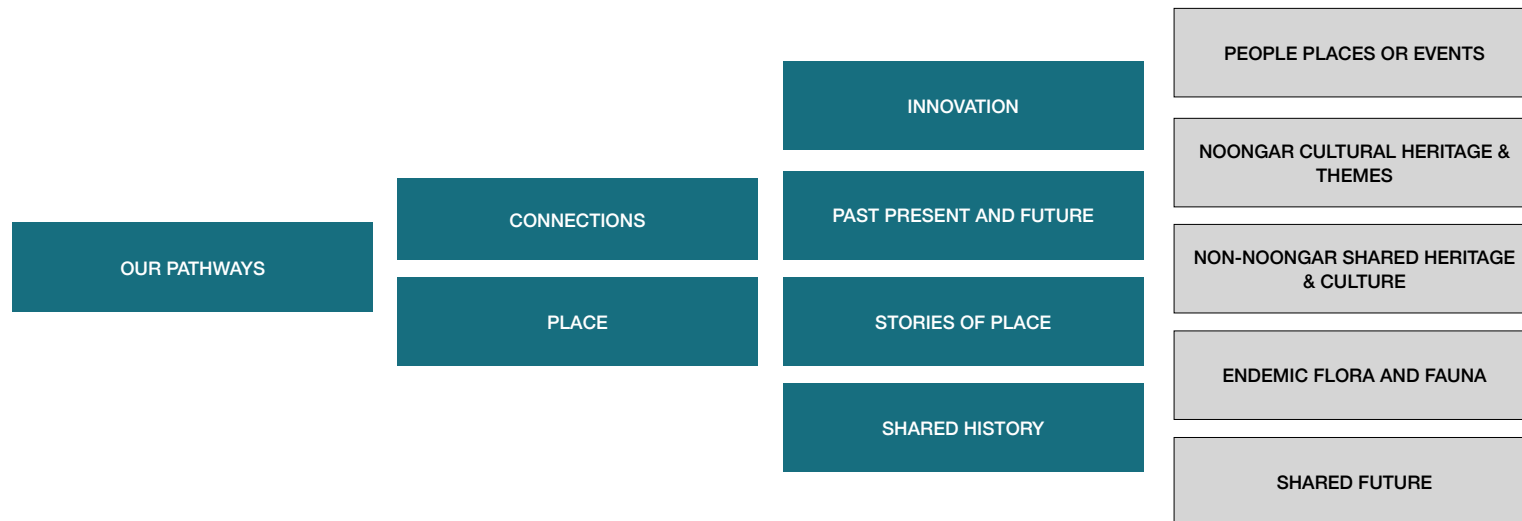
Every station has unique physical and functional characteristics that will affect its potential to develop as a liveable, vibrant urban centre. Public art will build on broader initiatives within the project to:

- ▶ Embody notions of identity and place, benefit local communities and leave a positive legacy for future generations;
- ▶ Foster connections between people and places, revealing embedding stories, ideas and authentic experiences within the stations and surrounding public space;
- ▶ Celebrate the cultural diversity of communities and people;
- ▶ Draw on community values to provide active public spaces that can be enjoyed day and night;
- ▶ Contribute to the activation of new town centres, neighbourhood centres and transit node precincts;
- ▶ Create new gateway and arrival experiences for public transport users and the broader community; and
- ▶ Enrich daily life and support community gathering in a vibrant and safe environment.

3.3 CURATORIAL THEMES

The Curatorial Themes provide a high-level thematic guides which encapsulate various qualities of the diverse topographies, station types and communities along the Morley-Ellenbrook Line.

Evoking elements of the local history, landscape and people, they can act as an initial source of inspiration for artists, ensuring that artworks forge meaningful connections to the locality and community.



The three broad themes below encompass both universal experiences and evoke stories and narratives specific to people and places along the new rail line.

GATHER

Social Encounters

Stations and their surrounding precincts are places of arrival and departure. They are meeting and gathering points that are an expression of local identity and the communities that they service.

Local life can be described by the social encounters in a vibrant town centre. Whether spontaneous or planned, social experiences add to the richness of daily life. Within the station they can make us feel comfortable and safe.

Before there was a city, Noongar people gathered on the Swan Coastal Plain to hunt, fish and celebrate culture. New stations, town centres and public spaces will become the places where people meet, rest and play.

DWELL

Being of a Place

The landscapes and places along the line have changed significantly over time. From the wetlands and banksia woodland that was once there, the land has been shaped and altered.

The new line will accelerate that rate of change, creating new places and making the familiar less so. Though much of the original vegetation is gone, the line continues to reveal its topography and offer spectacular vistas to places beyond.

The pattern of land subdivisions, laid across the landscape largely remain today. Their boundaries shape the networks of roads that connect the suburbs and people.

Communities continue to evolve as farmlands give way to suburbs and commercial areas. As the city moves outward, people seek new ways of connecting to places and making it their home.

STREAM

Passing Through

The streams and wetlands are ancient. They have sustained life in the area for millennia. From deep beneath the surface, the water rises and flows towards the river.

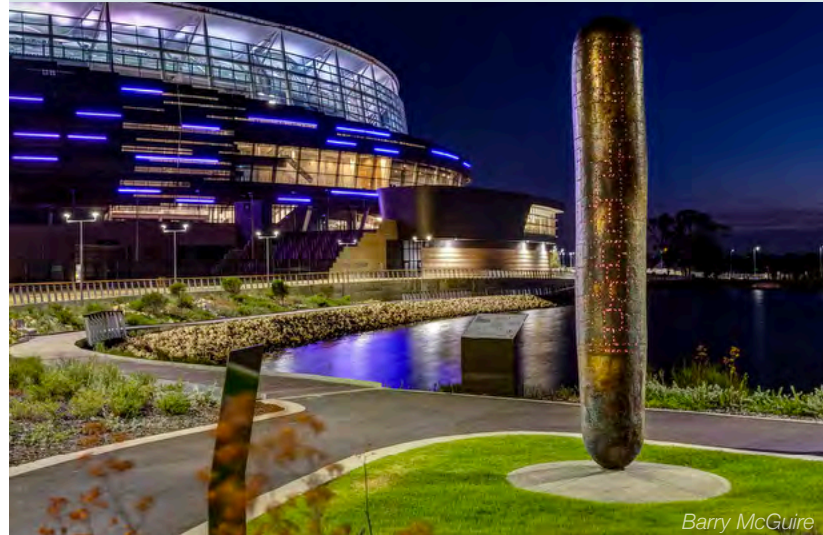
The stream exists within the landscape and as a metaphor for the confluence of pathways, routes and cultures. It is a place where people camped, gathered food. It sustains farmlands and is an attractor for recreation.

The stream can be the experience of travel and transition across the landscape. It embodies the experience of movement and change that defines the rail journey. It is the life force that connects places.

Beneath the station the stream is still there, hidden.

3.4 ARTWORK TYPES

The METRONET Public Art Strategy uses the DLGSC Public Art Commissioning Guidelines to define main categories of public art, recognising that boundaries between art types overlap.



STAND ALONE

Stand-alone artworks are arguably, the best known and recognised form of public art. They include sculptural works at a variety of scales, from landmark artworks that are major attractors and destinations through to small-scale elements interwoven within the landscape design.

They can be singular works sited at locations with high visual impact or be a series of small scale elements disbursed throughout a public space.

Stand-alone artworks are usually acquired through a standard artist commissioning process, with the artist responsible for design, fabrication and installation.

On more complex construction projects, artworks are sometimes delivered to site, with installation by the construction contractor or their subcontractors.



Stuart Green



Rod Garlett



Kylie Graham



Phil Gamblen

INTEGRATED

Integrated artworks is a broad category that includes art concepts and design elements integrated into the fabric of built form and urban environments. Often developed through a collaborative design process, the artist is best engaged during the early design stage.

Art concepts can be incorporated into the overall design as 'value added' elements, allowing artist to respond to the scale of the buildings and landscaped environments. This could include treatments to walls, ceilings, glazing, screens and floors, landscape elements and paving.

Integrated artworks can be developed as 'design only' or through a standard commissioning process. There can be a combination of approaches with the artists sometimes responsible for documenting, fabricating and installing the artwork elements.



Jon Tarry



Judy Watson



Nancy Bunn



Unknown

APPLIED

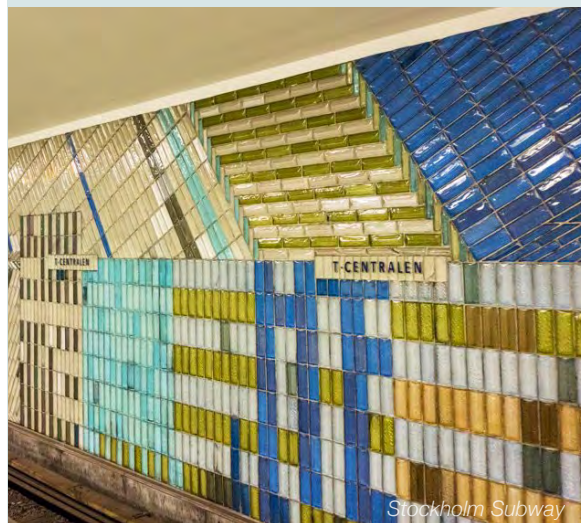
Applied public art is defined as elements applied to existing surfaces and structures. It may include, but not limited to, painted finishes, tiling, metal or other elements fixed to existing walls, floors or ceilings. They can be permanent or semi-permanent in nature.

Applied artworks are often designed and fabricated by the artist with installation towards the end of construction or after project completion.

To some extent, the artist is able to develop and fabricate artworks independently of the built form, meaning that they can be introduced later in the design process.

Applied artworks are usually acquired through a standard artist commissioning process, with the artist responsible for design, fabrication and installation.

On more complex construction projects, artworks are sometimes delivered to site, with installation by the construction contractor or their subcontractors.



TEMPORARY

Temporary or programmed artworks include non-permanent artworks or events which activate a specified space or location for a pre-determined amount of time.

Temporary artworks add a vital layer of life and energy to public spaces, providing new experiences that build a sense of place over time, engage the community and encourage repeat visitation.

Temporary or programmed works can be curated as part of festivals or events and include a wide variety of art forms including hoardings, art installations, light festivals, musical and theatrical performances.

Art events can play a crucial role in place activation over time. During the station construction phase they can be a vehicle for positive community engagement. Post construction, they can be instrumental in the activation of new spaces and building a sense of community ownership.



Mel McVee



Bewley Shaylor



Guido Van Helten



Gare du Nord, Paris

LIGHT

Light can be a crucial component of any artwork types. At its most simple level, it may involve the illumination of artworks to enhance their night-time presence. At its best, it becomes an integral component of the artwork concept.

Light may be integrated into the fabric of the built form and urban environments as art concepts. They can become part of the overall design, allowing artist to response to the scale of the buildings and landscaped environments.

Sculptural works may incorporate light at a variety of scales, from landmark artworks that are major attractors and destinations through to small-scale elements interwoven within the landscape design.

Light can be an integral component of temporary or programmed works, curated as part of festivals or events. it can play a crucial role in place activation and safety.



3.5 PROCUREMENT MODELS

ART COMMISSIONS

The majority of public artworks are procured through a standard commission process. The artist is usually responsible for the full scope of work, including design, documentation, fabrication and installation of the artwork.

The method is most relevant for stand-alone and applied artworks, which constitute the majority of public art projects.

The art commission model can also be appropriate for some integrated artworks, depending on the nature of the integration. The standard two stage process for artist selection involves:

- ▶ Shortlisted artists from the Expression of Interest are invited to prepare a detailed Design Concept;
- ▶ Shortlisted artists present their Design Concepts to the selection panel who select one artist or artist team;
- ▶ Alternatively, the selection panel may interview shortlisted artists and invite one artist to prepare design options before completing the Design Concept.

DESIGN COLLABORATIONS

Sometimes referred to as 'Design Only', artworks are developed through a collaborative design process.

Design elements are incorporated into the overall design as 'value added' elements, allowing artist to respond to the scale of the buildings and landscaped environments.

The artist is responsible for the Design Concept and Design Development only. The documentation, fabrication and installation is delivered as part of the larger project. Artist selection involves the following:

- ▶ Shortlisted artists from the Expression of Interest are interviewed by the selection panel. Alternately, artists may be shortlisted from a limited invitation.
- ▶ One artist or artist team is selected and engaged to prepare design options through a collaborative design process.
- ▶ The preferred options are developed into the Design Concept for approval before proceeding to Design Development.

A variation of this model can be applied to artworks developed through design workshops.

DESIGN WORKSHOPS

The Gnarla Biddi Art and Placemaking Workshops are a vehicle for ensuring that Noongar culture is reflected in the infrastructure designed and built as part of the MEL program of works.

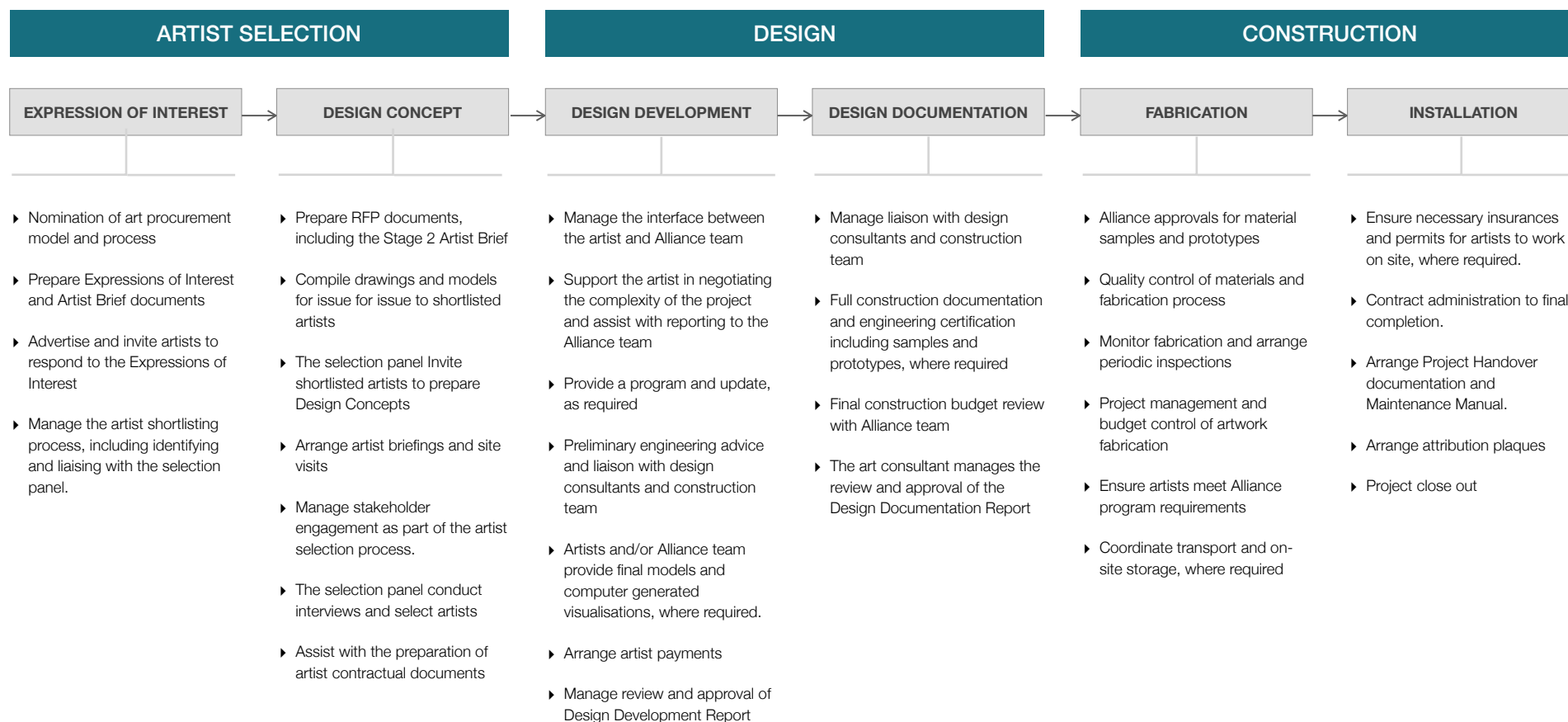
The workshops are a direct response to requirements of the Gnarla Biddi Engagement Strategy and Gynning/Morley- Ellenbrook Noongar Cultural Context Document, which promote Aboriginal connection to place, culture and community.

The model aims to reduce barriers for participation by Noongar artists. The workshops will identify public art opportunities for both experienced and emerging Noongar artists.

Artists will develop concepts that can be incorporated into the overall design as 'value added' elements, with artists only be responsible for the Design Concept and Design Development. The documentation, fabrication and installation is delivered as part of the larger project.

Workshop participants will also gain insight into the documentation process. Their involvement may extend into the implementation phase through visits to fabricators and station sites.

3.6 PROCUREMENT PHASES



3.7 ARTIST CONTRACTS

Artist agreements will set out the obligations and conditions of all parties involved in the public art program.

MELconnx has been nominated as the commissioning body for public artworks delivered through the art program. 'Fit for purpose' contracts will need to be developed that address the various ways that artists may be engaged.

The DLGSC Commissioning Guidelines (2019) provides a best practice model for engagement of artists. The BMW Artwork Commission Agreement is used for artist commissioned through the State Government Percent for Art Scheme and is based on the Arts Law standard agreement.

Other State Government departments and agencies such as PTA, LandCorp, DevelopmentWA and Main Roads WA have also adopted the agreement.

Design Concepts

Shortlisted artists are invited to prepare a Design Concept in response to a Stage 2 Artwork Brief, which sets out the conditions and submission requirements. Artists are paid a fee which is based on the value of the commission and the complexity of submission requirements. Conditions can be usually be addressed through a Letter of Agreement and reference to the Stage 2 Artwork Brief.

Design Agreement

A design agreement can be used when the artist is engaged for the Design Concept and Design Development stage only. In some instances, the agreement may also specify limited involvement in the implementation phases.

Documentation, fabrication and installation is delivered as part of the larger project and is not the artists' responsibility. The agreement provides details of the artist's moral and intellectual property rights in the design.

Commission Agreement

Artists commissioned through the State Government Percent for Art Scheme are engaged through a standard artist commission agreement. This form of contract is widely used when the artist is responsible for the full scope of work, including design, documentation, fabrication and installation of the artwork.

3.8 PRELIMINARY BUDGET

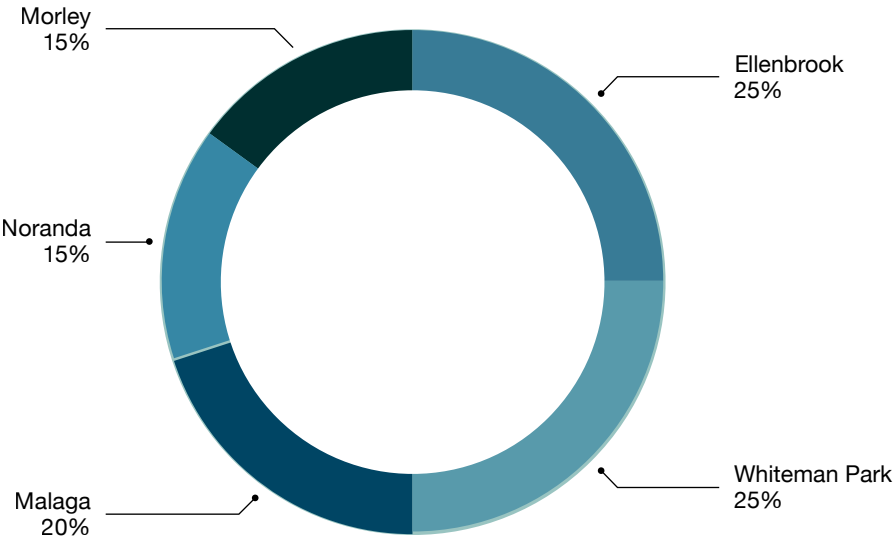
The preliminary budgets provides high level allocations for public artworks. Percentages have been assigned to zones within the station precincts rather than to individual art projects. Budgets for individual project will be determined as the opportunities become more defined. The amounts are currently inclusive of:

- ▶ Design Concept fees
- ▶ Commission budgets
- ▶ Design Workshop costs. (Artist fees associated with Noongar input into placemaking will be covered by a separate budget allocated to implementation of the Gnarla Biddi Strategy)
- ▶ “Value added” costs. This is the additional cost for artwork treatment of an exisiting element above the estimated base cost
- ▶ Contingencies and disbursements
- ▶ Contractors’ margin for management of the public art process

The allocations are based on the ability to maximise the visual impact of public art by ‘value adding’ to existing architectural and landscape elements, where appropriate.

This will be particularly crucial when considering potential input into urban design solutions for civil infrastructure that are currently not included in the scope of works.

An updated schedule for all five stations will be included in the Phase 2 Plan.



STATIONS

Ellenbrook	Welcome Place	30%
	Gateway	27%
	Station Building	24%
	Place Activation	10%
	Fees & Contingencies	9%
Whiteman Park	Welcome Place	33%
	Pedestrian Link	33%
	Station Building	20%
	Place Activation	5%
	Fees & Contingencies	9%
Malaga	Welcome Place	46%
	Station Building	40%
	Place Activation	5%
	Fees & Contingencies	9%

04

LINE WIDE

4.1 CONTEXT

The Morley-Ellenbrook Line is a connector for the central and northern suburbs of Perth. It creates an expanded web of connected places in distinctive landscapes and settings on the Swan Coastal Plain.

The new rail line echoes the path of the Swan River, which provides landscape markers as it meanders northwards into the Avon Valley. The line will become an equally distinctive marker and corridor in the urban landscape.

The rail line, like the river, links various points along the way. The idea of connection along the trail translates into a more integrated family of station buildings and precincts: a line and an extension to the greater transport network.

Initially tracking north through established suburbs and road infrastructure, it cuts east below Whiteman Park and across Bennett Creek.

As it swings north towards Ellenbrook, and up the eastern flank of Whiteman Park, it shadows the upper reaches of the Swan River to the east, forming a man-made reflector of light along the length of the line.

Each station is conceived as an important civic place – distinctive, contextually appropriate and a safe and inviting setting for the gathering and movement of people on and off the train line.



STATIONS

Stations and their immediate surrounds are convergence points and places of transition between transport modes and the surrounding environment. Public art can contribute to the legibility of these functional spaces by responding to the way people use them.

WELCOME PLACE

The Welcome Place is the heart of the station. It is the place where people arrive in the town or suburb and can be an expression of the community's identity and sense of place.

The Welcome Place is a meeting place where people congregate or wait before proceeding on their journeys. It is also the place where people need to make decisions when making transfers. It is also a primary focus for public artworks, including:

- ▶ Large-scale destination artworks intended to be an iconic attractor that is easily identifiable and highly memorable;
- ▶ Medium-scale markers that define nodes, focal points and decision points;
- ▶ Small-to-medium scale artworks and integrated elements that introduce elements of surprise, pause and intrigue.



KISS AND RIDE

The Kiss and Ride is a focal point within the car park. It is a transitional zone where the user's priority is accessing vehicles, drop-offs and passenger pick-up.

Public artworks may assist with guiding people towards the station building. They may take the form of elements integrated into canopies, arbours or pavement treatments.

BUS INTERCHANGE

Located at bus stands, along pathways and routes, artworks can be a variety of forms, primarily integrated into the fabric of transport infrastructure.

They can tell stories, explore themes or assist in orientation while guiding users towards the station building.

ENTRIES

Entry points need to provide clear connections and pathways to the Welcome Place, Station and Bus Interchange. Public art in these locations needs to be appreciated at a vehicular, cyclist and pedestrian scale and may:

- ▶ Reinforce major gateways or arrival points; and
- ▶ Strengthening wayfinding along key pedestrian corridors.

CIVIL INFRASTRUCTURE

Civil infrastructure along the 21km route includes roads, tunnels, underpasses, viaducts, retaining walls and noise walls. Most of this infrastructure is currently not included in the scope of the public art program, which focuses on station buildings and immediate surrounds.

In some instances, the impact of civil infrastructure can be significant. Public art can respond to the scale of the infrastructure by contributing to urban design solutions that provide gateway experiences or mitigate visual impact.

STATION BUILDINGS

As people arrive at the train station the experience must be quick and easy. The space needs to be organised around smooth flows and intuitive wayfinding, that provides all the clues before relying on signage.

Artworks may be experienced progressively as station users move along pathways and through zones. They may frame and direct attention towards spaces beyond.

Artworks may be incorporated into the fabric of the building to provide a more diffused or immersive experience. They can be integrated into surface treatments, such as walls, metal screens, soffit treatments or glazing.



4.2 SENSE OF PLACE

The Sense of Place Statements are intended to ensure that design decisions for public artworks in station buildings and their immediate surrounds align with community values and expectations.

The Public Art Plan includes Sense of Place Statements for each station on the Gyrning/Morley-Ellenbrook Line. They draw sources, including on the METRONET Noongar Cultural Context Document, Preliminary Place Plans and relevant Local Area Plans.

The Sense of Place Statements have also benefited from the input of community reference groups established for each project areas along the line, with the City of Bayswater and City of Swan playing key roles in representing community interests.

The statements establish common themes, narratives and stories for the whole line, as well as distinct local stories specific to certain localities.

They are not intended to be an extensive history for each station area. However, they will be available as a resource when developing the curatorial framework and themes included in artwork briefs.



Mussel Pool, Whiteman Park

THEMES AND STORIES



Sense of Place

The Morley-Ellenbrook Line encapsulates a variety urban and natural experiences as it travels through diverse landscapes along its 21km journey.

The rail line, like the Swan River, links various points along the way. The idea of connecting stories and themes along the line translates into a more integrated family of stations: a line and an extension to the greater transport network.

Line wide and location-specific stories and themes are addressed in detail under the relevant station heading.



Gnarla Biddi

“ Since the Koondarm our ancestral pathways have guided us through Noongar Boodjar from significant place to significant place from one water body to another.

Now we work together to strengthen Gnarla Biddi, the way that people travel and connect to places, still linked to our shared history and culture.”

The Gnarla Biddi statement, contained in the METRONET Aboriginal Engagement Strategy, provides a unifying and all encompassing theme that is relevant to all artists, whether Noongar or non-Noongar.

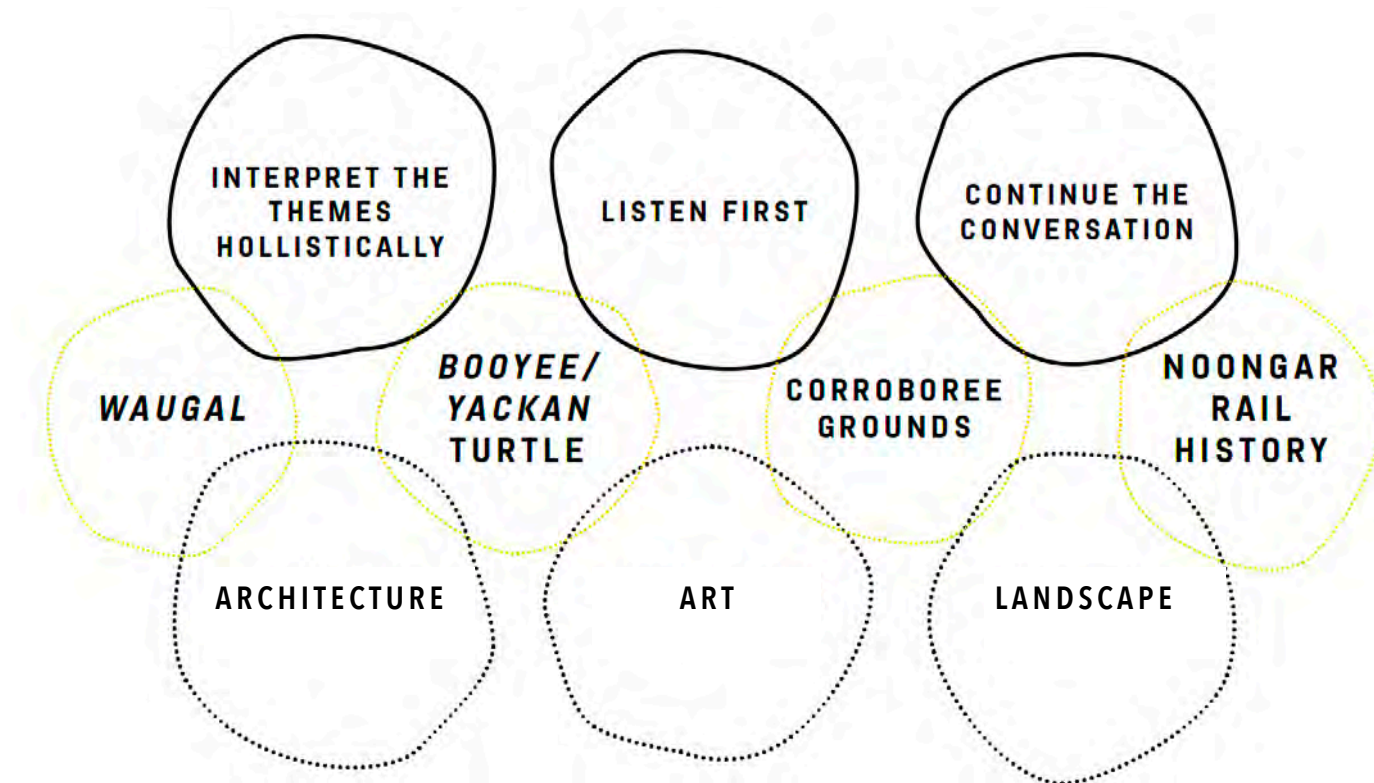


Noongar Cultural Context

Significant local Noongar themes include, but are not limited to:

- ▶ Waugul - the creation story of the spirit/rainbow serpent; a place of water with many wetland and river features;
- ▶ Turtle (Boyee or Yackan) - Illustrating belief in the shared spiritual essence of all living things
- ▶ Corroboree Grounds - Important meeting and ceremony places within the biddi network;
- ▶ Noongar Rail History - Language maintenance, cultural renewal and resistance, travelling, residence and return to country through the railways.

NOONGAR THEMES



The Noongar Cultural Context Document identifies line-wide themes that will be further developed through a collaborative design approach led by Noongar cultural advisors and artists.

The approach is intended to ensure that Noongar culture and placemaking is embedded in the design of stations and their immediate surrounds. Artwork concepts will initially be developed to reinforce and complement elements of the landscape design, including planting, furniture, paving and signage.

Artwork concepts and design elements may also be incorporated as 'Design Only' elements in station buildings.

Design workshops will facilitate input into the design of stations and their surrounds. They will involve input from both experienced Noongar artists and emerging Noongar artists.

Design fees directly associated with Noongar input into placemaking will be covered by a budget allocated to support the implementation of the Gnarla Biddi Engagement Strategy.

The Noongar Design Workshops will play an important role in Noongar story telling and interpretation of cultural material.

DESIGN WORKSHOPS

The workshop process will allow sufficient time for artists to have meaningful engagement with the Noongar Reference Group, cultural advisors and the Alliance team.

It will also allow time for artists to become familiar with the complexities of the rail project and to develop concepts through a structured and supported process.

The thematic approach will be informed by the overarching Gnarla Biddi theme of 'Our Pathways' while also addressing the following sub-themes:

- ▶ Acknowledgement of Country
- ▶ Shared Stories and Knowledge
- ▶ Cultural Mapping
- ▶ Noongar Language
- ▶ Dual Naming
- ▶ Meeting Place
- ▶ Culturally Significant Plants
- ▶ Bush Foods & Medicine
- ▶ Seasonal Flowers & Fruits
- ▶ Totemic Species



The initial focus will be on concepts that can be incorporated into landscape elements in stations at Ellenbrook, Whiteman Park and Malaga. Potential design elements may include:

- ▶ Garden beds
- ▶ Furniture and paving
- ▶ Wayfinding signage
- ▶ Interpretation

Architectural elements may include, but is not limited to:

- ▶ Facade treatments
- ▶ Metal screens
- ▶ Glass balustrades

4.3 OPPORTUNITIES

Stations are convergence points and places of transition between transport modes and the surrounding environment. They need to be organised around smooth flows and intuitive wayfinding.

Artworks may be experienced progressively, as station users move along pathways and through zones. They may frame and direct attention towards spaces beyond.

Artworks can emphasise arrival or meeting points,. They can also be part of the fabric of the station building and surrounding landscaped spaces, as more diffused or immersive experiences.

Stand-alone artworks may include sculptural works at a variety of scales. They can be singular works sited at locations with high visual impact or a series of small scale elements disbursed throughout landscaped spaces.

Art concepts may also be incorporated into the overall design as 'value added' elements, allowing artist to response to the scale of the buildings and landscaped environments. This could include treatments to walls, soffits, glazing, screens and floors, landscape elements and paving.

Some artwork opportunities have already been identified within the station designs. They will be refined and added to as station designs progress. They may include, but are not limited to the following examples;



MARKERS

Stand-alone artworks provide markers and episodes along a journey and can operate at different scales:

- ▶ Landmark artworks can emphasise arrival or gateways points where their scale and visibility make them identifiable and memorable
- ▶ Medium scale artworks may consist of a single focal element or multiple elements extending along pathways or routes.



LANDSCAPE

Small-to-medium in scale, fine grained artworks can be incorporated into the landscape design as integrated or stand-alone elements.

They may be integrated into functional elements, such as retaining walls, screens, informal seating, paving and interpretive signage.



SCREENS

Station buildings include extensive areas of permeable metal panels. The artwork may 'value add' to these existing elements as:

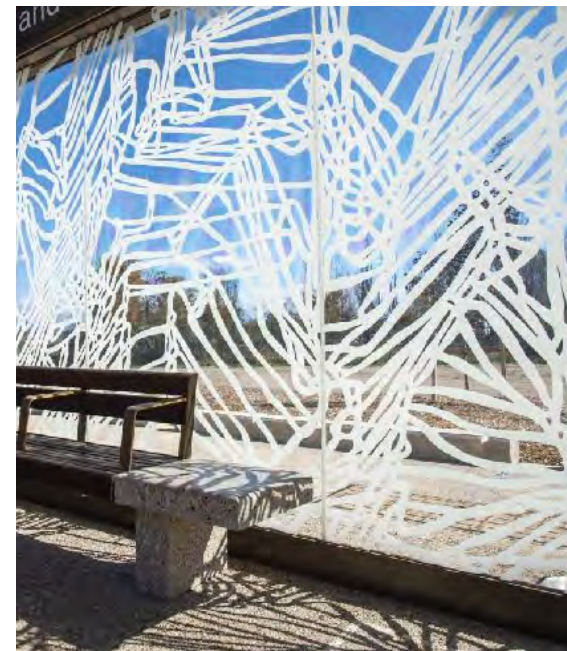
- ▶ Screen walls on vertical circulation buildings
- ▶ Weather screening on platforms
- ▶ Perimeter fencing
- ▶ Balustrading on elevated concourses and walkways



CANOPIES

Stations and bus interchanges are connected by a series of canopies and arbours. The canopies guide transport users towards the station while also offering weather protection. The artwork may take the form of treatments to:

- ▶ Fabrics on green and/or unplanted arbours
- ▶ Soffits in linking canopies



GLAZING

Station buildings and bus interchanges include glass panels as weather, privacy and security protection. Artworks may be incorporated as fritted designs to:

- ▶ Skylights located centrally along the length of the station and platform canopies
- ▶ Internal waiting areas in station buildings
- ▶ Bus stands



PLAY

Forecourt areas connect stations to the bus interchanges, car park and surrounding precinct. These 'Welcome Places' are the social 'heart' of the station and important places of social gathering and interaction.

Informal playscapes can offer a wide range of open-ended play options that allow people to be creative and use their imagination. They can have multi-generational appeal to children, families, and people of all ages.



MURALS

Along its length the rail line rises and dives as it travels through different environments. Artworks may include:

- ▶ Construction hoardings
- ▶ Painted mural treatments to noise walls
- ▶ Applied or cast panel treatments to noise walls
- ▶ Integrated lighting to noise walls
- ▶ Painted ancillary buildings, such as bike storage.
- ▶ Service buildings on platforms and surround areas



CIVIL INFRASTRUCTURE

Grade separated structures such as ramps, viaducts, dives, tunnels and bridges extending over and under the new rail. Artwork opportunities include;

- ▶ Vertical surfaces of viaducts
- ▶ Painted or applied soffit treatments
- ▶ Painted or applied columns
- ▶ Retaining walls and bridge embankments
- ▶ Integrated lighting solutions

05

MALAGA STATION

URBAN CONTEXT

OVERVIEW

Malaga is the City of Swan's major industrial precinct and its largest employment centre. Malaga has evolved into a precinct that is home to over 3,000 businesses employing approximately 15,500 workers.

Malaga Station is located in close proximity to the surrounding suburbs of Ballajura and Bennett Springs, with Beechboro and Malaga also nearby.

Situated on the edge of an important remnant banksia woodland, the station and its surrounding precinct will be the heart of a large residential and mixed-use development planned for the area.

Malaga Station is where the train experience changes from the freeway rail to the bushland rail. Rising out of the tunnel from under Tonkin Highway, the train arrives at Malaga Station before traveling through the Whiteman Park landscape.

The rail corridor passes near low banksia bushland hills that forms a crescent around land feeding water into the Bennett Brook. The site provides sweeping views over the Whiteman Park plains to the Darling Scarp beyond.

Although the station will deliver connectivity to the adjoining residential communities and the Malaga industrial precinct, these areas lie behind the hills and out of view.

Future development of the Town Centre will bring radical change to area, though the landscape setting and connections to Whiteman Park, Bennett Brook Catchment, Swan River and the Darling Scarp are retained.

HISTORY

Malaga formed as an industrial centre, focussed around the Manx Brickworks and a sand quarry. In 1963 the area was reserved as an industrial area and in 1969 the name 'Malaga' was registered as a suburb.

It's not clear whether the name Malaga was adopted from the Spanish city of the same name or the Aboriginal word "malaga" meaning "ironstone".

Over the past 30 years, the industrial area has grown rapidly and now has more than 3,000 businesses with a workforce of almost 16,000 people.

Malaga is surrounded by residential suburbs. The largest is Ballajura which has a range of community facilities such as an aquatic centre, library, community centre, parks and public open spaces.

The Ballajura area, particularly Emu Swamp and the surrounding wetlands, has cultural significance for Aboriginal people as a source of fresh water and a hunting ground.⁴

The Ballajura area was first settled in 1905, when Ernest Maltby Kerruish, an immigrant from the Isle of Man, purchased land for a farm at the present site, which at the time was located in Caversham. He named it Ballajura, after a farm at Maughold on the Isle of Man.

Bennett Brook ran through the Ballajura Farm. It was named after Matilda Bennett, also an Isle of Man descent who was the wife of John Septimus Roe, the first surveyor general of Western Australia under the first governor of the state, Sir James Stirling.

John Creer and Arthur Eaton, who also emigrated with Kerruish from the Isle of Man, joined him in clearing the land to build a house and begin farming the land. After a few years, Kerruish decided the soil was not fertile enough and moved his operations to an established vineyard in the present-day Caversham area, a few kilometres southeast.

By 1970, the Ballajura area was part of a larger pastoral holding and remained leased as a cattle farm until 1977.

Ballajura was developed as a residential suburb from 1978 and by 1981. The suburb was further developed in the 1980s with the establishment of two sub-divisions at Lakeshore and the Lakes Estate. The population increased rapidly during the early 1990s and then slowed in the early 2000s.

⁴ Ballajura Local Area - City of Swan website

ENVIRONMENT

The station is located on the south west boundary of Whiteman Park and within the Bennett Brook Catchment. The majority of the catchment is covered by the Gngara Pine Plantation and Whiteman Park.

Bennett Brook was once a natural creek system; however its tributaries to the west have been modified over time. The Brook is fed primarily by groundwater seepage from the Gngara Mound and stormwater from the surrounding industrial, residential and rural areas.

The water system flows south-east before entering the Swan River, upstream of Success Hill in Bassendean.

Increased groundwater pumping in the northern part of the catchment has lowered groundwater levels, consequently reducing flow into the brook.

Conversely, the southern part of the catchment has elevated flow due to the construction of drainage networks and increased runoff from hard surfaces.

SENSE OF PLACE

Currently the station site is located on semi-rural land and has no urban setting. With the future development of a town centre, the Sense of Place will change radically.

Malaga Station will become the heart of the new Town Centre and should be a place that feels occupied and owned by the community it services.

In order to achieve a distinct urban experience and eliciting a sense of belonging in the community, the Malaga Station should have the following qualities:

Spring

‘The station feels like a bubbling spring reviving liveliness. People, nature and water are flowing through the spaces, aerating and animating the precinct. It is the source that is connected to the Bennett Brook system as well as the metropolitan area.’

Young

‘The new Town Centre is an opportunity for a new start, with fresh concepts to reconcile with the original values of the site.’

Outwards

‘The station feels open and outward looking, both physically and mentally. It maximising the topographic qualities, with views to the surrounding landscape and connections outwards. It is future-orientated and looking for new horizons.’⁵

⁵ *Malaga Station Precinct-Preliminary Place Plan*

THE STATION

Malaga Station is located between the suburbs of Ballajura and Bennett Springs, with Beechboro and Malaga in close proximity.

The station will be constructed on a greenfield site between Beechboro Road North, Marshall Road and Tonkin Highway in the suburb of Whiteman, allowing for future development around the station.

A large car park, located south-east of the station, will provide eleven hundred car bays and a drop off area.

A dedicated bus interchange with twelve bus stands will be constructed as well, providing feeder bus services to nearby suburbs.

Future development of a Town Centre will bring radical changes to the station's urban context. The station is likely to become the town's civic heart, delivering connectivity to the adjoining residential communities and the Malaga industrial precinct.



1 Welcome Place

Curatorial Vision

The Welcome Place will be the heart of both the station and the new Malaga Town Centre. It is a meeting place where people congregate or dwell before proceeding on their journeys.

The artworks will celebrate emergence of the town centre and be inspired by the Bennett Brook Catchment and natural bushland setting that lies beyond. They will celebrate Noongar connection to place through the expression of cultural stories and themes.

Artworks may express line wide and location specific themes developed through a collaborative design process.



Artwork Intention

Integrated landscape elements are part of the line-wide approach that explores shared themes and narratives across stations.

Artworks may be large-scale or fine-grained expressions of place that build a community identity. They can:

- ▶ Celebrate local culture, history and stories.
- ▶ Encourage exploration and discovery
- ▶ Enrich the user experience by providing arrival experiences and assisting with wayfinding.

Scale

- ▶ Medium scale markers that define destinations, meeting points and decision points;
- ▶ Small-to-medium scale artworks and integrated elements that contribute to the waiting experience.

Opportunities

1. Stand-alone nodal artworks;
2. Harbour treatments;
3. Coloured, sandblasted or inlaid paving;
4. Interpretive signage and text elements;

Budget

46% of the overall station art budget

Procurement Method

The development of line wide integrated landscape elements may be achieved by:

- ▶ Open Competition
- ▶ 'Design only' elements developed as line wide themes through Noongar Design Workshops

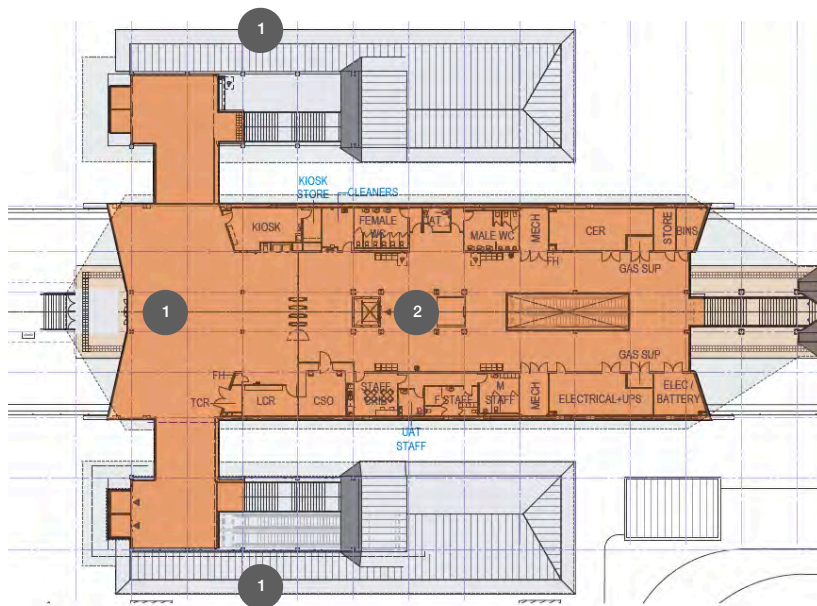
2 Station Building

Curatorial Vision

Integrated into the fabric of the station building, the artworks will be 'value added' elements that can be appreciated from multiple external vantage points, including the Kiss and Ride, Welcome Place, car parks, bus interchanges, pathways and landscaped spaces.

They artworks may be experienced when approaching the building from a distance or internally as part of the vertical circulation. They may include screening treatments to the entry building facades and concourse glass balustrading.

The approach may be line-wide, emphasising the connections between stations or a more localised response to the Malaga site and the surrounding environment.



Artwork Intention

Integrated landscape elements are part of the line-wide approach that explores shared themes and narratives across stations.

Artworks may be large-scale or fine-grained expressions of place that build a community identity. They can:

- ▶ Provide common elements and thematic connections between stations;
- ▶ Celebrate local culture, history and stories;
- ▶ Enrich the user experience by providing arrival experiences and assisting with wayfinding.

Scale

- ▶ Large to medium scale integrated elements that may extend over large areas;
- ▶ Fine grained elements of patterned and texture.

Opportunities

1. Perforated metal screens in concourse and vertical circulation buildings;
2. Fritted glass to station canopy skylight (refer to Whiteman Park Station image for typical skylight detail);

Budget

40% of the overall station art budget

Procurement Method

The development of line wide integrated architectural elements may be achieved by:

- ▶ Open Competition
- ▶ 'Design only' elements developed as line wide themes through Noongar Design Workshops

06

REFERENCES

The following documents and websites have been referenced in the preparation of the Plan:

- ▶ METRONET Public Art Strategy
- ▶ METRONET Morley-Ellenbrook Line Public Art Guide
- ▶ METRONET Aboriginal Engagement Strategy (Gnarla Biddi)
- ▶ METRONET Noongar Cultural Context - Gyinning/Morley-Ellenbrook Line
- ▶ METRONET Station Precinct Guide
- ▶ Ellenbrook Station - Preliminary Place Plan (Place Laboratory)
- ▶ City of Swan - Ellenbrook Local Area Plan
- ▶ City of Swan - Growth Corridor Local Area Plan
- ▶ Whiteman Park Station Station - Preliminary Place Plan (Place Laboratory)
- ▶ Whiteman Park Strategic Plan 2017-2021 (Department of Planning)
- ▶ <https://www.whitemanpark.com.au/>
- ▶ <https://www.bushlandperth.org.au/treasures/whiteman-park/>
- ▶ Malaga Station - Preliminary Place Plan (Place Laboratory)
- ▶ City of Swan - Malaga Local Area Plan
- ▶ City of Swan - Ballajura Local Area Plan
- ▶ Beeralain/Bayswater - Station Precinct Placemaking Plan (UDLA and Apparatus)
- ▶ <https://www.noongarculture.org.au/>

Appendix I – Bushfire Management Plan



Metronet – Malaga Station

Beechboro Road North, Malaga

Bushfire Management Plan

Date: 13 August 2021

Prepared For: Perth Transport Authority

Linfire Ref: 20210416136LOR-BMP-001_1a

Linfire Consultancy

ABN: 577 930 47299



Revision	Issue Date	Revision Description	Approved By
0	11 June 2021	Issued for Approval	Linden Wears (Level 3 BPAD 19809)
1a	13 August 2021	Issued for Approval	Linden Wears (Level 3 BPAD 19809)

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Fire is an unpredictable force of nature. Changing climatic factors (whether predictable or otherwise) either before or at the time of a fire can also significantly affect the nature of a fire and in a bushfire prone area it is not possible to completely guard against bushfire. The mitigation strategies contained in this Bushfire Management Plan (BMP) are considered to be prudent minimum standards only, based on the standards prescribed by relevant authorities. It is expressly stated that Linfire do not guarantee that if such standards are complied with or if a property owner exercises prudence, that a building or property will not be damaged or that lives will not be lost in a bush fire.

Further, the achievement of the level of implementation of fire precautions will depend on the actions of the landowner or occupiers of the land, over which Linfire has no control. If the proponent becomes concerned about changing factors then either a review of the existing BMP, or a new BMP, should be requested. Linfire accepts no liability or responsibility whatsoever for or in respect of any use or reliance upon this report and its supporting material by any third party.

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1.0 Proposal details

1.1 Background

Melconnx, on behalf of the Perth Transport Authority (PTA; the Proponent) is seeking to lodge a Development Application (DA) in relation to proposed development of a Malaga Train Station at Lots 11 and 810 Beechboro Rd North, Whiteman (the project area) located in the City of Swan.

The development plan (see Figure 1) identifies that the proposed development will comprise the following elements:

- Station building with platform and concourse areas
- Roof canopy
- Bus interchange including fire booster connection and DFES hardstand
- Kiss n Ride drop off area
- Bike shelter
- Signalling Equipment Room (building) and radio mast
- Services area including bins, irrigation tanks and Western Power infrastructure
- Fire pumps and tanks
- Welcome Place outdoor plaza
- Onsite carparking.
- Onsite roads consisting of:
 - Public roads
 - Internal driveways
 - Internal access roads
 - Services roads
- Pedestrian shared path (PSP) - footpaths
- Onsite landscaping/drainage
- 4No. Future Development lots (developments not included in this DA)
- A future carpark (not included in this DA)
- Metronet railway track and associated batters (not included in this DA)
- Beechboro Road North upgrade works (not included in this DA)
- Western Power substation and Traction Power substations, and access road, to the south of the development (none of this is included in this DA)

The project area extends around the portions of the overall Metronet project that are included in this development application, as shown in Figure 2. The 4 future development lots and the future carpark are included in the project area, however these will simply be cleared of vegetation and levelled for future development. These will be subject to future development applications and are not addressed as part of this BMP which will assume they are cleared and maintained in a non-vegetated or as low threat vegetation. The roads will be constructed as shown on Figure 2.

The construction of the railway line and the modification of Beechboro Road North are parts of separate work packages and not part of this development application. It has been assumed as part of this BMP that both the railway construction and Beechboro Road North upgrade will be completed prior to occupancy. The proposed Western Power and Traction Power substations to the south of the project area, and the access road, will all be subject to a separate planning application and are not considered as part of this BMP.

The station will be operated by PTA and is manned at all times that it is open to the public.

Vehicular access to the station for the public is via the main entrance south of the project area, from Beechboro Road North, with buses able to enter the bus interchange via another entrance further north also from Beechboro Road North. The main entrance road along the southern boundary of the project area is a public road that extends up to the Welcome Place, and spurs into the carpark in four locations to serve the Future Development lots, as depicted on Figure 2. The public road also extends west to a temporary turning head. Future public roads are proposed within future development to the south-west of the station and also to the north the railway, via a bridge over the rail alignment.

The remainder of the roads within the project area are all considered private driveways including:

- the internal carpark roads
- the bus interchange driveway
- the service road from the temporary turning head to the firewater pumps/tanks
- the service road to the bins/irrigation tanks/substation area
- the maintenance track to the rear of the future carpark site
- the service road providing access along the southern railway alignment boundary, connecting to the bus interchange road and extend to the north-east along the alignment.

Access control will be provided on the following roads, to prevent unauthorised access or use by the public

- the service road to the fire pumps and tanks and
- the on-tracking service road located immediately to the west of the future carpark
- the service road from the bus interchange

A temporary Emergency Access Way (EAW) is also proposed to connect the internal carpark driveway to the bus interchange driveway, to permit vehicles to use the other Beechboro Road North connection, in an emergency bushfire situation. This EAW is a temporary measure required to until the internal road network is provided with a second connection to the existing public road network.

Given the nature of the facility, this station has its own onsite fire hydrant system which consists of dedicated fire water tanks, pump room and booster connection. Emergency management provisions, including evacuation, is expected to be conducted in accordance with the PTA Emergency Management Manual (EMM). Linfire note that while the PTA EMM details the response to a variety of onsite emergencies, including station fires, there isn't any specific information in the EMM relating to bushfire emergencies, which may require different responses and evacuation protocols to other emergencies. As outlined in Section 1.4, it is proposed that bushfire emergency management measures be incorporated into the PTA EMM to satisfy bushfire policy requirements.

1.2 Site description

The project area extends around the overall development boundary for this development application, as shown in Figure 2, and is surrounded by:

- remnant bushland to the north with Whiteman Park to the north-east
- remnant bushland and Tonkin Highway to the west
- remnant bushland immediately to the south, with the existing Potters House Christian Centre and Marshall Road further south
- Beechboro Road North immediately to the east, with grazed agricultural land further west.

1.3 Habitable buildings and assets

Review of the proposed development has identified the following proposed habitable buildings and assets that Linfire consider require protection from bushfire impact:

- Main station rooms and infrastructure (beneath the main station canopy) on both the platform and concourse levels including toilets, staff crib, kiosk, offices, cleaners room, electrical and communications rooms and other infrastructure.
- Lift lobby building located immediately south of the main station canopy
- Toilets/Communications/Electrical/Mechanical building on the eastern part of the platform, not located beneath the main canopy
- The Signalling Equipment Room located to the east of the main station
- Fire pumps and tanks

The various buildings and assets are depicted on Figures 1 and 2, and in Appendix 1.

Linfire note that the fire pump and tanks are not considered habitable buildings, however given the importance of this asset it is considered appropriate that are provided a level of protection from bushfire, especially given loss of this infrastructure would result in a lack onsite water supply.

1.4 Purpose

The project area contains proposed habitable development located within a designated bush fire prone area that is subject to a BAL rating above BAL-Low. On this basis, this Bushfire Management Plan (BMP) has been prepared to address requirements under Policy Measures 6.2 and 6.5 of *State Planning Policy 3.7 Planning in Bushfire-Prone Areas* (SPP 3.7; WAPC 2015) and *Guidelines for Planning in Bushfire-Prone Areas* (the Guidelines; WAPC 2017).

The proposed development is considered to be a vulnerable land use which triggers additional requirements under Policy Measure 6.6 of SPP 3.7. In accordance with Policy Measure 6.6.1 and Section 5.5 of the Guidelines, development applications for vulnerable land uses require a Bushfire Emergency Evacuation Plan (BEEP) detailing the emergency management provisions for the facility, accompanies the BMP.

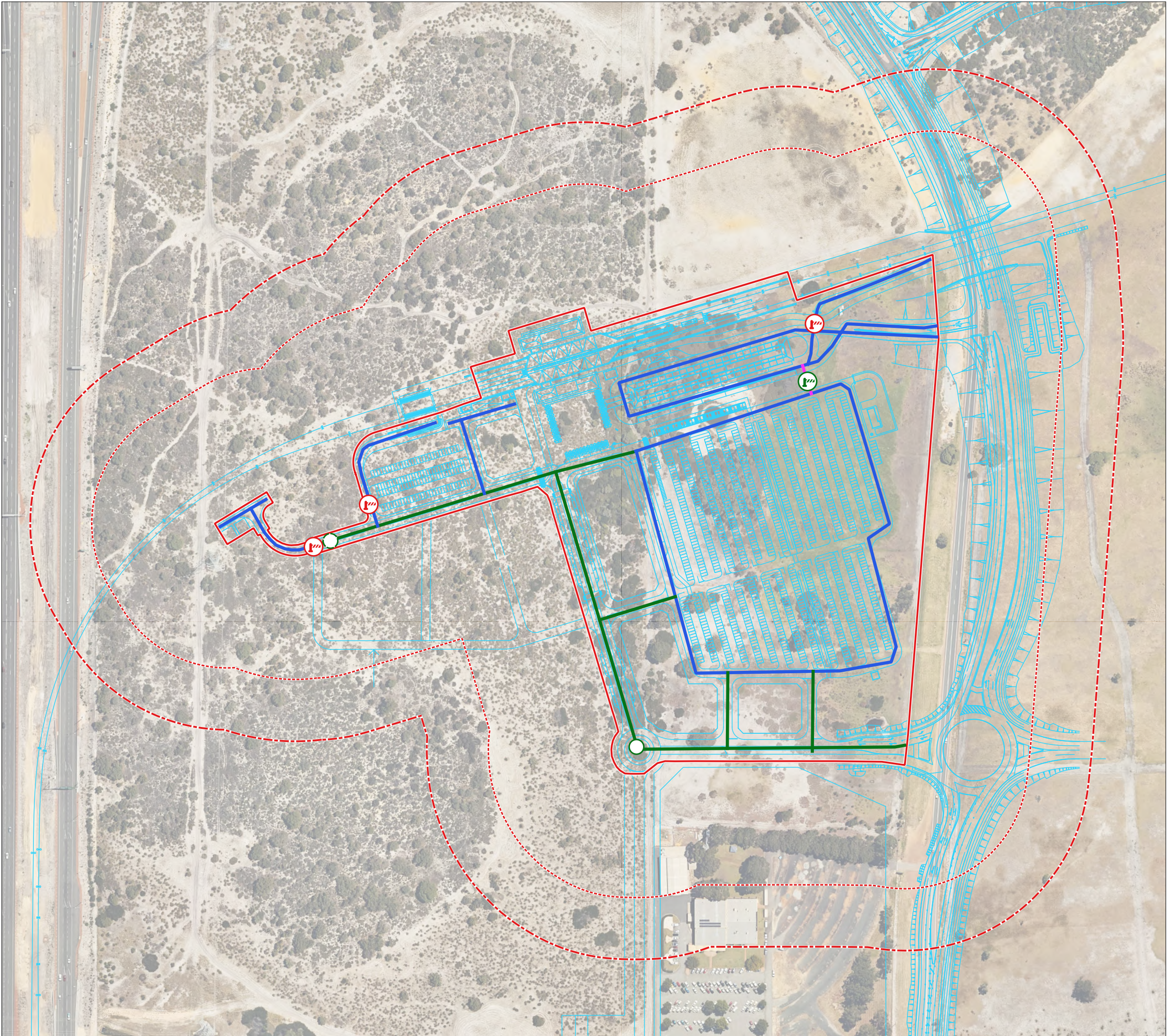
For this project, it is proposed that a BEEP is not prepared at this time, but is included as a future implementation measure within this BMP and conditioned as part of the DA approval. Linfire consider the most appropriate approach is to have the proposed bushfire emergency management arrangements for this station be incorporated into the existing PTA EMM to standardise the procedures. To achieve this, there is a significant liaison process required with PTA, which given occupation of the station by vulnerable occupants (i.e the public) isn't likely until 2024, there is considerable time to define these bushfire emergency management arrangements. This BMP will provide some guidance about the overall strategy, to provide decision-makers some information regarding the anticipated emergency management measures. Notwithstanding, a standalone BEEP for the station may still be an option if this is PTA's preference, however it should be aligned and referenced in the EMM.

1.5 Other plans/reports

There are no known bushfire or assessments that have been prepared previously for the project area.



Plate 1: Map of Bush Fire Prone Areas (DFES 2021)



Legend

-  Access Gate (locked)
-  Access Gate (unlocked)
-  Turning Head
-  Temporary Turning Head
-  Proposed Development
-  Public Road
-  Emergency Access Way
-  Private Driveway
-  Project Area
-  100m Assessment Area
-  150m Assessment Area

Scale 1: 3,500



0 40 80 120 Metres



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Public Transport Authority

Metronet: Malaga Station

Figure 2: Site Overview and Vehicular Access

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2.0 Environmental considerations

2.1 Native vegetation - modification and clearing

The project area contains both areas of remnant vegetation and regenerated vegetation on previously cleared land, and all this vegetation will require clearing as part of the proposal. Table 1 provides a summary of a search of free publicly available environmental data.

Linfire understand all environmental impacts resulting from implementation of the proposal, if any, will be addressed under standard State and Federal environmental assessment and referral requirements under the Environmental Protection Act 1986 and Environment Protection and Biodiversity Conservation Act 1999.

Table 1: Summary of environmental values

Environmental value	Not mapped as occurring within or adjacent to the project area	Mapped as occurring within or adjacent to the project area		Description
		Within	Adjacent	
Environmentally Sensitive Area			✓	No Environmentally Sensitive Area have been identified within the project area but has been immediately to the north of Beechboro Rd North
Swan Bioplan Regionally Significant Natural Area	✓			No Regionally Significant Natural Areas were identified.
Ecological linkages	N/A	N/A	N/A	This layer not publicly available at the time of document preparation.
Wetlands			✓	No Conservation Category wetlands are identified within the project area however one is located to the north of Beechboro Road North. A Resource Enhancement wetland is located over the eastern portion of the project area. No Ramsar sites are mapped as occurring within or adjacent to the project area.
Waterways	✓			No waterways or lakes within or adjacent to the project site.
Threatened Ecological Communities listed under the EPBC Act		✓	✓	National Map shows the project area and the surrounding area as containing Threatened Ecological Communities.
Threatened and priority flora	N/A	N/A	N/A	This layer not publicly available at the time of document preparation.

Environmental value	Not mapped as occurring within or adjacent to the project area	Mapped as occurring within or adjacent to the project area		Description
		Within	Adjacent	
Fauna habitat listed under the EPBC Act	✓			No Fauna habitat listed under the EPBC Act is mapped as occurring within the project area. Land within the project area is mapped as being a potential roosting area for endangered Carnaby's Black Cockatoo, and also an area requiring investigation for feeding habitat. The project area shows no potential Western Ringtail Possum habitat.
Threatened and priority fauna	N/A	N/A	N/A	This layer not available at the time of document preparation.
Bush Forever Site			✓	No Bush Forever site is identified within the project area. Bush Forever site 304 is located to the north and east of Beechboro Rd North
DBCA managed lands and waters (includes legislated lands and waters and lands of interest)	✓			No DBCA managed or legislated land and waters were identified within or adjacent to the project area.
Conservation covenants	✓			No information has been provided by the client regarding Conservation Covenants.
Aboriginal Heritage		✓	✓	The project area and surrounds are mapped as being a Register Aboriginal Site.
Crown Reserves	✓			No Crown Reserves were identified within or adjacent to the project area.

2.2 Revegetation and Landscaping

The proposed development is to include a combination of proposed revegetation and onsite managed landscaping as part of the proposal. The landscaping strategy for the project area is to include the following treatments:

- proposed revegetation planting along the eastern and southern interfaces of the carpark with a Class B woodland vegetation structure (low understorey species <0.5 m high with trees between 10% - 30% canopy cover). This occurs both within the project area and adjacent to the proposed Beechboro Road North upgrade as part of a separate work package.

- landscaping within the carpark and, along the roads and around the proposed station.

Asset Protection Zones (APZs) are to be implemented around nominated buildings, to the dimensions detailed in this BMP, and complying with the APZ standards from the Guidelines (see Schedule 1 in Appendix 3). Outside the APZs, the managed landscaping around the station is to consist of either non-vegetated elements or low threat landscaping in accordance with AS 3959—2018 Clauses 2.2.3.2 (e) and (f).

Linfire understand that there will no revegetation, landscaping or drainage basins along the rail alignment, within 150 m of the project area. Additionally, the batters from the railway alignment will be maintained in a non-vegetated state. As such, the proposed rail alignment and batters has been excluded from classification on the basis it will be non-vegetated or managed as low threat vegetation.

The Future Development lots and carpark are understood to be cleared and levelled (and most likely sprayed with hydromulch to prevent wind erosion) as part of this DA, and as such, have been excluded as non-vegetated or managed low threat landscaping in accordance with AS 3959—2018 Clauses 2.2.3.2 (e) and (f).

3.0 Bushfire assessment results

3.1 Assessment inputs

3.1.1 Vegetation classification

Linfire assessed classified vegetation and exclusions within 150 m of the project area through on-ground verification on 26 May 2021 in accordance with AS 3959—2018 *Construction of Buildings in Bushfire-Prone Areas* (AS 3959; SA 2018) and the *Visual Guide for Bushfire Risk Assessment in Western Australia* (DoP 2016). Georeferenced site photos and a description of the vegetation classifications and exclusions are contained in Appendix 1 and depicted in Figure 3 and Table 2.

The following vegetation classifications were identified during the site inspection within the project area and adjacent 150 m assessment area:

- Class G grassland
 - Unmanaged grassland with isolated mature trees to the north, south and east of the project area
- Class D scrub
 - predominately comprised of low groundcovers and small trees (3-6 m high) with a significant number of banksia species.
 - Remnant scrub vegetation occurs to the north, north-east, west and south of the project area
- Class A forest
 - Occurs to the north of the project area at higher elevation with a structure of low groundcovers and small trees, with more mature trees (>6m high) also throughout the plot
 - Also occurs in a small plot to the south of the project area, adjacent to the existing Christian Centre.
- Class B woodland
 - The proposed revegetation to the south and east of the carpark, both within the project area and also as part of the Beechboro Road North upgrade, is to consist of low understorey species (<0.5 m high) and trees that will be between 10% - 30% canopy cover.

The project area and adjacent 150 m assessment area also contains land excluded from classification, including:

- existing non-vegetated areas and low threat vegetation including buildings, roads, managed road verge along Beechboro Road North (to be retained post-development) and managed gardens within the Christian Centre to the south, excluded under Clauses 2.2.3.2 (e) and (f).
- areas of existing vegetation to be modified to non-vegetated areas and low threat vegetation as part of the proposed development in accordance with Clauses 2.2.3.2 (e) and (f).

The vegetation mapping in Figure 3 reflects the post-development outcome anticipated following completion of the railway alignment construction and the Beechboro Road North upgrade. This includes the following:

- creation and management of APZs in a non-vegetated state or as low threat vegetation compliant with the APZ standards

- the railway alignment and associated batters being constructed and maintained in a non-vegetated state (or low threat vegetation, however this is unlikely)
- the Future Development lots and carpark being created and maintained as either non-vegetated or as low threat vegetation
- Beechboro Road North being constructed as per the proposed plan with revegetation to be established within the existing road reserve as detailed above and depicted Figure 3. Where it is unclear what the revegetation might be it has been assumed to be Class B woodland on the western boundary and Class G grassland on the eastern interface. These areas will have no BAL impact on the proposed buildings.

3.1.2 Effective slope

Linfire assessed effective slope under classified vegetation through on-ground verification on 26 May 2021 in accordance with AS 3959. Results were cross-referenced with Landgate 5m contour data and are depicted in Table 2 and Figure 3.

Site observations indicate that land within the project area, and within the 150 m assessment area, are situated on land sloping from the north to the south-east, with variation in slope beneath classified vegetation ranging from flat/upslope to less than 5° downslope in relation to the project area. On this basis, Linfire has assigned effective slopes accordingly, ranging from flat/upslope to downslope 0°-5° for the various classified vegetation plots.

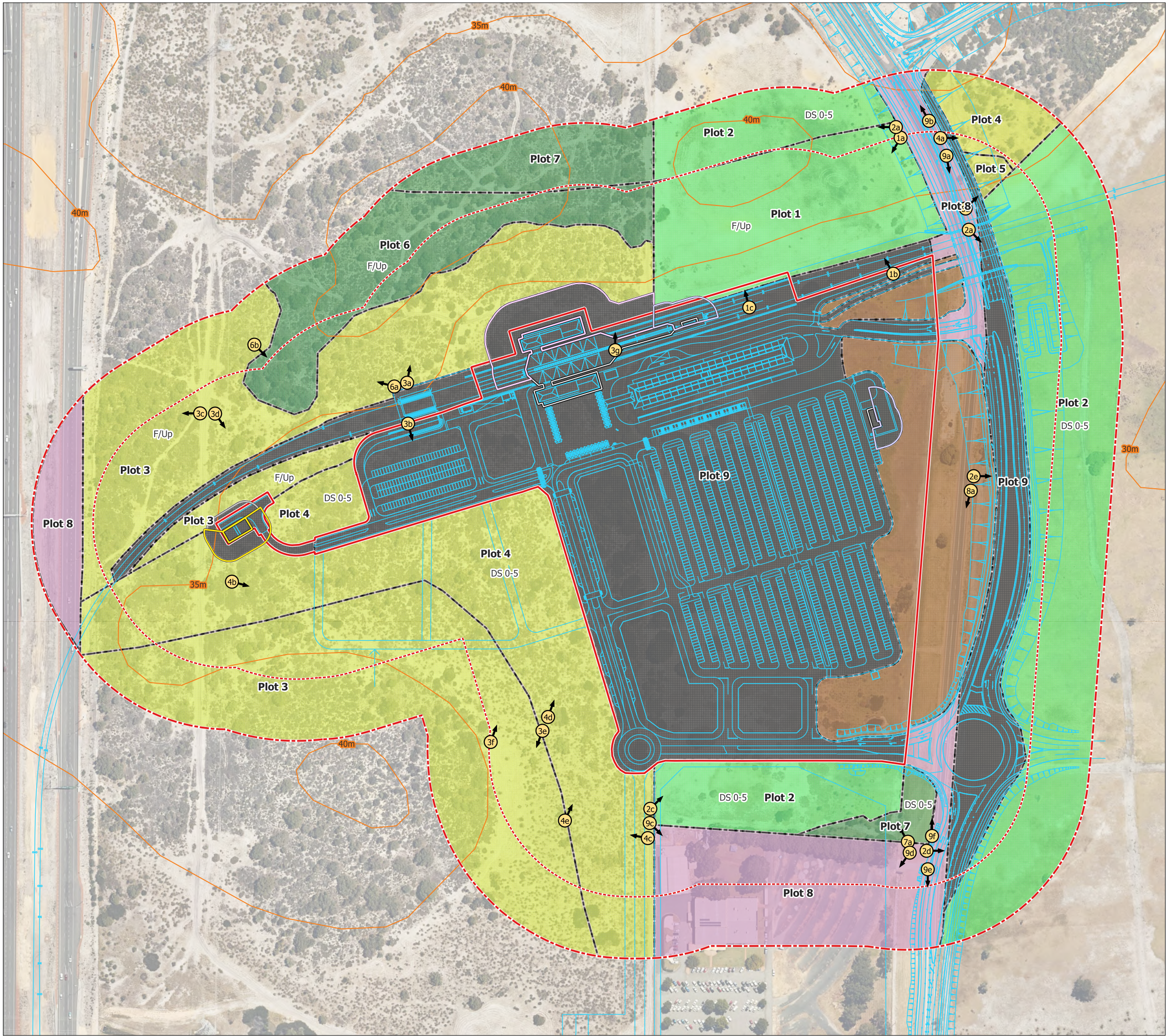
3.1.3 Summary of inputs

Table 2 illustrates the anticipated post-development vegetation classifications and exclusions following completion of development works and modification of existing vegetation to a non-vegetated or low threat state, throughout much of the project area and along the railway alignment and batters. The post-development vegetation classifications/exclusions and effective slope are summarised in Table 2.

Table 2: Post-development vegetation classifications/exclusions and effective slope

Vegetation plot	Vegetation classification	Effective slope	Comments
1	Class G Grassland	Flat/upslope (0°)	Plot of unmanaged grassland vegetation to the north of the railway alignment
2	Class G Grassland	Downslope >0–5°	Small plots of grassland north and south of the project area, with another to the east of Beechboro Road North
3	Class D Scrub	Flat/upslope (0°)	Plots of remnant banksia dominated scrub vegetation to the north, north-west and west of the project area. Contains vegetation <6m in height, however much of the vegetation is <1m high with areas that are non-vegetated.
4	Class D Scrub	Downslope >0–5°	Plots of remnant banksia dominated scrub vegetation to the west of the project area. Similar to Plot 3, contains vegetation <6m in height, however much of the vegetation is <1m high with areas that are non-vegetated.
5	Class D Scrub	Downslope >5–10°	Small plot of scrub vegetation to the north-east of the project area on a steeper downslope

Vegetation plot	Vegetation classification	Effective slope	Comments
6	Class A Forest	Flat/upslope (0°)	Located to the north of the project area. Similar scrub structure to Plots 3 and 4, but with mature trees >6m height that also >10% canopy cover.
7	Class A Forest	Downslope >0–5°	Located in small plots to the north and south of the project area. Similar scrub structure to Plots 3 and 4, but with mature trees >6m height that also >10% canopy cover.
8	Class B Woodland	Downslope >0–5°	To be introduced as part of proposed revegetation to the south and east of the carpark, both within the project area and also as part of the Beechboro Road North upgrade. Will consist of low understorey species (<0.5 m high) and trees that will be between 10% - 30% canopy cover.
9	Excluded – Non-vegetated and Low threat (Clause 2.2.3.2 [e] and [f])	N/A	Existing non-vegetated elements (buildings, roads etc) and low threat vegetation, adjacent to the project area
10	Excluded – Non-vegetated and Low threat (Clause 2.2.3.2 [e] and [f])	N/A	Existing classified vegetation within the project area to be modified to non-vegetated or low threat vegetation as part of the proposed development This includes the non-vegetated elements and managed landscaping within the project area, the APZs and the railway reserve. The proposed vegetation within the carpark has been excluded on the basis that it will be managed by the PTA on an ongoing basis, and the vegetation is contained in isolated



Legend

- Site Photo
- Contours
- Proposed Development
- Project Area
- 100m Assessment Area
- 150m Assessment Area
- Building Outline
- Asset Protection Zone
 - 13m
 - 15m
 - 17m
 - 27m
- Vegetation Plot
- Classified Vegetation
 - A. Forest
 - B. Woodland
 - D. Scrub
 - G. Grassland
 - Excluded Clause 2.2.3.2(e&f)
 - Modified to non vegetated and low threat

Scale 1: 3,500

0 40 80 120 Metres



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Figure 3: Post-development vegetation classification and effective slope

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3.2 Assessment outputs

3.2.1 Bushfire Attack Level (BAL) contour assessment

Linfire has undertaken a BAL contour assessment in accordance with Method 1 of AS 3959 for the project area (see Figure 4). The Method 1 procedure incorporates the following factors:

- state-adopted FDI 80 rating
- vegetation classification
- effective slope
- distance maintained between proposed development areas and the classified vegetation.

The BAL rating gives an indication of the level of bushfire attack (i.e. the radiant heat flux) that may be received by proposed future development and subsequently informs the standard of building construction and/or setbacks required for proposed habitable development to potentially withstand such impacts.

The BAL contours are based on:

- the vegetation classifications and effective slope observed at the time of inspection as well as consideration of the post-development conditions resulting from proposed on-site clearing extent and vegetation management, resultant vegetation exclusions and separation distances achieved in line with the Development Plan and Sections 2.2 and 3.1.1.
- the proposed revegetation around the southern and eastern extents of the carpark and within upgraded Beechboro Road North reserve, with woodland vegetation structure as per AS 3959
- the Proponent maintain landscaping within the carpark as low threat vegetation on an ongoing basis to enable exclusion of the carpark as non-vegetated and low threat vegetation under Clauses 2.2.3.2 (e) and (f).

Should there be any changes in development design or classified vegetation extent that results in a modified BAL outcome, then the BAL contours will need to be reassessed.

The results of the BAL contour assessment are detailed in Table 3 and illustrated in Figure 4. The highest BAL applicable to the proposed buildings and elements is BAL-29, following implementation of the proposed Asset Protection Zones and other vegetation modification in line with the Landscaping Plan ensuring all development will be in BAL-29 or less.

Table 3: BAL contour assessment results to proposed buildings and assets

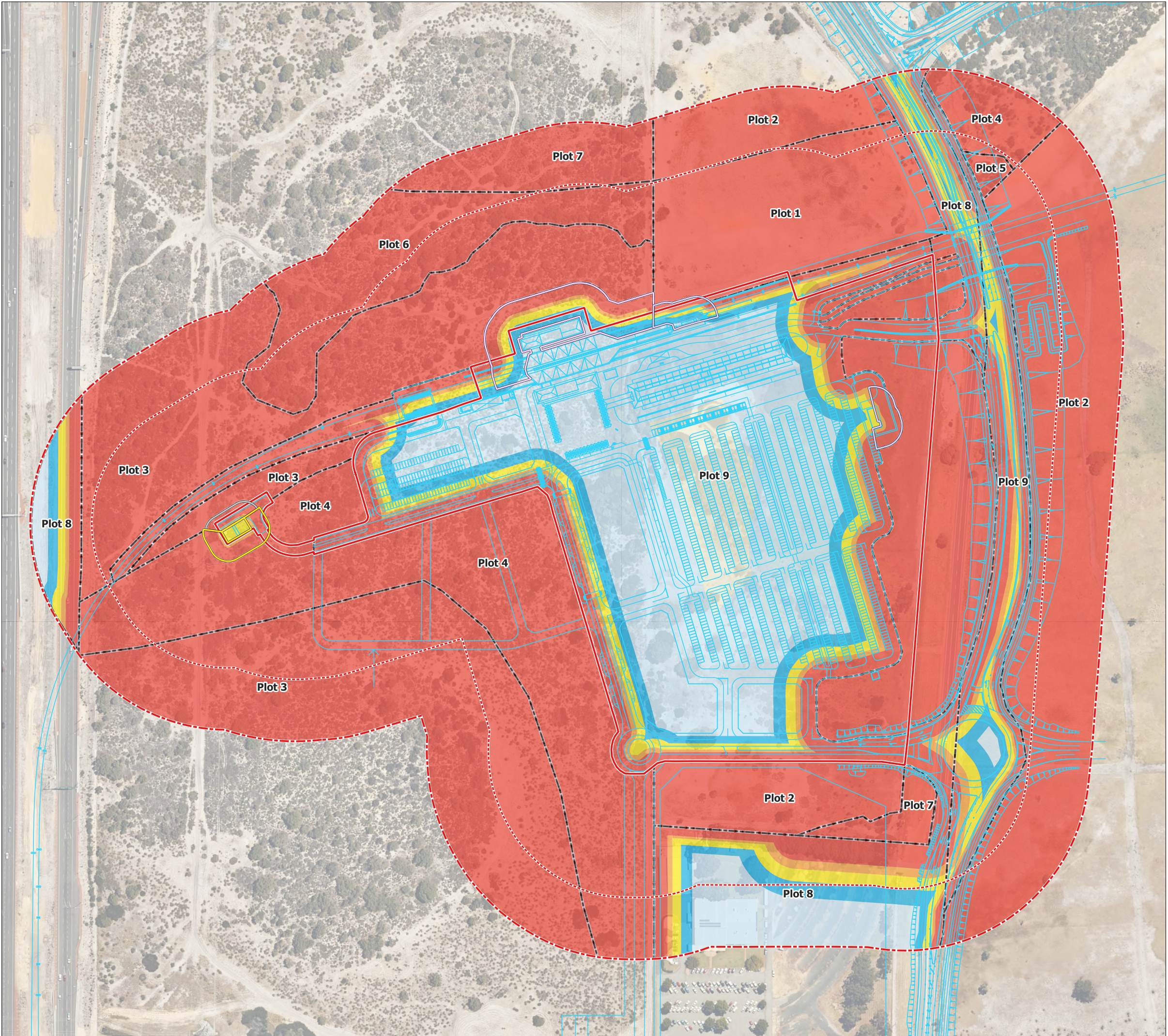
Method 1 BAL determination				
Plot	Vegetation classification	Effective slope	Separation distance	Highest BAL
1	Class G Grassland	Flat/upslope (0°)	17 m	BAL-12.5
2	Class G Grassland	Downslope >0–5°	>100 m	BAL-Low
3	Class D Scrub	Flat/upslope (0°)	13 m	BAL-29
4	Class D Scrub	Downslope >0–5°	15 m	BAL-29
5	Class D Scrub	Downslope >5–10°	>100 m	BAL-Low
6	Class A Forest	Flat/upslope (0°)	69 m	BAL-12.5
7	Class A Forest	Downslope >0–5°	>100 m	BAL-Low

Method 1 BAL determination				
Plot	Vegetation classification	Effective slope	Separation distance	Highest BAL
8	Class B Woodland	Downslope >0–5°	17 m	BAL–29
9	Excluded – Non-vegetated and Low threat (Clause 2.2.3.2 [e] and [f])	N/A	N/A	BAL–Low
10	Excluded – Non-vegetated and Low threat (Clause 2.2.3.2 [e] and [f])	N/A	N/A	BAL–Low

Table 4 lists the BAL applicable to each building or element within the proposed development.

Table 4: BAL applicable to each building/element

Building / element	Initial BAL (no management)	Proposed vegetation management	Revised BAL
Station building including lift lobby building (south of the main station canopy)	BAL–FZ	17 m -27 m variable width APZ around the building, in conjunction with onsite landscaping and revegetation and the proposed clearing along the rail alignment.	BAL–12.5
Toilets/Communications/Electrical/Mechanical building (on platform)	BAL–FZ	17 m -27 m variable width APZ around the building, in conjunction with onsite landscaping and revegetation and the proposed clearing along the rail alignment.	BAL–12.5
Signalling Equipment Room	BAL–FZ	17 m wide APZ around the building, in conjunction with onsite landscaping and revegetation and the proposed clearing along the rail alignment.	BAL–29
Fire Pumps and Tanks	BAL–FZ	13 m -15 m variable width APZ around the proposed pumps and tanks	BAL–29



Legend

- Proposed Development
- Project Area
- 100m Assessment Area
- 150m Assessment Area

Asset Protection Zone

- 13m
- 15m
- 17m
- 27m
- Vegetation Plot

BAL Contours

- BAL FZ
- BAL 40
- BAL 29
- BAL 19
- BAL 12.5
- BAL Low

Scale 1: 3,500



0 40 80 120 Metres



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Figure 4: BAL Contour map

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4.0 Identification of bushfire hazard issues

4.1 Bushfire context

The project area is located within an area comprising both native vegetation and previously cleared or grazed land that has had some regeneration. In close proximity to the west of the project area is Tonkin Highway with the residential land use in Ballajura further to the west. To the south is Marshall Road with Bennett Springs residential area further south.

The greatest bushfire threat to the proposed development is from Whiteman Park to the north, north-east and east of the project area in the form of forest, woodland, scrub and grassland vegetation. Some level of separation will be provided by Beechboro Road North and the proposed rail alignment, however long fire runs exceeding several kilometres will still exist following development. It is noted that there is a considerable level of fragmentation of the vegetation as it approaches the project area from these directions, which will likely produce a natural reduction in bushfire behaviour. Notwithstanding, fully developed bushfire behaviour would be expected over long fire runs with elevated radiant heat and ember attack, if left unmanaged.

A bushfire approaching from the north-east would be on a much shorter fire run of 400-500 m long however could still exhibit steady state bushfire behaviour through scrub vegetation, albeit quite stunted scrub in various area in this direction.

Based on the above, bushfire impact on the proposed development is expected to be relatively short, given the quick residence time associated with bushfire spreading through the grassland and scrub vegetation. Linfire consider it unlikely that the current fuel structure would result in the peak bushfire behaviour anticipated by AS 3959, however, if left unprotected, the project area would be expected to receive elevated levels of radiant heat and ember attack from a bushfire approaching the development.

4.2 Bushfire hazard issues

Examination of the environmental considerations (Section 2.0) and the bushfire risk assessment (Section 3.0) has identified the following bushfire hazard issues:

1. Based on the existing extent of vegetation outside proposed buildings and roads, the proposed facility is subject to an initial BAL of BAL-FZ. In order for the habitable buildings and other assets to achieve a compliant rating of BAL-29 or less, sufficient separation will be required in the form of APZs, low threat vegetation or permanent non-vegetated elements
2. Ensuring sufficient vehicular access to the proposed development, to enable egress by onsite occupants and facilitating access for fire brigade and emergency services.
3. Ensuring access to bushfire fighting water supply, to limit the travel time to water supplies for appliance refills.
4. The proposed development constitutes a vulnerable land use, primarily due to the presence of the public who may not be familiar with the facility or what to do in a bushfire emergency.

4.3 Bushfire safety strategy

The following bushfire safety strategy is proposed to demonstrate compliance with the Bushfire Protection Criteria of the Guidelines and address the bushfire hazards identified above:

1. Create sufficient separation from surrounding classified vegetation, by ensuring appropriately sized APZs are implemented around proposed buildings and assets to achieve BAL-29 or lower, and comply with the APZ standards of the Guidelines. Given

the importance of the station building, the decision has been made to implement an APZ to voluntarily achieve BAL-12.5 or lower.

2. Providing compliant vehicular access within, to and from the proposed development, consisting of public roads, private driveways and a temporary EAW, to enable occupant egress and facilitate firefighter access to the project area and in particular the firewater supply.
3. Providing a secure bushfire fighting water supply by installing the proposed on-site fire hydrant system to provide hydrant coverage to the station building. Static water tanks on the hydrant system will also enable refill of bushfire fighting appliances from the fire booster connection.
4. Ensure appropriate bushfire emergency management procedures are incorporated into the overarching PTA EMM, to enable onsite staff to appropriately manage a bushfire event impacting the proposed development including:
 - a. Monitoring of forecast Fire Danger Rating during bushfire season, and Total Fire Ban Days, to anticipate bushfire risk for the next day and consider pre-emptive actions
 - b. Maintaining situational awareness during day in bushfire season by monitoring emergency services information
 - c. Emergency management procedures for bushfire events including ceasing train and bus services and evacuating the train station.

Based on the above, Linfire considers the bushfire hazards within and adjacent to project area and the associated bushfire risks are manageable through standard management responses outlined in the Guidelines. These responses will be factored into proposed development as early as possible at all stages of the planning process to ensure a suitable, compliant and effective bushfire management outcome is achieved for protection of future life, property and environmental assets.

5.0 Assessment against the bushfire protection criteria

5.1 Compliance table

An acceptable solutions assessment against the bushfire protection criteria is provided in Table 5.

Table 5: Compliance with the bushfire protection criteria of the Guidelines

Bushfire protection criteria				Linfire response		
Element	Intent	Performance Principle	Acceptable solutions	Method of compliance	Proposed bushfire management measures	Compliance Comment
Element 1: Location	To ensure that strategic planning proposals, subdivision and development applications are located in areas with the least possible risk of bushfire to facilitate the protection of people, property and infrastructure.	<u>Performance Principle P1</u> Development location The strategic planning proposal, subdivision and development application is located in an area where the bushfire hazard assessment is or will, on completion, be moderate or low, or a BAL-29 or below, and the risk can be managed. For unavoidable development in areas where BAL-40 or BAL-FZ applies, demonstrating that the risk can be managed to the satisfaction of the Department of Fire and Emergency Services and the decision-maker.	<u>A1.1 Development location</u> The strategic planning proposal, subdivision and development application is located in an area that is or will, on completion, be subject to either a moderate or low bushfire hazard level, or BAL-29 or below.	Acceptable Solution	The BAL contour map (see Figure 4) indicates that all proposed buildings and infrastructure can be sited in an area of BAL-29 or lower, upon completion of development and implementation of the proposed Asset Protection Zones (APZs) and other onsite landscaping, in addition to the construction of the railway line and associated non-vegetated batters. The decision has been made to voluntarily achieve BAL-12.5 or lower on the station building, and the APZ around this building has been sized on this basis.	<ul style="list-style-type: none"> Compliance of the Performance Principle and Intent of Element 1 is achieved through compliance with Acceptable Solution A1.1
Element 2: Siting and design of development	To ensure that the siting and design of development minimises the level of bushfire impact.	<u>Performance Principle P2</u> The siting and design of the strategic planning proposal, subdivision or development application, including roads, paths and landscaping, is appropriate to the level of bushfire threat that applies to the site. That it incorporates a defendable space and significantly reduces the heat intensities at the building surface thereby minimising the bushfire risk to people, property and infrastructure, including compliance with AS 3959 if appropriate.	<u>A2.1 Asset Protection Zone (APZ)</u> Every habitable building is surrounded by, and every proposed lot can achieve, an APZ depicted on submitted plans, which meets the following requirements: Width: Measured from any external wall or supporting post or column of the proposed building, and of sufficient size to ensure the potential radiant heat impact of a bushfire does not exceed 29kW/m ² (BAL-29) in all circumstances. Location: the APZ should be contained solely within the boundaries of the lot on which the building is situated, except in instances where the neighbouring lot or lots will be managed in a low-fuel state on an ongoing basis, in perpetuity (see explanatory notes) Management: the APZ is managed in accordance with the requirements of 'Standards for Asset Protection Zones' (see Guidelines Schedule 1).	Acceptable Solution	On completion of development, the following APZs are to be implemented as non-vegetated elements or maintained low threat vegetation: <ul style="list-style-type: none"> Station and lift lobby building: 17m to 27m wide APZ Toilet/Comms/Elec/Mech building: 17m to 27m wide APZ Signal Equipment building: 17m wide APZ Fire pump and tanks: 13m to 15m wide APZ The APZs are to be implemented and maintained in accordance with Schedule 1 of the Guidelines (see Appendix 3). The railway alignment to the east and west is to be kept in a non-vegetated state, as will the railway batter immediately north of the alignment. However further north of the batter, the remainder of the APZ extent is to be established and managed as low threat vegetation in compliance with the APZ standards. The APZ for the Station and lift lobby building extends north into land that is under WAPC tenure. It is a requirement of this BMP that a Maintenance Agreement to be obtained from WAPC, that permits PTA access to their land to establish the APZ where it exists on WAPC land, and also permits ongoing access to conduct routine maintenance of the APZ. This is proposed as a development condition in Section 5.2.5 Similarly, the proposed APZ for the fire pumps and tanks extends into the Western Power easement, and a Maintenance Agreement will be required from them to establish and maintain the APZ on their land.	<ul style="list-style-type: none"> Compliance of the Performance Principle and Intent of Element 2 is achieved through compliance with Acceptable Solution A2.1
Element 3: Vehicular access	To ensure that the vehicular access serving a subdivision/development is available	<u>Performance Principle P3</u> The internal layout, design and construction of public and private vehicular access and egress in the subdivision / development allow emergency and other vehicles to move	<u>A3.1 Two access routes</u> Two different vehicular access routes are provided, both of which connect to the public road network, provide safe access and egress to two different destinations and are	Acceptable Solution	The proposed new public road network has been detailed in Section 1.1, with new public roads to be created as shown in Figure 2. Eventually new public roads are expected to be constructed to enable travel north over the railway to future development, and also south to proposed development with likely road connections south of project	<ul style="list-style-type: none"> Compliance of the Performance Principle and Intent of Element 2 is achieved through compliance with

Bushfire protection criteria				Linfire response		
Element	Intent	Performance Principle	Acceptable solutions	Method of compliance	Proposed bushfire management measures	Compliance Comment
	and safe during a bushfire event.	through it safely and easily.	available to all residents/the public at all times and under all weather conditions.		<p>area to Beechboro Road North and/or Marshall Road. The timing of these roads is not currently known, and this creates a temporary non-compliance, with an overlength cul-de-sac road which exceeds 200 m in length.</p> <p>To address the non-compliance, a temporary Emergency Access Way (EAW) is proposed from the carpark to the bus interchange road, to enable emergency egress/access from the northern interconnection with Beechboro Road North. This ensures that there is a point of choice from the public road network immediately south of the Welcome Place, as well as from around the three Future Development lots in the south of the project area.</p> <p>On this basis, the only cul-de-sac will be the public road to the west of the Welcome Place, which is 200 m long and will have a compliant temporary turning head.</p> <p>Based on the above all occupants can move through the public road network to both connections with Beechboro Road North, with the option of travelling to more than two different destinations:</p> <ul style="list-style-type: none"> travelling south to Marshall Road where further travel is possible to the east, west or further south. travelling north to Tonkin Highway where further travel can be undertaken north or south on Tonkin Highway or to the north-west on Hepburn Avenue. <p>In this regard, the proposed development is provided with at least two access routes which meets and exceeds the requirements of Acceptable Solution A3.1.</p>	Acceptable Solution A3.1, A3.5 and A3.8
			<u>A3.2 Public road</u> A public road is to meet the requirements in Table 2, Column 1.	Not applicable	<p>All public roads proposed as part of the development are to be constructed to the relevant technical requirements of the Guidelines (see Appendix 4).</p> <p>The existing public roads sighted whilst travelling to the site appeared compliant with public road specifications of the Guidelines and will be sufficient for emergency egress or firefighter access to the site.</p>	
			<u>A3.3 Cul-de-sac (including a dead-end-road)</u> A cul-de-sac and/or a dead-end road should be avoided in bushfire prone areas. Where no alternative exists (i.e. the lot layout already exists and/or will need to be demonstrated by the proponent), detailed requirements will need to be achieved (refer to the Guidelines for detailed cul-de-sac requirements).	Not applicable	<p>A temporary cul-de-sac road less than 200 m in length is proposed to the west of the Welcome Place (see Figure 2), will include a temporary 17.5 m diameter turn-around head and are to be constructed to the relevant technical requirements of the Guidelines (see Appendix 4). This cul-de-sac is to be eventually removed once the road network is expanded as part of future development.</p> <p>The project area is not serviced by an existing cul-de-sac.</p>	
			<u>A3.4 Battle-axe</u> Battle-axe access leg's should be avoided in bushfire prone areas. Where no alternative exists, (this will need to be demonstrated by the proponent) detailed requirements will need to be achieved (refer to the Guidelines for detailed battle-axe requirements).	Not applicable	No battle-axe legs are proposed as part of the development and the project area is not serviced by an existing battle-axe.	
			<u>A3.5 Private driveway longer than 50 m</u> A private driveway is to meet detailed requirements (refer to the Guidelines for	Acceptable Solution	<p>The proposed private driveways are depicted on Figure 2, and include:</p> <ul style="list-style-type: none"> the bus interchange driveways, to and from Beechboro Road 	

Bushfire protection criteria				Linfire response		
Element	Intent	Performance Principle	Acceptable solutions	Method of compliance	Proposed bushfire management measures	Compliance Comment
			detailed private driveway requirements).		<p>North</p> <ul style="list-style-type: none"> the service road from the temporary turning head to the firewater pumps/tanks the service road to the bins/irrigation tanks/substation area, to the south-west of the station building the on-tracking road to the west and north of the future carpark site the service road from the bus interchange, along the southern side of the rail alignment to the east of the station building the road around and within the main station carpark (noting Figure 2 doesn't highlight all internal roads within the carpark). <p>Access control will be provided on several of the driveway roads, to prevent unauthorised access or use by the public. This is shown on Figure 2.</p> <p>The private driveways will be constructed in accordance with the technical requirements of the Guidelines for private driveways (see Appendix 4). Most proposed roads will exceed 6 m in width, so passing bays are not considered to be required within the project area. Similarly compliant turning arrangements are provided for most driveway dead-ends, with the on-tracking road being the only exception. This road is to provide access to the railway alignment, and will have a locked gate (or other access control) as depicted on Figure 2, to prevent public access. Use of this on-tracking road is to be by unauthorised personnel only.</p>	
			<p><u>A3.6 Emergency access way</u> An access way that does not provide through access to a public road is to be avoided in bushfire prone areas. Where no alternative exists (this will need to be demonstrated by the proponent), an emergency access way is to be provided as an alternative link to a public road during emergencies. An emergency access way is to meet detailed requirements (refer to the Guidelines for detailed EAW requirements).</p>	Not applicable	<p>It is expected that eventually the public road network will connect to surrounding public roads such that no permanent emergency access ways (EAW) will be required, however given this development is the first stage of a larger overall development, there is a need to create a second access point to the existing wider public road network to avoid a temporary non-compliance.</p> <p>The proposed emergency access way (EAW) from the carpark to the bus interchange road, is to be constructed to the relevant technical requirements of the Guidelines (see Appendix 4). The EAW will need to be signposted, and if fitted with gates, these shall be kept unlocked at all times.</p> <p>The EAW is no further than 600 m from a public road at any point but it does connect to two private driveways, rather than directly to the public roads, however given the development is for public infrastructure, it is considered that these driveways are permanent access routes that will not be altered or removed. Similarly, given the EAW is expected to be temporary, it is not considered necessary to nominate this small EAW as a right of way or public easement in gross.</p> <p>Notwithstanding, this BMP does require that the temporary EAW is established and maintained in accordance with the requirements of Appendix 4 and this BMP until such time that the public road network provides an additional compliant connection that permits decommissioning of the EAW.</p> <p>The establishment and ongoing maintenance of the EAW is the responsibility of the PTA.</p>	
			<u>A3.7 Fire service access routes (perimeter</u>	Not applicable	The proposed development does not require fire service access routes	

Bushfire protection criteria				Linfire response		
Element	Intent	Performance Principle	Acceptable solutions	Method of compliance	Proposed bushfire management measures	Compliance Comment
Element 4: Water	To ensure that water is available to the subdivision, development or land use to enable people, property and infrastructure to be defended from bushfire.	<u>Performance Principle P4</u> The subdivision, development or land use is provided with a permanent and secure water supply that is sufficient for firefighting purposes.	<u>roads</u> Fire service access routes are to be established to provide access within and around the edge of the subdivision and related development to provide direct access to bushfire prone areas for fire fighters and link between public road networks for firefighting purposes. Fire service access routes are to meet detailed requirements (refer to the Guidelines for detailed fire service access route requirements).		(FSARs) to achieve access within and around the perimeter of the project area. DFES have previously indicated that they do not require vehicular access along the northern boundary of the rail alignment. This correspondence is provided in Appendix 5.	<ul style="list-style-type: none"> Compliance of the Performance Principle and Intent of Element 4 is achieved through compliance with Acceptable Solution A4.2
			<u>A3.8 Firebreak width</u> Lots greater than 0.5 hectares must have an internal perimeter firebreak of a minimum width of three metres or to the level as prescribed in the local firebreak notice issued by the local government.	Acceptable Solution	On completion of development, the project area will be developed with non-vegetated surfaces, cleared land and low threat landscaping with some revegetation along the eastern and southern project area extent and as such, perimeter firebreaks are not considered to be required around the project area. The balance portion of Lots 11 and 810, not included within the project area, shall comply with relevant requirements of the City of Swan firebreak notice (see Appendix 5)	
			<u>A4.1 Reticulated areas</u> The subdivision, development or land use is provided with a reticulated water supply in accordance with the specifications of the relevant water supply authority and Department of Fire and Emergency Services.	Not applicable	The proposed development is not located within an existing reticulated area, however a Water Corporation town main is to be extended to the main roundabout in the south to provide water supply to the development. It is expected that town main supply will be required to the Future Development lots, however the timing of this is not clear nor whether street hydrants will also be installed on the new main at this stage, and as such this has not been relied upon to achieve compliance with A4.1. The nearest existing street hydrants are located at the intersection of Beechboro Road North and Marshall Road, approximately 500 m from the project area. Whilst the project area is located near these street hydrants, the main bushfire fighting water supply is likely to be accessed from the dedicated onsite fire hydrant system detailed below in A4.2 below.	
			<u>A4.2 Non-reticulated areas</u> Water tanks for firefighting purposes with a hydrant or standpipe are provided and meet detailed requirements (refer to the Guidelines for detailed requirements for non-reticulated areas).	Acceptable Solution	The proposed development is to have an on-site fire hydrant system, designed, installed and maintained in accordance with the National Construction Code and relevant Australian Standards. The fire hydrant system is expected to include dedicated firewater storage tanks and duty/standby pumpset located to the west of the main station, with a booster connection situated within the proposed bus interchange. Onsite fire hydrants are sited throughout the development provide attending fire fighters with fire hydrant coverage of the railway station, including the platform and concourse levels. Given the onsite water storage (and infill) associated with the proposed wet fire systems, the addition of an extra 50 kL to the proposed storage capacity for bushfire fighting purposes is considered appropriate. This static water supply will be available for attending firefighters from the firewater storage tanks, via the booster connection. Appliance turnaround will be achieved using the loop road within the bus interchange. The firewater tank/s are to be installed, filled and maintained for the	

Bushfire protection criteria				Linfire response		
Element	Intent	Performance Principle	Acceptable solutions	Method of compliance	Proposed bushfire management measures	Compliance Comment
					life of the project by the Proponent.	
			<p><u>A4.3 Individual lots within non-reticulated areas (Only for use if creating 1 additional lot and cannot be applied cumulatively)</u></p> <p>Single lots above 500 m² need a dedicated static water supply on the lot that has the effective capacity of 10,000 L.</p>	Not applicable	The proposed development is being addressed in accordance with A4.2	

5.2 Additional management strategies

Linfire makes the following additional bushfire management recommendations to inform ongoing planning stages of the development and increase the level of bushfire risk mitigation across the site.

5.2.1 Onsite landscaping and revegetation

The BAL contour assessment is reliant on all landscaping and revegetation being implemented and maintained in accordance with the standards detailed in Section 3.1.1 and depicted on Figure 3.

All vegetation immediately south of the development and within the carpark is expected to be managed as low threat vegetation, in perpetuity, by the Proponent. All proposed revegetation to the east and south of the carpark is to be established as a woodland vegetation structure as per AS 3959. The Future Development lots and carpark are to be maintained in a non-vegetated and/or low threat state.

5.2.2 Road verge fuel management

Existing and proposed public road verges that have been excluded as low threat are to be managed to ensure the understorey and surface fuels remain in a low threat, minimal fuel condition in accordance with Clause 2.2.3.2 (f) of AS 3959. Ongoing management of proposed road reserves is the responsibility of the Proponent, until handed over to the City, with management of any existing road verges to continue to be the responsibility of the City.

5.2.3 Building construction standards

The proposed development does not include any Class 1, 2, or 3 residential buildings and associated Class 10a structures, and as such, there is no statutory requirement for proposed buildings to meet the construction requirements of AS 3959.

5.2.4 Staging of access

If development (and therefore construction of vehicular access) is to occur on a staged basis, vehicular access arrangements will need to ensure that all occupiers and visitors are provided with compliant access at all stages. This can be achieved via construction of access in advance of stages or through provision of temporary access should it be required. A temporary EAW is proposed to connect the carpark to the bus interchange, to provide an alternative exit to Beechboro Road North, and address a temporary non-compliance, which is expected to be addressed as part of future development.

5.2.5 APZ Maintenance agreement

The APZ for the main station building, extends north into land under WAPC tenure, while the APZ proposed for the fire pumps and tanks, extends into a Western Power easement. To ensure the APZs are able to be implemented and managed on an ongoing basis, a Maintenance Agreement will be required with both landowners, to enable access to their land so PTA can undertake the works.

The Maintenance Agreement is to specify responsibilities for maintenance of the APZ outside PTA control, as well as access arrangements if the PTA will be taking on responsibility for maintenance. The Maintenance Agreement will only be required until such the land within the AP is developed, in which case low threat landscaping and/ or non-vegetated paved areas will replace the unmanaged scrub and grassland vegetation.

5.2.5.1 Recommended development conditions

The following condition is recommended for the development application approval (subject to City of Swan wording):

A Maintenance Agreement is to be prepared and implemented to relation to establishment and ongoing maintenance of the nominated APZs, within WAPC and Western Power land in perpetuity, or until such a time that the unmanaged vegetation is either permanently removed or managed as low threat vegetation.

5.2.6 Vulnerable land use and recommended development condition

The proposed development constitutes a vulnerable land use. On this basis, a Bushfire Emergency Evacuation Plan (BEEP) is required to address the requirements of Policy Measure 6.6.1 of SPP 3.7.

The preference is that the BEEP is not prepared at this time, but is included as a future implementation measure within this BMP and conditioned as part of the DA approval. Instead of producing a standalone BEEP for the station, the ideal approach is to incorporate the proposed bushfire emergency management arrangements for this station into the existing PTA Emergency Management Manual (EMM) to standardise the procedures. To achieve this, there is a significant liaison process to be undertaken with PTA, and given occupation of the station by vulnerable occupants (i.e the public) is to be in 2024, there is considerable time to define these arrangements.

Based on the above, the following is proposed:

- The preparation, endorsement, and implementation of the bushfire emergency management arrangements (preferably within the PTA EMM) is specifically nominated as a condition of development approval (see Section 5.2.6.1)
- The bushfire emergency management arrangements consider the proposed philosophies outlined in Section 5.2.6.2, which have been included to provide some guidance about the overall strategy.

5.2.6.1 Recommended development condition

The following condition is recommended for the development application approval (subject to WAPC wording):

Bushfire emergency management procedures, detailing the management of vulnerable occupants at the proposed station, is to be prepared, endorsed by WAPC and implemented prior to occupation by any vulnerable occupants (i.e. the public). The proposed emergency management procedures will preferably be incorporated into the overarching PTA Emergency Management Manual (EMM) as standardised procedures, however it may also be documented within a standalone BEEP for the station that is aligned with the EMM.

5.2.6.2 Indicative Bushfire Emergency Management Procedures

It is expected that the bushfire emergency management procedures or arrangements would consider the following, to be incorporated into the PTA EMM (or a standalone BEEP that aligns with the EMM):

- Monitor the forecast Fire Danger Rating (FDR) each day (at 4pm) to enable consideration of any pre-emptive actions including
 - Heighten alertness for staff and public, including warnings when FDR is Extreme or Catastrophic
 - Consider adding extra staff to manage a bushfire emergency

- Buses on standby for evacuation
 - DFES liaison
- Consider similar pre-emptive actions to the above, when a Total Fire Ban is declared and ensure no hot works or no other activities that may start a fire are conducted.
- Monitor emergency services information during the day (especially during bushfire season or days with elevated FDR) and conduct regular visual assessments, to maintain situation awareness during these days.
- Consider triggers for:
 - Alerting DFES
 - Ceasing train and bus services to train stations
 - Evacuating train station
 - This above would likely be station specific triggers
- Consider using Transperth buses for offsite evacuation of occupants
- Otherwise utilising the existing relevant PTA emergency management procedures and infrastructure as much as possible from the EMM, to manage bushfire emergencies.
- Ensure sufficient training for staff and regular exercise drills are conducted

5.2.7 BAL compliance and/or BAL assessment report

A BAL compliance and/or BAL assessment report may be prepared at the discretion of the Shire following completion of construction works and prior to issue of certificate of occupancy to validate and confirm the accuracy of the BAL contour assessment.

5.2.8 Compliance with annual firebreak notice

The Proponent or landowner is to comply with the current City of Swan annual firebreak notice as amended (refer Appendix 5).

6.0 Responsibilities for implementation and management of the bushfire measures

Implementation of the BMP applies to the Proponent (landowner, facility manager) and the City to ensure bushfire management measures are adopted and implemented on an ongoing basis. A bushfire responsibilities table is provided in **Error! Reference source not found.** to drive implementation of all bushfire management works associated with this BMP.

Table 6: Responsibilities for implementation and management of the bushfire measures

Implementation/management table	
<i>Decision maker – prior to development approval</i>	
No.	Implementation action
1	Condition the preparation of the Bushfire Emergency Management Procedures for the station prior to occupation as part of the development approval
2	Condition the provision of a Maintenance Agreement to address the establishment and ongoing management of the APZs within WAPC land and the Western Power easement.
<i>Proponent – prior to development occupation</i>	
No.	Implementation action
1	Develop a Maintenance Agreement to address the establishment and ongoing management of the APZs within WAPC land and the Western Power easement, to the standards stated in the BMP.
2	Establish the Asset Protection Zones (APZs) around nominated buildings and infrastructure assets to the dimensions and standards stated in the BMP and Appendix 3, and in accordance with the Maintenance Agreement.
3	Establish low threat landscaping and revegetation throughout the project area, including the Future Development lots and carpark, in accordance with the standards outlined in the BMP. This is to include the establishment of woodland vegetation structure as the revegetation to the east and south of the project area.
4	Install the public road, cul-de-sac road, private driveway network within the project area to the relevant technical requirements under the Guidelines (refer to Appendix 4). Ensure access gates and the temporary cul-de-sac turning head are installed at the locations nominated in the BMP.
5	Install the temporary EAW within the project area to the relevant technical requirements under the Guidelines (refer to Appendix 4), and at the location nominated in the BMP.
6	Construct proposed onsite fire hydrant system for the proposed development, including the additional 50 kL firewater capacity in the tanks for bushfire fighting purposes as stated in this BMP.
7	Develop the Bushfire Emergency Management Procedures for the station, ideally incorporated into the PTA EMM, as documented in this BMP
8	If development is staged, ensure that all occupiers and visitors are provided with compliant access at all stages.
9	Comply with the City of Swan annual firebreak notice issued under s33 of the Bush Fires Act 1954.
10	If required by the City, individual BAL assessment prior to issuing of building permits.
<i>Proponent – ongoing</i>	
No.	Implementation action
1	Maintain the Asset Protection Zones (APZs) around the nominated buildings and assets to the dimensions and standards stated in the BMP and Appendix 3, and in accordance with the Maintenance Agreement.
2	Maintain low threat landscaping and revegetation throughout the project area, including the Future

Implementation/management table	
	Development lots and carpark, in accordance with the standards outlined in the BMP, including management of vegetation within the carpark as low threat vegetation.
3	Maintain the public road, cul-de-sac road, private driveway network to the standards stated in the BMP.
4	Maintain the temporary EAW to the standards stated in the BMP.
4	Maintain the onsite fire hydrant system in accordance with relevant Australian Standards and the standard stated in the BMP.
6	Conduct ongoing review of the Bushfire Emergency Management Procedures to ensure they remain appropriate to the facility
7	Comply with the City of Swan annual firebreak notice issued under s33 of the Bush Fires Act 1954.
<i>Local government – ongoing management</i>	
<i>No.</i>	<i>Implementation action</i>
1	Maintain road verges in a low threat minimal fuel condition as per Clause 2.2.3.2 (f) of AS 3959.

7.0 References

Department of Fire and Emergency Services (DFES) 2021, *Map of Bush Fire Prone Areas*, [Online], Government of Western Australia, available from:

<https://maps.slip.wa.gov.au/landgate/bushfireprone/>,.

Department of Planning (DoP) 2016, *Visual guide for bushfire risk assessment in Western Australia*, Department of Planning, Perth.

Standards Australia (SA) 2018, *Australian Standard AS 3959–2018 Construction of Buildings in Bushfire-prone Areas*, Standards Australia, Sydney.

Western Australian Planning Commission (WAPC) 2015, *State Planning Policy 3.7 Planning in Bushfire Prone Areas*, Western Australian Planning Commission, Perth.

Western Australian Planning Commission (WAPC) 2017, *Guidelines for Planning in Bushfire Prone Areas*, Version 1.3 August 2017, Western Australian Planning Commission, Perth.



Appendix 1: Development Plans

Appendix 2: Vegetation plot photos and description



Photo ID: 1a



Photo ID: 1b



Photo ID: 1c

Plot number		Plot 1
Vegetation classification	Pre-development	Class G Grassland
	Post-development	Class G Grassland
Description / justification		Grassland greater than 100 mm in height



Photo ID: 2a



Photo ID: 2b



Photo ID: 2c

Plot number		Plot 1
Vegetation classification	Pre-development	Class G Grassland
	Post-development	Class G Grassland
Description / justification		Grassland greater than 100 mm in height



Photo ID: 2d



Photo ID: 2e

Plot number		Plot 2
Vegetation classification	Pre-development	Class G Grassland
	Post-development	Class G Grassland
Description / justification		Grassland at maturity, greater than 100 mm in height

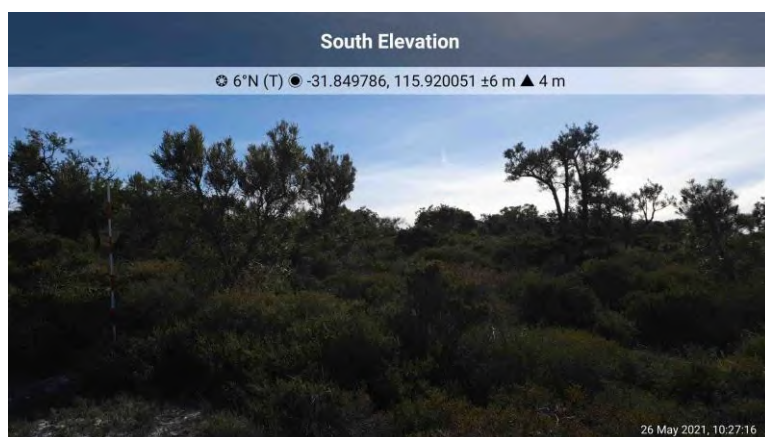


Photo ID: 3a



Photo ID: 3b



Photo ID: 3c

Plot number		Plot 3
Vegetation classification	Pre-development	Class D Scrub
	Post-development	Class D Scrub
Description / justification		Vegetation with a continuous horizontal and vertical structure, greater than 2 m high at maturity



Photo ID: 3d

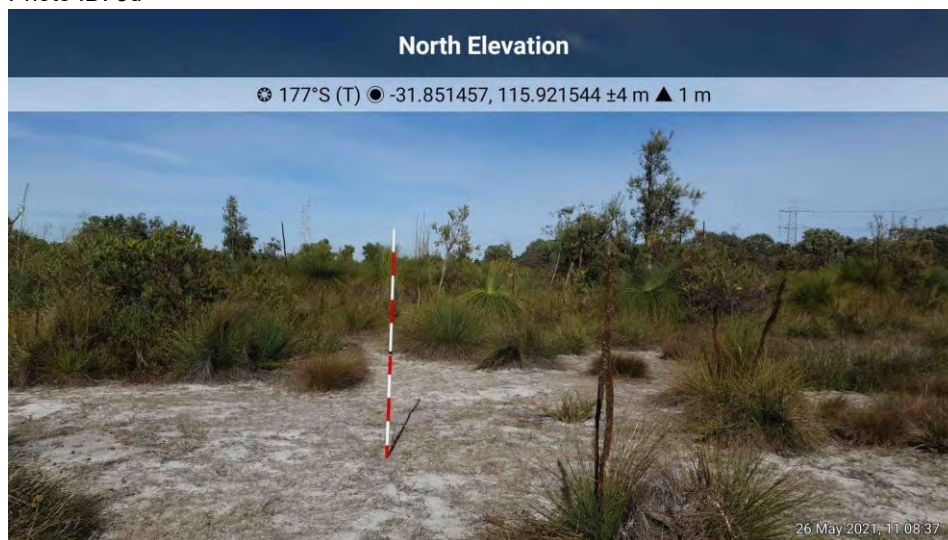


Photo ID: 3e

Plot number		Plot 3
Vegetation classification	Pre-development	Class D Scrub
	Post-development	Class D Scrub
Description / justification		Vegetation with a continuous horizontal and vertical structure, greater than 2 m high at maturity



Photo ID: 3f

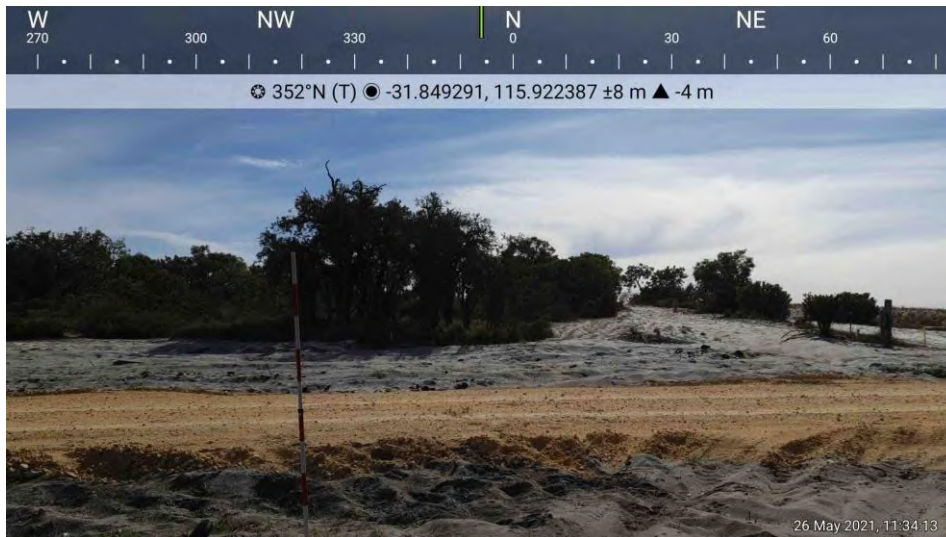


Photo ID: 3g

Plot number		Plot 3
Vegetation classification	Pre-development	Class D Scrub
	Post-development	Class D Scrub
Description / justification		Vegetation with a continuous horizontal and vertical structure, greater than 2 m high at maturity



Photo ID: 4a



Photo ID: 4b



Photo ID: 4c

Plot number		Plot 4
Vegetation classification	Pre-development	Class D Scrub
	Post-development	Class D Scrub
Description / justification		Vegetation with a continuous horizontal and vertical structure, greater than 2 m high at maturity



Photo ID: 4d

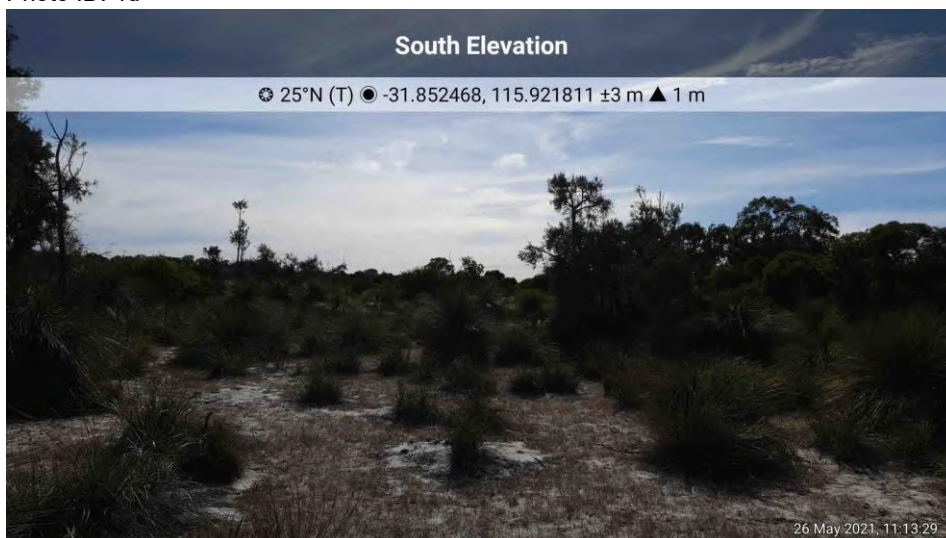


Photo ID: 4e

Plot number		Plot 4
Vegetation classification	Pre-development	Class D Scrub
	Post-development	Class D Scrub
Description / justification		Vegetation with a continuous horizontal and vertical structure, greater than 2 m high at maturity



Photo ID: 5a

Plot number		Plot 5
Vegetation classification	Pre-development	Class D Scrub
	Post-development	Class D Scrub
Description / justification		Vegetation with a continuous horizontal and vertical structure, greater than 2 m high at maturity



Photo ID: 6a

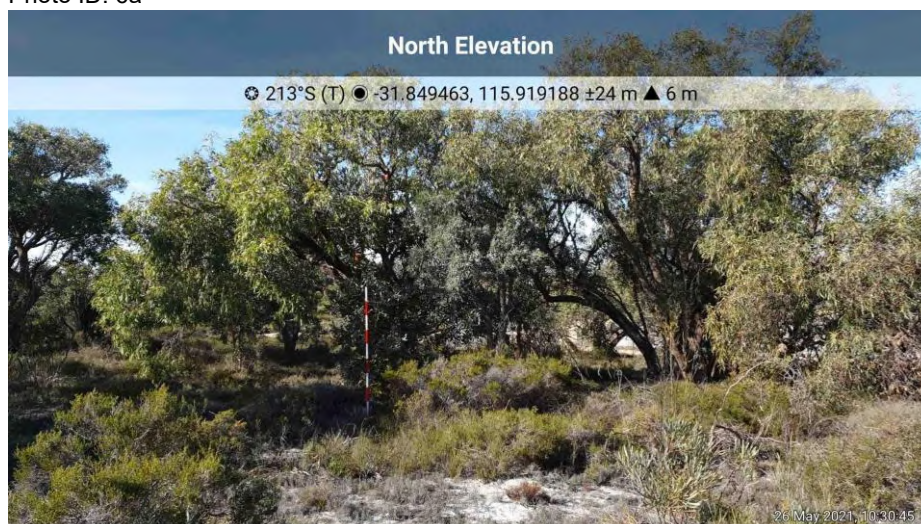


Photo ID: 6b

Plot number		Plot 6
Vegetation classification	Pre-development	Class A Forest
	Post-development	Class A Forest
Description / justification		Trees 10-30 m high at maturity, dominated by Eucalypts, multi-tiered structure comprising tall canopy layer, shrubby middle layer and grass/herb/sedge understorey



Photo ID: 7a

Plot number		Plot 7
Vegetation classification	Pre-development	Class A Forest
	Post-development	Class A Forest
Description / justification		Trees 10-30 m high at maturity, dominated by Eucalypts, multi-tiered structure comprising tall canopy layer, shrubby middle layer and grass/herb/sedge understorey



Photo ID: 8a

Plot number		Plot 8
Vegetation classification	Pre-development	Excluded – Non-vegetated and Low threat (Clause 2.2.3.2 [e] and [f])
	Post-development	Modified to non-vegetated (exclusion 2.2.3.2 [e]) and/or low threat (exclusion 2.2.3.2 [f]) state
Description / justification		Revegetated with low understorey species (<0.5 m high) and trees that will be between 10% - 30% canopy cover



Photo ID: 9a



Photo ID: 9b



Photo ID: 9c

Plot number		Plot 8
Vegetation classification	Pre-development	Excluded – Non-vegetated and Low threat (Clause 2.2.3.2 [e] and [f])
	Post-development	Excluded – Non-vegetated and Low threat (Clause 2.2.3.2 [e] and [f])
Description / justification		Low threat cultivated gardens and maintained lawns within surrounding properties and non-vegetated areas including roads, footpaths, driveways and building footprints

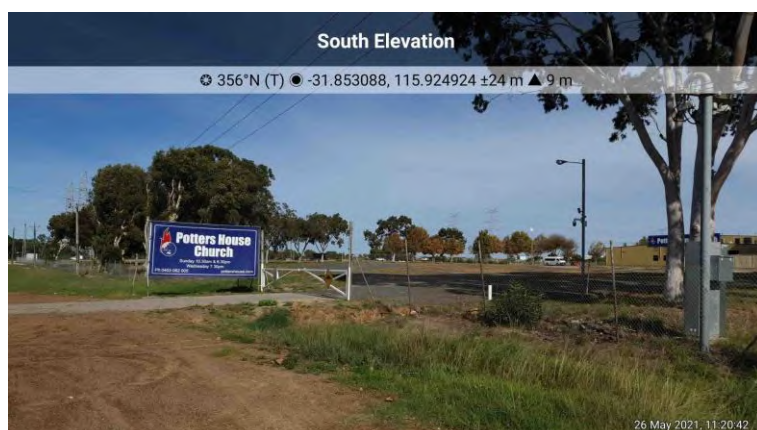


Photo ID: 9d



Photo ID: 9e

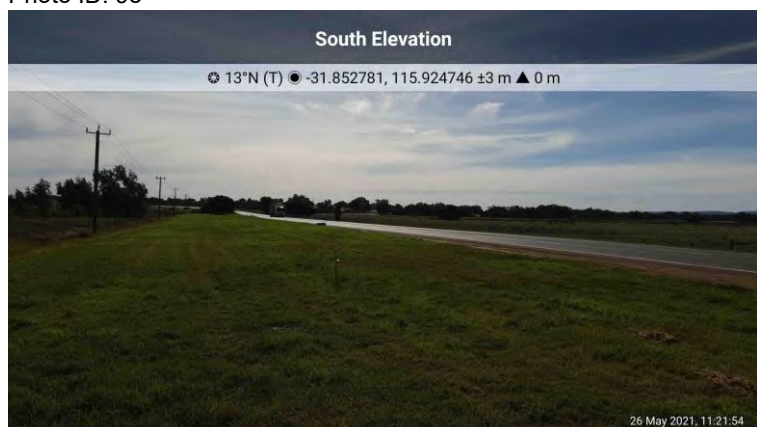


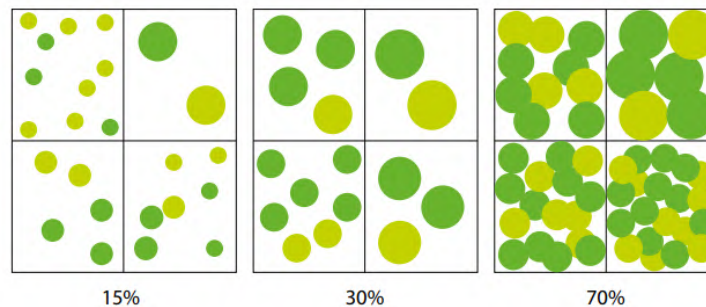
Photo ID: 8f

Plot number		Plot 8
Vegetation classification	Pre-development	Excluded – Non-vegetated and Low threat (Clause 2.2.3.2 [e] and [f])
	Post-development	Excluded – Non-vegetated and Low threat (Clause 2.2.3.2 [e] and [f])
Description / justification		Low threat cultivated gardens and maintained lawns within surrounding properties and non-vegetated areas including roads, footpaths, driveways and building footprints

Appendix 3: APZ standards (Schedule 1 of the Guidelines)

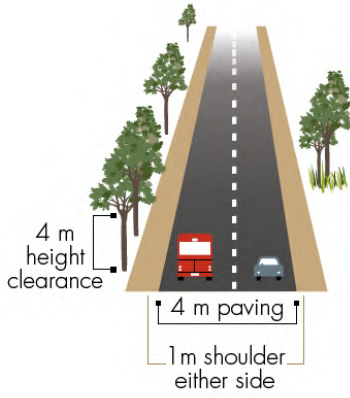
Schedule 1: Standards for Asset Protection Zones

- **Fences:** within the APZ are constructed from non-combustible materials (e.g. iron, brick, limestone, metal post and wire). It is recommended that solid or slatted non-combustible perimeter fences are used.
- **Objects:** within 10 metres of a building, combustible objects must not be located close to the vulnerable parts of the building i.e. windows and doors.
- **Fine Fuel load:** combustible dead vegetation matter less than 6 millimetres in thickness reduced to and maintained at an average of two tonnes per hectare.
- **Trees (> 5 metres in height):** trunks at maturity should be a minimum distance of 6 metres from all elevations of the building, branches at maturity should not touch or overhang the building, lower branches should be removed to a height of 2 metres above the ground and or surface vegetation, canopy cover should be less than 15% with tree canopies at maturity well spread to at least 5 metres apart as to not form a continuous canopy.

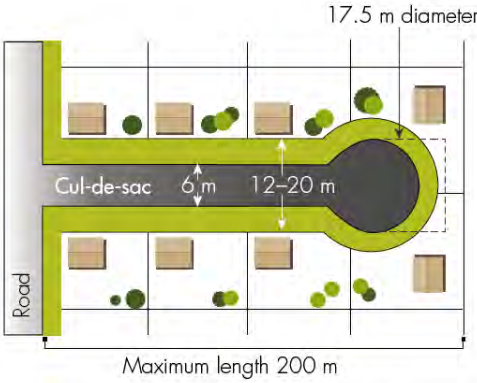


- **Shrubs (0.5 metres to 5 metres in height):** should not be located under trees or within 3 metres of buildings, should not be planted in clumps greater than 5 m² in area, clumps of shrubs should be separated from each other and any exposed window or door by at least 10 metres. Shrubs greater than 5 metres in height are to be treated as trees.
- **Ground covers (<0.5 metres in height):** can be planted under trees but must be properly maintained to remove dead plant material and any parts within 2 metres of a structure, but 3 metres from windows or doors if greater than 100 millimetres in height. Ground covers greater than 0.5 metres in height are to be treated as shrubs.
- **Grass:** should be managed to maintain a height of 100 millimetres or less.

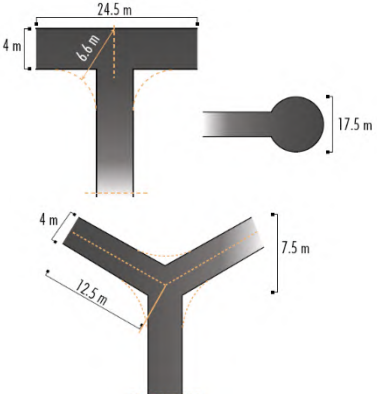
Appendix 4: Vehicular access technical standards of the Guidelines

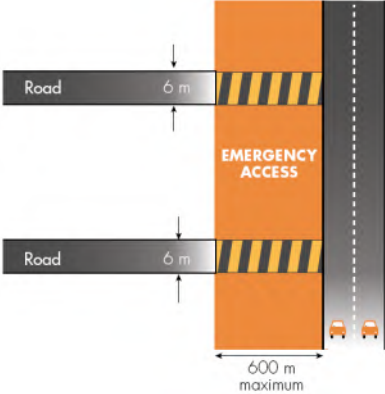
Public roads	
Acceptable solution A3.2	A public road is to meet the requirements in Table 1, Column 1.
Explanatory note E3.2	<p>Trafficable surface:</p> <p>Widths quoted for access routes refer to the width of the trafficable surface. A six metre trafficable surface does not necessarily mean paving width. It could, for example, include four metre wide paving one metre wide constructed road shoulders. In special circumstances, where eight lots or less are being serviced, a public road with a minimum trafficable surface of four metres for a maximum distance of 90 metres may be provided subject to the approval of both the local government and Department of Fire and Emergency Services.</p> <p>Public road design:</p> <p>All roads should allow for two-way traffic to allow conventional two-wheel drive vehicles and fire appliances to travel safely on them.</p>  <p>The diagram illustrates a cross-section of a public road. It shows a central paved area labeled '4 m paving' with a dashed white line down the center. On either side of the paving is a shoulder labeled '1 m shoulder either side'. Above the paving, a vertical dimension line indicates a '4 m height clearance' from the road surface to the top of the trees flanking the road. A red fire truck and a blue car are shown driving on the road.</p>

Cul-de-sac (including a dead-end road)	
Acceptable solution A3.3	<p>A cul-de-sac and/ or a dead end road should be avoided in bushfire prone areas. Where no alternative exists (i.e. the lot layout already exists and/ or will need to be demonstrated by the proponent), the following requirements are to be achieved:</p> <ul style="list-style-type: none"> • Requirements in Table 1, Column 2 • Maximum length: 200 metres (if public emergency access is provided between cul-de-sac heads maximum length can be increased to 600 metres provided no more than eight lots are serviced and the emergency access way is no more than 600 metres) • Turn-around area requirements, including a minimum 17.5 metre diameter head.
Explanatory note E3.3	<p>In bushfire prone areas, a cul-de-sac subdivision layout is not favoured because they do not provide access in different directions for residents. In some instances it may be possible to provide an emergency access way between cul-de-sac heads to a maximum distance of 600 metres, so as to achieve two-way access. Such links must be provided as right of ways or public access easements in</p>

Cul-de-sac (including a dead-end road)	
	<p>gross to ensure accessibility to the public and fire services during an emergency. A cul-de-sac in a bushfire prone area is to connect to a public road that allows for travel in two directions in order to address Acceptable Solution A3.1.</p> 

Private driveway longer than 50 metres	
Acceptable solution A3.5	<p>A private driveway is to meet all of the following requirements:</p> <ul style="list-style-type: none"> • Requirements in Table 1, Column 3 • Required where a house site is more than 50 metres from a public road • Passing bays: every 200 metres with a minimum length of 20 metres and a minimum width of two metres (i.e. the combined width of the passing bay and constructed private driveway to be a minimum six metres) • Turn-around areas: designed to accommodate type 3.4 fire appliances and to enable them to turn around safely every 500 metres (i.e. kerb to kerb 17.5 metres) and within 50 metres of a house • Any bridges or culverts: are able to support a minimum weight capacity of 15 tonnes • All-weather surface (i.e. compacted gravel, limestone or sealed).
Explanatory note E3.5	<p>For a driveway shorter than 50 metres, fire appliances typically operate from the street frontage however where the distance exceeds 50 metres, then fire appliances will need to gain access along the driveway in order to defend the property during a bushfire. Where house sites are more than 50 metres from a public road, access to individual houses and turnaround areas should be available for both conventional two-wheel drive vehicles of residents and type 3.4 fire appliances.</p> <p>Turn-around areas should be located within 50 metres of a house. Passing bays should be available where driveways are longer than 200 metres and turn-around areas in driveways that are longer than 500 metres. Circular and loop driveway designs may also be considered. These criteria should be addressed through subdivision design.</p> <p>Passing bays should be provided at 200 metre intervals along private driveways to allow two-way traffic. The passing bays should be a minimum length of 20 metres, with the combined width of the passing bay and the access being a minimum of six metres.</p> <p>Turn-around areas should allow type 3.4 fire appliances to turn around safely (i.e. kerb to kerb 17.5 metres) and should be available at the house sites and at 500 metre intervals along the driveway.</p>

Private driveway longer than 50 metres	
	

Emergency access way	
Acceptable solution A3.6	<p>An access way that does not provide through access to a public road is to be avoided in bushfire prone areas. Where no alternative exists (this will need to be demonstrated by the proponent), an emergency access way is to be provided as an alternative link to a public road during emergencies. An emergency access way is to meet all of the following requirements:</p> <ul style="list-style-type: none"> • Requirements in Table 1, Column 4 • No further than 600 metres from a public road • Provided as right of way or public access easement in gross to ensure accessibility to the public and fire services during an emergency • Must be signposted.
Explanatory note E3.6	<p>An emergency access way is not a preferred option however may be used to link up with roads to allow alternative access and egress during emergencies where traffic flow designs do not allow for two-way access. Such access should be provided as a right-of-way or easement in gross to ensure accessibility to the public and fire emergency services during an emergency.</p> <p>The access should comply with minimum standards for a public road and should be signposted. Where gates are used to control traffic flow during non-emergency periods, these must not be locked. Emergency access ways are to be no longer than 600 metres and must be adequately signposted where they adjoin public roads.</p> <p>Where an emergency access way is constructed on private land, a right of way or easement in gross is to be established.</p> 

Technical requirement	1	2	3	4	5
	Public road	Cul-de-sac	Private driveway longer than 50 m	Emergency access way	Fire service access routes
Minimum trafficable surface (m)	6*	6	4	6*	6*
Horizontal distance (m)	6	6	6	6	6
Vertical clearance (m)	4.5	N/A	4.5	4.5	4.5
Maximum grade <50 m	1 in 10	1 in 10	1 in 10	1 in 10	1 in 10
Minimum weight capacity (t)	15	15	15	15	15
Maximum crossfall	1 in 33	1 in 33	1 in 33	1 in 33	1 in 33
Curves minimum inner radius	8.5	8.5	8.5	8.5	8.5
* Refer to E3.2 Public roads: Trafficable surface					



Appendix 5: DFES Correspondence



Appendix 6: City of Swan Firebreak Notice