ARMADALE LINE UPGRADE PROJECT

BECKENHAM VIADUCT, TRAIN STATION, STATION PRECINCT AND PUBLIC REALM ARRANGEMENTS – DEVELOPMENT APPLICATION

PTA DOCUMENT NUMBER: LXR-ALUA-PN-PLN-00001
ALUA DOCUMENT NUMBER: LXR-CON-GN-PM-SM-PLN-00003

ARMADALE LINE UPGRADE ALLIANCE

Document Control Record

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Document Control						
Report Title	Armadale Line Upgrade Project Beckenham Viaduct Construction, Beckenham Station, Station Precinct and Public Realm – Development Application					
Client	ALUA					
Rev	Date	Revision Details / Status	Author	Reviewer	Verifier (If required)	Approver
A	03/08/23	Draft	Renee Young and Murray Casselton			
B	25/08/23	Draft	Renee Young and Murray Casselton			
C	13/09/23	Final	Renee Young and Murray Casselton			
D	19/09/23	Final	Renee Young and Murray Casselton			
Current Revision	Rev D					

We acknowledge the Whadjuk people of the Noongar nation as Traditional Owners of the land on which we live and work.

We acknowledge and respect their enduring culture, their contribution to the life of this city, and Elders, past and present.

Contents

Executive Summary

The Victoria Park-Canning Level Crossing Removal Project (VPCLXR) forms part of the METRONET rail program, which represents the single largest investment in public transport that Perth has seen.

In delivering approximately 77 kilometres of new passenger rail and 22 new train stations, the METRONET rail program acts as a catalyst to turn more than 8,000 hectares of land around new stations into desirable places to live, work and play.

The VPCLXR project is Perth's first major elevated rail line that will improve public transport safety, reduce traffic congestion and create new publicly accessible spaces for ongoing use by the community within the existing rail corridor. The VPCLXR project includes the following key components:

- Three sections of new elevated rail line, or viaduct, comprising piers, pier headstock and 'U trough/s'.
- The removal of six (6) existing level crossings at Mint Street, Oats Street, Welshpool Road, Hamilton Street, Wharf Street and William Street.
- The development of five (5) new, modern elevated train stations at Carlisle, Oats Street, Queens Park, Cannington and Beckenham.
- The removal of the existing Welshpool Train Station.
- New station precincts at ground plane level around each of the new train stations including bus interchanges at Oats Street and Cannington Stations, passenger parking and landscaping.
- New ground level public realm works between station precincts incorporating public spaces and facilities.

The VPCLXR project will be delivered by the Armadale Line Upgrade Alliance (ALUA) on behalf of the Office of Major Transport Infrastructure Delivery (OMTID) and the rail operator, the Public Transport Authority of Western Australia (PTA). The project is expected to be completed in the first half of 2025.

It was determined very early in the planning phases to make the VPCLXR project an elevated rail line, as opposed to putting the rail line underground. In this regard the extensive early planning and assessments undertaken by the State Government determined that an underground rail solution was not a feasible option, due to the availability of land for the project within the existing Metropolitan Region Scheme (MRS) Railways Reservation, the cost differential (both capital and ongoing operational costs) for sinking the rail rather than elevating it and given the success of similar elevated rail projects in the Eastern States such as the Caulfield to Dandenong Level Crossing Removal project and the Coburg to Moreland Level Crossing Removal project. It was clearly established as part of early planning processes that elevated rail, if done well, provides many positive benefits.

This development application is the second development application for the VPCLXR project within the City of Gosnells (the City). It relates only to that section of the VPCLXR project that is located in the City and is referred to as 'GDA2'. It follows an application that was lodged in August 2023 for the demolition of the existing Beckenham Train Station and the establishment of a temporary laydown area and crane pad zone (referred to as 'GDA1'). These works have been split from the works included in GDA2 to fast track the demolition and early site establishment works which are critical path items for the Armadale Line shutdown commencing on 20 November 2023.

GDA2 follows the earlier development applications which have been lodged with the Town of Victoria Park (the Town) (VPDA1 and VPDA2) and the City of Canning (CDA1 and CDA2) which have been variously lodged between October 2022 and July 2023 for the sections of the VPCLXR project that are in the Town and the City of Canning respectively. In the Town and the City of Canning, the development applications were split, to separate and fast track the early works and structural components of the rail line, including the elevated rail line (viaduct) and associated structures, and operational railway infrastructure ahead of the development applications for the new stations, station precincts and public realm in these areas. The splitting of the applications allowed further resolution of the design of the stations and public realm in conjunction with additional community consultation.

It is noted that VPDA1, CDA1 and VPDA2 have all been approved by the Western Australian Planning Commission (WAPC). CDA2 was lodged with the City of Canning in July 2023 and is expected to be determined by the WAPC in October 2023.

This development application includes the following scope of works within the City:

- Removal of vegetation;
- Piling for the viaduct;
- Viaduct piers and structure;
- Operational railway infrastructure / works (i.e. rail track, maintenance tracks, signalling infrastructure, OLE masts, overhead rail lines and infrastructure etc);
- Electricity works for the railway;
- Temporary work zones within the rail corridor;
- Elevated train station at Beckenham, including ground level station entry and concourse;
- Beckenham Station passenger parking (including Park 'n' Ride and Kiss 'n' Ride parking);
- At grade Principal Shared Path (PSP) modifications to augment the existing PSP adjacent to Railway Parade;
- Public realm initiatives and improvements between the north abutment, which is within the Metropolitan Region Scheme (MRS) railways reservation just to the south of the intersection of Lacey Street and Railway Parade and the southern abutment adjacent to Linden Close, incorporating construction of a new community node, community park, pathways and landscaping; and
- Local road works and intersection modifications where within the MRS railways reservation.

This application is the culmination of many months of design work for the VPCLXR project. As set out in the Design Report prepared by the ALUA (refer to Appendix F), the design process commenced with the METRONET Preliminary Place Plans, which were derived from engagement with the local community as undertaken by METRONET. ALUA built on this early METRONET work with the preparation of high level concept designs which were then refined and developed with more detailed community engagement. This further engagement was undertaken through: the MySay Transport website; Community Reference Groups (CRGs); pop up information booths; and through targeted consultation with business groups and key stakeholders.

The Final Place Plans, architectural plans and landscape plans have also been subject to design review and refinement through the State Design Review Panel (SDRP) and the Design Working Group which was formed to continue the consultative design review process in between SDRP reviews and has continued following the final SDRP review. The Design Working Group includes representatives from the Office of the Government Architect (OGA) and METRONET.

The proposed GDA2 works are located within the rail corridor and local road reserves adjoining the rail corridor, all of which are within Planning Control Area No.175 (PCA), which extends generally from south of Lacey Street to Linden Close as shown in Figures 1, 2, 3 and 4. A PCA is an enabling planning mechanism that allows the development application for this significant public infrastructure project to be considered and determined by the Western Australian Planning Commission (WAPC).

Refer to Figure 1 – Location Plan

Refer to Figure 2 – Aerial Plan

Refer to Figure 3 – Indicative extent of VPCLXR Works Included in the Development Application Shown Generally in Black Outline (and including William Street works)

Refer to Figure 4 – Concept diagram of extent of VPCLXR Project, with the extent of work that is included in this development application shown highlighted in red outline (source: METRONET 2022)

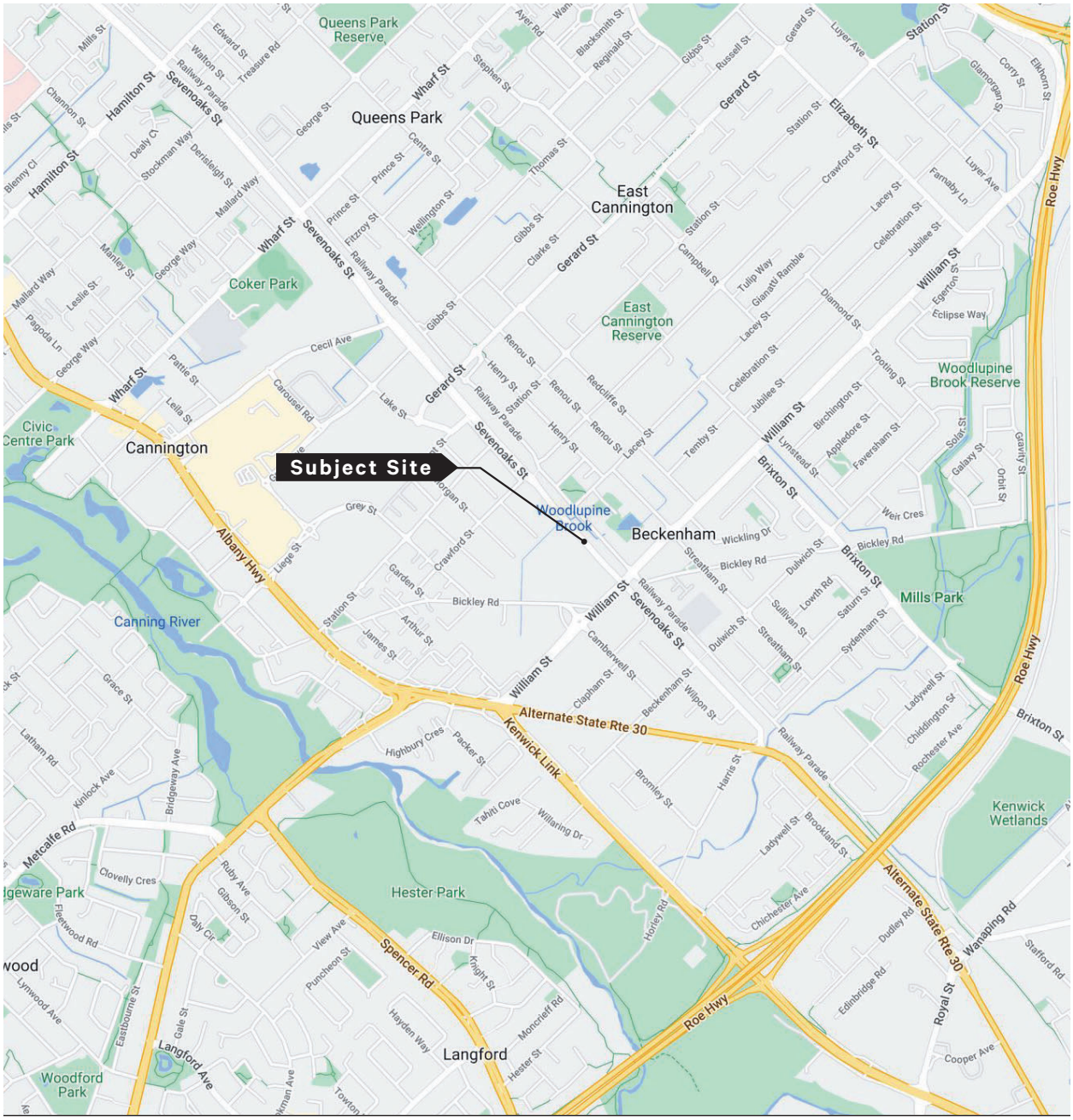


Figure 1. Location Plan

Figure 2. Location Plan

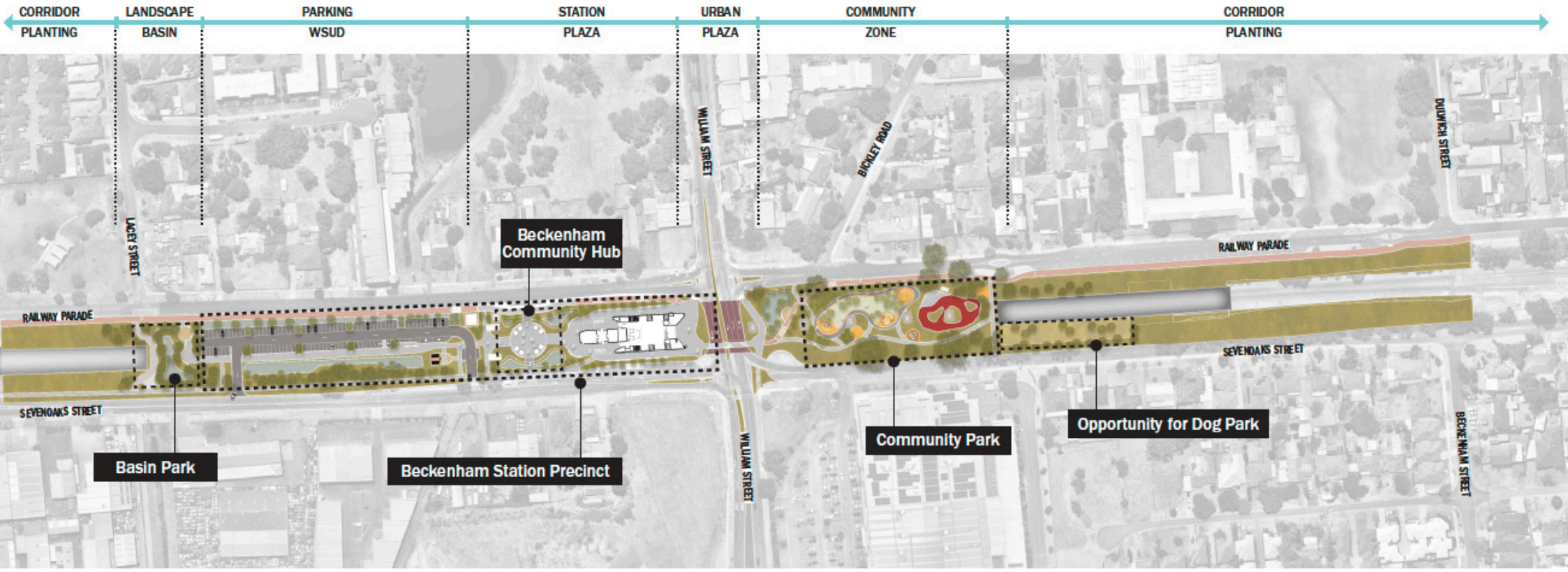


Figure 3. Indicative extent of VPCLXR Works Included in the Development Application Shown Generally in Black Outline (and including William Street works)

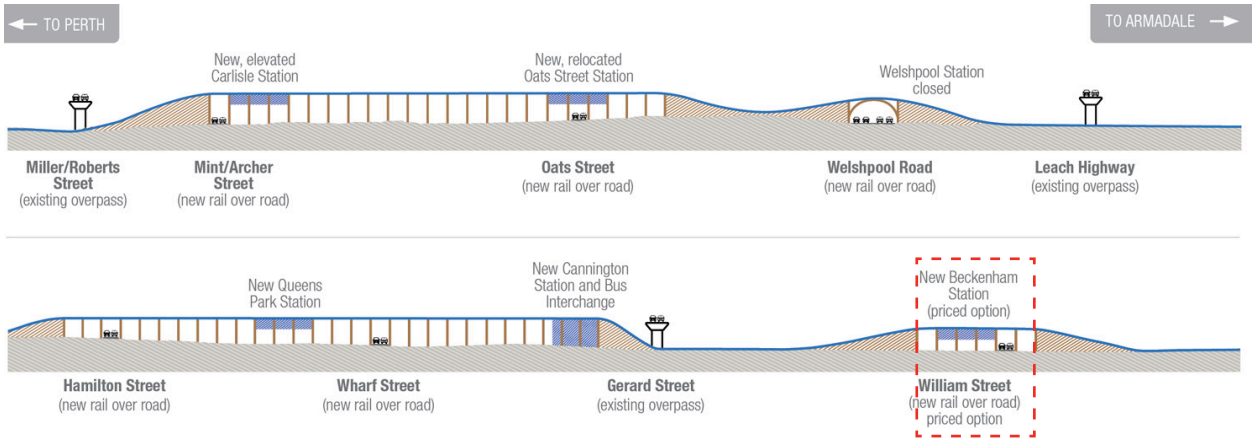


Figure 4. Concept diagram of extent of VPCLXR Project, with the extent of work that is included in this development application shown highlighted in red outline (source: METRONET 2022)

Abbreviations

Abbreviation	Definition
ACP	Beckenham Station Activity Centre Plan
CRGs	Community Reference Groups
DAs	Development Applications
DC Policy 5.1	Development Control Policy No. 5.1 Regional Roads (Vehicular Access)
DoT	Department of Transport
DPLH	Department of Planning, Lands and Heritage
Draft OP 1.2	Draft Operational Policy 1.12 – Planning Proposals Adjoining Regional Roads in Western Australia
DWER	Department of Water and Environmental Regulation
GBN	Ground Borne Noise
GBV	Ground Borne Vibration
LPP 4.1	Local Planning Policy 4.1 Public Consultation
LPP 4.7	Local Planning Policy 4.7 Public Open Space and Streetscapes
LPP 4.9	Local Planning Policy 4.9 Signage
LPP 4.11	Local Planning Policy 4.11 Public Art
LPP 4.12	Local Planning Policy 4.12 Design Review
LPS	City of Gosnells Local Planning Strategy
LPS 6	City of Gosnells Local Planning Scheme No. 6
METRONET Act	*Railway (METRONET) Act 2018*
MRWA	Main Roads WA
MNRG	METRONET Noongar Reference Group
OLE	Overhead Line Equipment
OMTID	Office of Major Transport Infrastructure Delivery
OGA	Office of the Government Architect
ORR	MRS Other Regional Roads Reserve
PCA	Planning Control Area
PD Act	*Planning and Development Act 2005*
POSS	City of Gosnells Public Open Space Strategy
PTA	Public Transport Authority
PSP	Principal Shared Path
SDRP	State Design Review Panel
SPP 5.1	State Planning Policy 5.1 Land use planning in the vicinity of Perth Airport
SPP 5.4	State Planning Policy 5.4 Road and Rail Noise
SPP 7.0	State Planning Policy 7.0 Design of the Built Environment
The City	City of Gosnells
The Town	Town of Victoria Park
TOD	Transit Orientated Development
VPCLXR	Victoria Park-Canning Level Crossing Removal project
WAPC	Western Australian Planning Commission

1. Introduction

This report has been prepared by **element**, as the nominated planning consultant for the Armadale Line Upgrade Alliance (ALUA), in support of an application for the delivery of the VPCLXR project within the City of Gosnells (the City).

This report has been prepared to provide:

- an overview of the VPCLXR project;
- an overview and explanation of the works that form part of this development application, requiring approval from the Western Australian Planning Commission (WAPC);
- an overview and explanation of the demolition and early works that were included in the first development application (GDA1) for the VPCLXR project, which was lodged in August 2023;
- an overview of the subject site for the purposes of this development application;
- an assessment of the proposal against relevant planning requirements; and
- an examination of the planning merits of the proposal.

This report is accompanied by detailed development plans and elevations as well as supporting technical reports, detailed as follows:

- Appendix A – Subject Site Details
- Appendix B – Requirements for Planning Approval
- Appendix C – Detailed Planning Assessment
- Appendix D – Certificates of Title
- Appendix E – PCA Boundary
- Appendix F – Design Report prepared by ALUA
- Appendix G – Civil Structures and Viaduct Drawings (Plans, Elevations, Typical Sections) prepared by ALUA
- Appendix H – Retaining Walls and Abutment Plans (Plans, Elevations, Typical Sections) prepared by ALUA
- Appendix I – Architectural Drawings for Beckenham Train Station (Plans, Elevations, Typical Sections) prepared by ALUA
- Appendix J – Civil Corridor Landscape and Urban Design Package prepared by ALUA
- Appendix K – Transport Impact Assessment Report prepared by ALUA
- Appendix L – Public Space Consultation Outcomes Report prepared by ALUA
- Appendix M – Drainage General Arrangement Plans prepared by ALUA
- Appendix N – Civil Corridor General Arrangement Plans prepared by ALUA
- Appendix O – Roads and Drainage General Arrangement Plans prepared by ALUA
- Appendix P – Swept Path Diagrams prepared by ALUA
- Appendix Q – Tree Management Plans prepared by ALUA
- Appendix R – Public Art Plan and Opportunities Document prepared by ALUA

The overall VPCLXR project location is shown in Figures 5 to 8.

Further information in relation to the site details relevant to the development application have been included at Appendix A.

Refer to Appendix A – Subject Site Details

Refer to Figure 5 – Indicative extent of full VPCLXR project

Refer to Figure 6 – Location Plan - extent of VPCLXR Project within the City of Gosnells

Refer to Figure 7 – Aerial Plan – extent of VPCLXR Project within the City of Gosnells

Refer to Figure 8 – Site Plan – extent of VPCLXR Project within the City of Gosnells

Figure 5. Indicative extent of full VPCLXR project

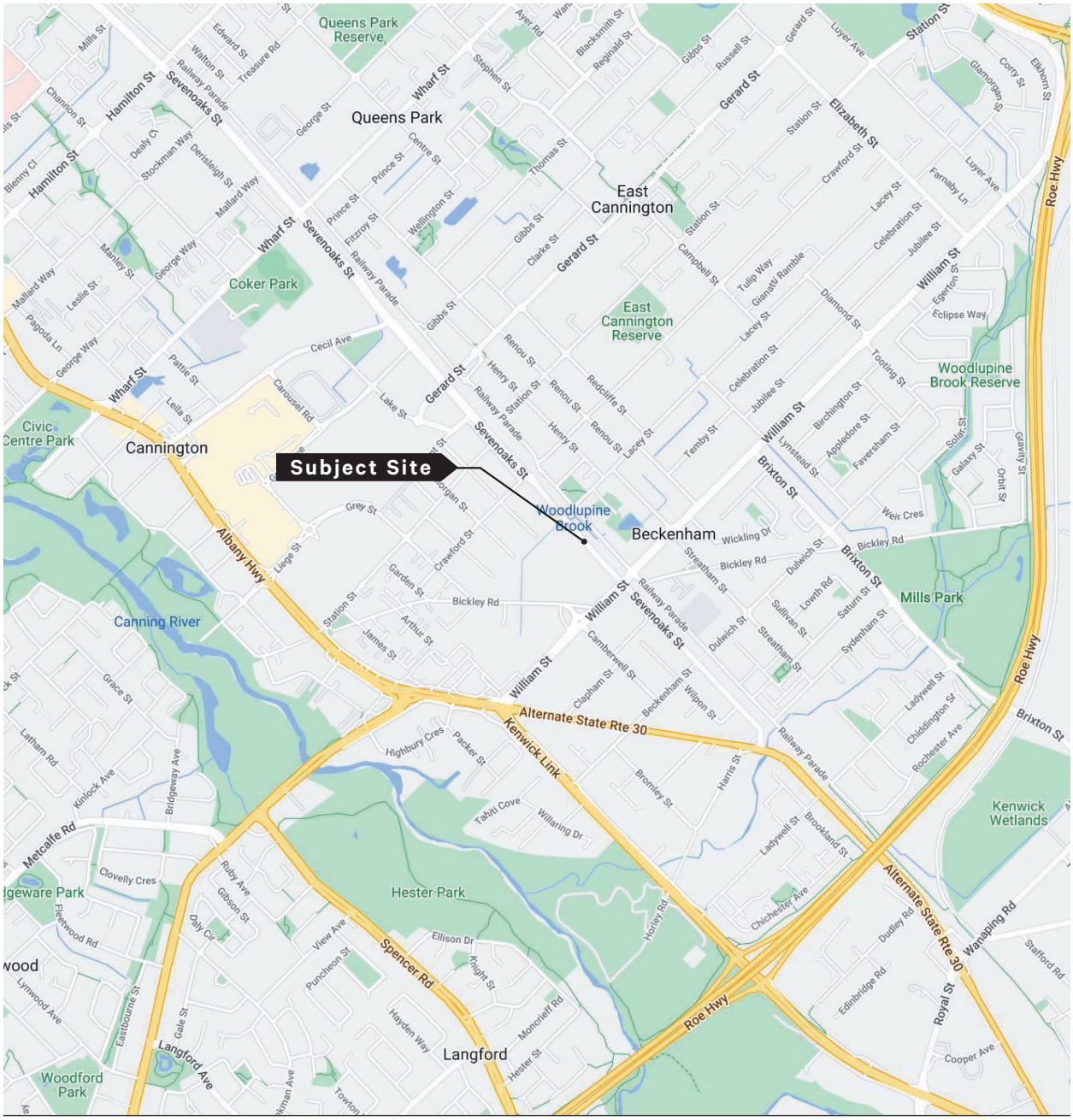


Figure 6. Location Plan - extent of VPCLXR Project within the City of Gosnells

Figure 7. Aerial Plan – extent of VPCLXR Project within the City of Gosnells

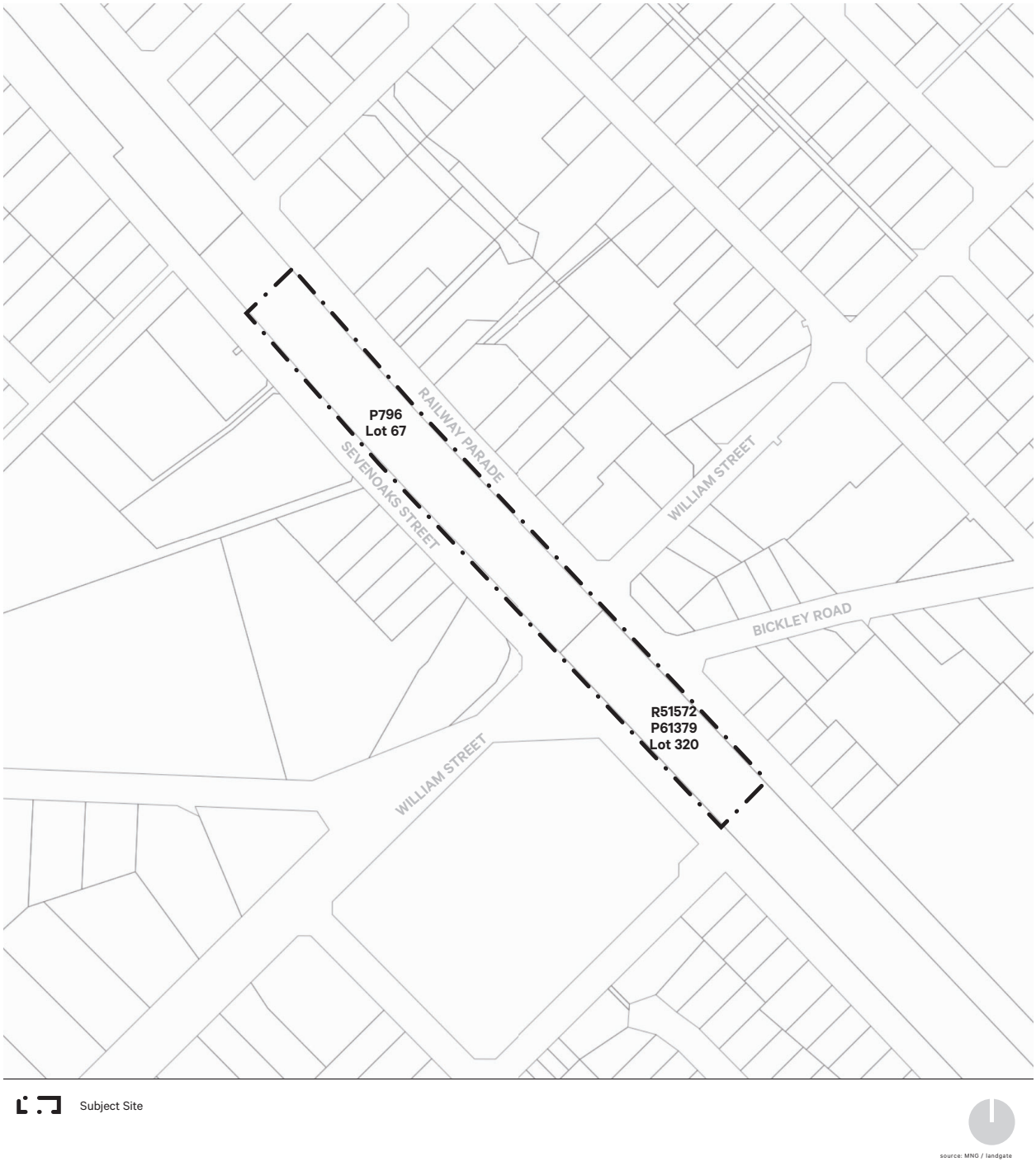


Figure 8. Site Plan – extent of VPCLXR Project within the City of Gosnells

This development application is the second development application for the VPCLXR project within the City of Gosnells (the City). It follows an application that was lodged in August 2023 for the demolition of the Beckenham Train Station and the establishment of a temporary laydown area and crane pad zone (referred to as 'GDA1'). The GDA1 works have been split from the works included in GDA2 to fast track the station demolition and early site establishment works which are critical path items for the Armadale Line shutdown commencing on 20 November 2023.

GDA2 follows the earlier development applications which have been lodged with the Town of Victoria Park (the Town) (VPDA1 and VPDA2) and the City of Canning (CDA1 and CDA2) which have been variously lodged between October 2022 and July 2023 for the sections of the VPCLXR project that are in the Town and the City of Canning respectively.

In the Town and the City of Canning, the development applications were split, to separate and fast track the early works and structural components of the rail line, including the elevated rail line (viaduct) and associated structures, and operational railway infrastructure ahead of the development applications for the new stations, station precincts and public realm in these areas. The splitting of the applications allowed further resolution of the design of the stations and public realm in conjunction with additional community consultation. In the City, only the demolition and site establishment works have been split from GDA2.

It is noted that VPDA1, CDA1 and VPDA2 have all been approved by the Western Australian Planning Commission (WAPC). CDA2 was lodged with the City of Canning in July 2023 and is expected to be decided by the WAPC in October 2023.

This application seeks approval for the following VPCLXR project components:

- Removal of vegetation;
- Piling for the viaduct;
- Viaduct piers and structure;
- Operational railway infrastructure / works (i.e. rail track, maintenance tracks, signalling infrastructure, OLE masts, overhead rail lines and infrastructure etc);
- Electricity works for the railway;
- Temporary work zones within the rail corridor;
- Elevated train station at Beckenham, including ground level station entry and concourse;
- Beckenham Station passenger parking (including Park 'n' Ride and Kiss 'n' Ride parking);
- At grade Principal Shared Path (PSP) modifications to augment the existing PSP adjacent to Railway Parade;
- Public realm initiatives and improvements between the north abutment, which is within the Metropolitan Region Scheme (MRS) railways reservation just to the south of the intersection of Lacey Street and Railway Parade and the southern abutment adjacent to Linden Close, incorporating construction of a new community node, community park, pathways and landscaping; and
- Local road works and intersection modifications where within the MRS railways reservation.

This report has been prepared to provide an overview of the subject site and the proposed project works, as well as an assessment against relevant planning requirements and an examination of the planning justifications for the proposal. The application is also accompanied by supporting plans and technical documents, as discussed throughout this report.

Refer to Appendix F – Design Report prepared by ALUA

Refer to Appendix G – Architectural Drawings for Beckenham Train Station (Plans, Elevations, Typical Sections) prepared by ALUA

Refer to Appendix J – Civil Corridor Landscape and Urban Design Package prepared by ALUA

1.1 Project Overview

The VPCLXR project will deliver an elevated rail line and rail stations for a section of the Armadale Rail Line commencing to the south east of the existing Miller Street overpass in Victoria Park and extending to the south of the existing William Street crossing in Beckenham. The project will also create new and connected open spaces, parkland and community infrastructure that will act as a catalyst for positive social interaction and urban renewal within the surrounding area.

In August 2022 it was announced that there would be a further section of elevated rail added to the scope of the project, extending the project into the City of Gosnells, to include a new Beckenham Train Station and the removal of the William Street level crossing. It is this section of the project which is the subject of this development application.

The project is designed to improve public transport safety, improve road safety and reduce traffic congestion, improve accessibility to stations for all users and create new and versatile public spaces for the community. The key project works include:

- Three sections of new elevated rail line, or viaduct, comprising piers, pier headstock and 'U trough/s'.
- The removal of six (6) existing level crossings at Mint Street, Oats Street, Welshpool Road, Hamilton Street, Wharf Street and William Street.
- The redevelopment five (5) new, modern elevated train stations at Carlisle, Oats Street, Queens Park, Cannington and Beckenham.
- The removal of the existing Welshpool Train Station.
- New station precincts at ground plane level around each of the new stations including bus facilities, passenger parking and landscaping.
- New ground level public realm works between station precincts incorporating public spaces and facilities.

Refer to Figure 9 – Concept diagram of extent of VPCLXR Project, with the extent of the project that is the subject of this development application shown highlighted in red outline (source: METRONET 2022)

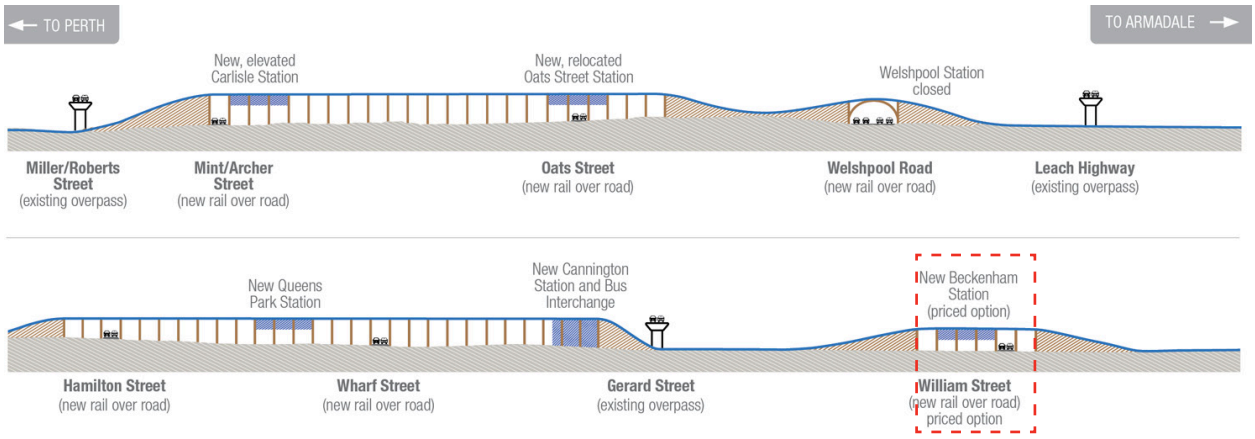


Figure 9. Concept diagram of extent of VPCLXR Project, with the extent of work that is included in this development application shown highlighted in red outline (source: METRONET 2022)

This development application relates to the Beckenham viaduct, Beckenham Train Station, station precinct and associated public realm improvements that are located within the City. This development application follows the earlier development applications which have been lodged with the City (GDA1), the Town of Victoria Park (the Town) (VPDA1 and VPDA2) and the City of Canning (CDA1 and CDA2). GDA1 was lodged in August 2023, VPA1 and CDA1 were lodged in October 2022, VPDA2 was lodged in February 2023 and CDA2 was lodged in July 2023.

In the Town and the City of Canning, the development applications were split, to separate and fast track the early works and structural components of the rail line, including the elevated rail line (viaduct) and associated structures (CDA1 and VPDA1), ahead of the development applications for the new stations, station precincts and public realm improvements (CDA2 and VPDA2), as this allowed further resolution of the design of the stations and public realm in conjunction with community consultation.

It is noted that VPDA1 and CDA1 were both approved by the WAPC in February 2023. VPDA2 was approved by the WAPC in June 2023. CDA2 was lodged with the City of Canning in July 2023 and is expected to be determined by the WAPC in October 2023.

The following diagram explains the structure and separation of the development applications for specific components of the VPCLXR project.

Refer to Figure 10 – Anticipated Development Application Staging

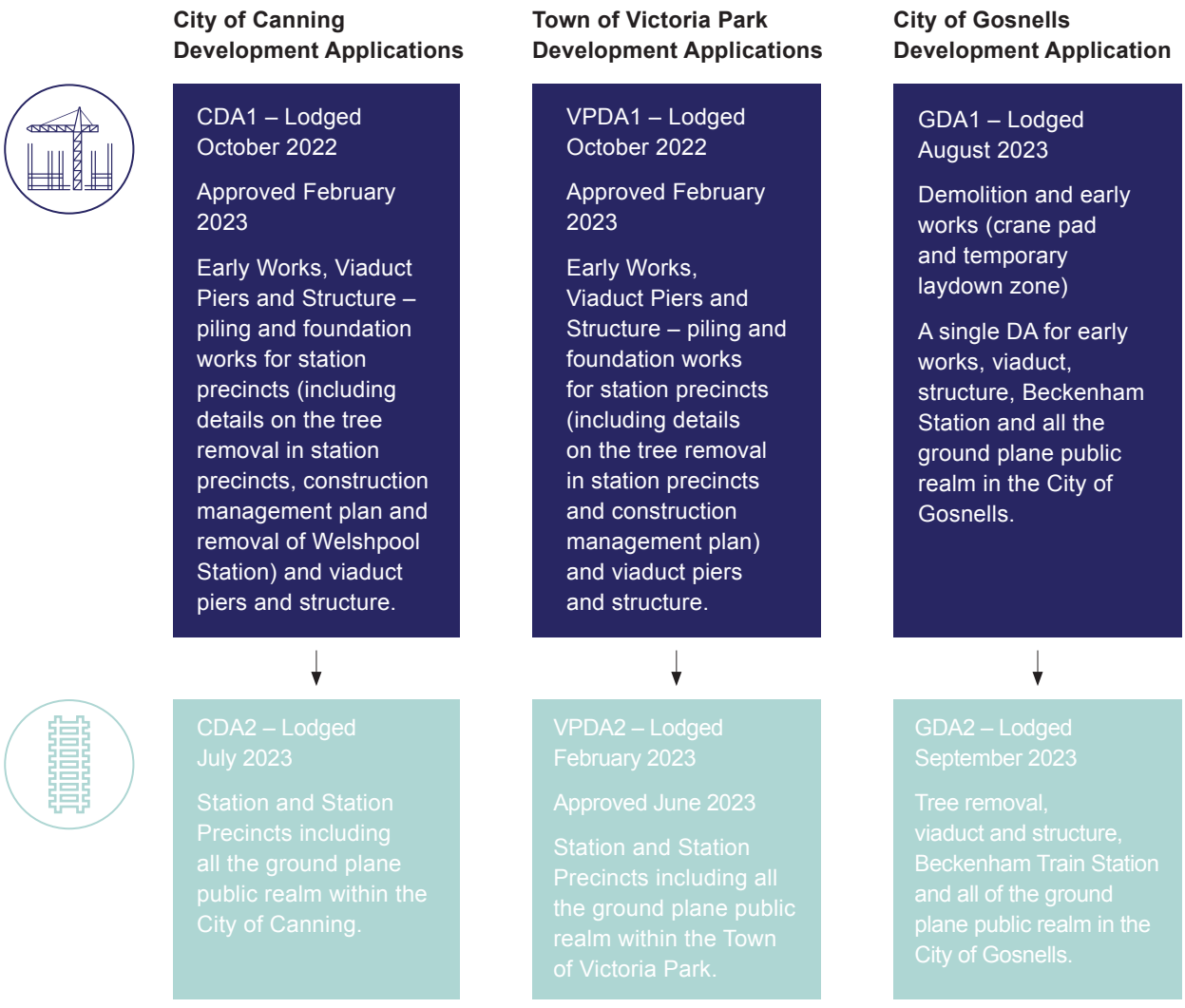


Figure 10. Anticipated Development Application Staging

1.2 Project Team

Table 1: Consultant List

Consortium (providing engineering and construction expertise and delivering the project)	Armadale Line Upgrade Alliance • Acciona Construction Australia Pty Ltd; • BMD Constructions Pty Ltd; • WSP Australia Pty Ltd; and • AECOM Australia Pty Ltd.
Planning Consultant	**element**
Architect and Landscape Architect	Hassell (part of the ALUA consortium)

1.3 Planning Approval Pathway

The planning approval process for the VPCLXR project is controlled by several key legislative and regulatory provisions, as summarised below:

- The *Planning and Development Act 2005* (PD Act), which provides exemptions for 'public works' from the need to obtain planning approval for such developments under the applicable local government planning framework (i.e. under a local government local planning scheme);
- The *Metropolitan Region Scheme* (MRS), which exempts all work for, or in connection with a railway that are located inside a designated railways reservations from the need for planning approval, other than 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;
- Declaration of Planning Control Area No.175 (PCA) under Part 7 of the PD Act. A PCA is an enabling planning mechanism that requires that all development within the PCA is to be considered and determined by the WAPC; and
- The *Railway (METRONET) Act 2018* (METRONET Act) includes the VPCLXR project, which means that certain METRONET works, other than 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, are exempt from the need to obtain planning approval where these METRONET works are situated outside of the designated MRS Railways Reservation.The relevant legislative framework that applies to the VPCLXR project has been described in more detail at Appendix B.

Refer to Appendix B – Requirements for Planning Approval

All the structural components of the rail line, including the elevated rail line (viaduct) and associated structures included in this development application are located within both the railways reservation and the PCA and therefore require approval from the WAPC.

Irrespective of the PCA, the construction of the new Beckenham Train Station, new related car park and new associated means of pedestrian and/or vehicular access are not exempt works under either the MRS or the METRONET Act. The works are also generally located within the railways reservation under the MRS and are all within the PCA and therefore require approval from the WAPC under the provisions that relate to PCAs. Further information on the planning approval process is provided in Section 5 of this report.

1.4 Related Approval Processes

Figure 11 below illustrates the typical assessment process which will be followed for each development application, including required public consultation and notification requirements.

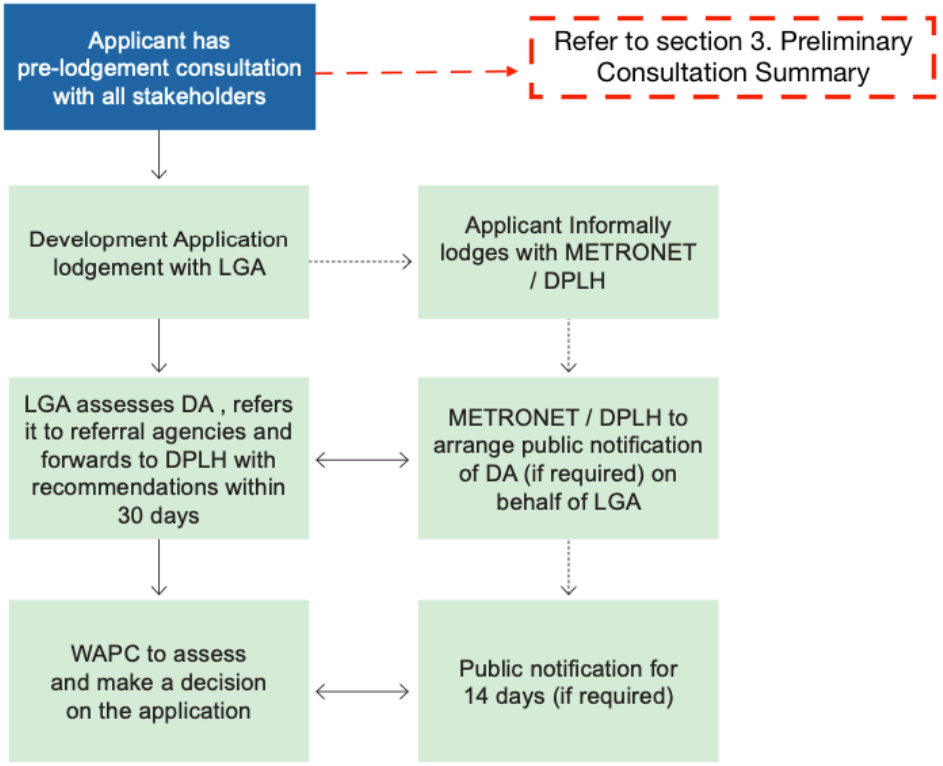


Figure 11. Typical development application assessment flow chart

As demonstrated in Figure 11, the applications will be referred to a number of State Government Agencies, who are key stakeholders for the VPCLXR project. The referral agencies include but are not limited to:

- METRONET;
- Office of the Government Architect;
- Public Transport Authority;
- Main Roads Western Australia; and
- Department of Water and Environmental Regulation.

These stakeholders will be given an opportunity to review the applications and provide comments and recommendations to the WAPC that will be used to inform the assessment of the proposed development and to set any associated conditions of approval.

2. Project Background

The VPCLXR project is Perth's first major elevated rail line designed to improve public transport safety, improve road safety and reduce traffic congestion, improve accessibility to stations for all users and create new and versatile public spaces for the community.

Level crossings on the Armadale Rail Line have been causing significant problems, including vehicle and pedestrian safety issues and traffic congestion and delays. The removal of the level crossings will address the objectives of the METRONET rail program by:

- Supporting sustainable economic growth in Perth;
- Improving connectivity between communities and businesses; and
- Increasing accessible travel and lifestyle options.

The VPCLXR project proposes the removal of six level crossings along the Armadale Rail Line including; the Mint Street, Oats Street, Welshpool Road, Hamilton Street, Wharf Street and William Street level crossings. The new elevated rail line or viaduct will allow the removal of the level crossings by removing the movement barrier associated with the existing at grade rail line. As a consequence of the elevated rail line all existing at grade train stations along this part of the line will need to be removed and replaced with new elevated train stations and associated public parking, bus interchange and public realm treatments, including new public spaces and facilities.

It was determined very early in the planning phases to make the VPCLXR project an elevated rail line, as opposed to putting the rail line underground. In this regard the extensive early planning and assessments undertaken by the State Government determined that an underground rail solution was not a feasible option, due to the availability of land for the project within the MRS Railways Reservation, the cost differential (both capital and ongoing operational costs) for sinking the rail rather than elevating it and given the success of similar elevated rail projects in the Eastern States including the Caulfield to Dandenong and the Coburg to Moreland Level Crossing Removal projects. It was clearly established as part of early planning processes that elevated rail, if done well, provides many positive benefits, which include:

- Elevated rail stations can be configured to have two or more entries, which can improve accessibility and can extend the station catchment, thus enhancing the integration between land use and public transport for the benefit of the local community. Multiple entrances are generally more difficult and costly for underground stations.
- Elevated rail lines are able to be constructed more efficiently and quickly than underground rail, minimising disruption to rail services.
- Opportunities to build over underground rail are limited due to structural load limitations and limitations on basement construction.
- Underground rail can be challenging in areas where the water table is high, introducing risk of flooding and increasing the complexity of construction.
- Elevated rail provides the opportunity to readily add capacity to the rail network at a later date by duplicating the viaduct if needed. These opportunities are much more difficult in an underground scenario and generally require tunnel duplication.
- Elevated rail provides the opportunity to easily integrate ground level development at a later date within the space under the viaduct, which provides the opportunity to stimulate desirable economic and social development around stations at the appropriate time.
- Both elevated rail and underground rail can deliver an extended networks of linear parks and dedicated pathways for safer walking and cycling.
- Elevated rail offers rail passengers a superior passenger experience, with views and way-finding when compared with underground rail.
- Elevated rail requires less electricity for cooling and lighting than underground rail.
- Elevated rail is more efficient and safer for the rail operator in the long term.

Many cities across the world are showing a strong preference for elevated rail over underground rail systems, these include[1]:

- Bangkok has the BTS Skytrain, which has been so successful that additional elevated rail is being planned.
- New York and Berlin have systems which mix underground rail and elevated rail.
- Dubai has an elevated metro system.
- Singapore's MRT runs underground through the city centre but is elevated in the less congested outskirts of the city.
- Delhi has a mostly elevated metro system.

The new elevated rail line will create a major opportunity for positive and desirable land use changes that generate:

- Increased recreational opportunities (active and passive) and social interaction associated with new public spaces and facilities at ground level along the length of the viaduct;
- Improved amenity for the surrounding areas from new public open space and an upgraded public realm;
- Reduced urban heat island effect through increasing vegetation and tree canopy along the length of the project;
- Improved passive surveillance and safety as a result of designing the new infrastructure and public realm in a manner that is consistent with the principles of Crime Prevention Through Environmental Design (CPTED);
- Opportunities to increase public use and patronage of the rail line through the provision of new train stations, bus interchanges and parking facilities;
- Opportunities to support enhanced community interaction and activity through the delivery of event spaces within the public realm (station forecourts and appropriately configured public spaces) that support 'pop up' events and markets (or similar); and
- Opportunities to leverage new local development opportunities from the significant investment in public infrastructure and improvements in the local environment.

The project has been designated by the WA Government as a 'project under acceleration' as part of its commitment to economic recovery in the wake of the COVID-19 pandemic and is outlined in the State Government's WA Recovery Plan.

Removing the level crossings will allow road traffic to move more safely and efficiently by travelling beneath the rail line without stopping or queueing for boom-gate closures. The area underneath the raised rail line will be transformed into public open space and will facilitate active transport connectivity through the project area and beyond. The new train stations with longer platform lengths will also be able to service longer train sets.

Whilst most of the existing stations are to be rebuilt as elevated stations, Welshpool Station is to be removed from the system due to its low patronage numbers.

The project is to be principally constructed during an 18 month shut down period during which the rail line will be closed and replacement bus services will be in operation. METRONET has publicly acknowledged that this shutdown process will be disruptive to the community however it was determined as the most appropriate option to deliver the new rail line quickly and safely. Temporary bus stops and bus interchanges will also be established during this period to support replacement bus services until the new permanent bus stops and interchanges come on line as part of the delivery of the VPCLXR project. Importantly, the recent shut down of the Mandurah line in January 2022 has provided Transperth with a number of valuable learnings that will help to ensure that when the Armadale Line is shut the replacement bus network will provide a suitable alternative.

1 https://www.hindustantimes.com/mumbai-news/despite-advantages-of-underground-mrt-cities-prefer-a-mix-of-elevated-and-underground-metros/story-I5US12iyHL1WadOS6jXKDI.html (September 02, 2019)

3. Preliminary Consultation Summary

3.1 Pre-Lodgement Agency and Community Consultation

3.1.1 Community Consultation

METRONET commenced consultation on the VPCLXR project with the community in 2020 with advertisements relating to the project released to the public as early as June 2020 through online mediums and letterbox drops.

Early engagement with the local community included in-person briefings before moving online for a few months due to the restrictions brought on by the COVID-19 pandemic. A summary of the communication and engagement statistics are listed below:

- 2020: A total of 44 sessions/online advertisements reaching approximately 110,347 individuals;
- 2021: A total of 28 sessions/online advertisements reaching approximately 68,941 individuals; and
- 2022: One (1) letterbox drop reaching 60 individuals.

The information provided to the public included updates on the project, requests for input, services notices and general information relating to the project.

Two Community Reference Groups (CRGs) were established to help inform the design concepts for the VPCLXR project. The Oats Street CRG covers the works proposed to Oats Street, Mint Street and Welshpool Road and the Wharf Street Community Reference Group (Wharf Street CRG) covers Wharf, Hamilton and William Streets. The groups are each made up of 10 residents, business owners and community group representatives. The works proposed as part of this report were reviewed by the Wharf Street CRG.

Four (4) meetings were held with the Wharf Street CRG across 2020 and 2021. These CRGs were facilitated by METRONET prior to ALUA's involvement in the project. The CRG members reviewed early design concepts to decide the best locations for public spaces, facilities and access points. These meetings primarily discussed the desired public realm outcomes associated with the project.

Between July and September 2022 ALUA undertook a public space community engagement program to inform the public space design of the VPCLXR project within the Town and the City of Canning, with the aim of raising awareness of the project, as well as seeking feedback from the community that are living and working around the VPCLXR project boundary. Due to the later inclusion of Beckenham in the VPCLXR project, the Beckenham public space community engagement program was run between March and May 2023.

Key highlights of this most recent ALUA consultation program for the Beckenham public space community engagement program included:

- Information flyers dropped to 700 residents and a social media campaign to raise awareness of the consultation program.
- A dedicated online engagement platform provided affected local communities with information and opportunities to provide feedback into the process.
- An online survey, which was completed by 207 community members, demonstrated community preferences and ideas for future public spaces.
- Key community and interest groups representative of the local communities being engaged through tailored workshops.
- Pop up information sessions were held in the VPCLXR project area to connect with the local community.
- Collaboration with the project's two CRGs.
- Engagement with industry and local government representatives to collect their insights.
- Consistent and timely information delivered through the METRONET project website and social media.

The key themes that emerged from the ALUA consultation, which have influenced the design of the public realm improvements include:

- **Connectedness** – a desire to feel more connected to places, people and opportunities.
- **Activation** – the excitement of new activities that support social interaction.
- **Movement** – the opportunity to create convenient ways to travel between home, work, school and local places.
- **Safety** – a strong desire for both individual and community safety through good design.
- **Environment** – a desire for greater connection to the natural environment.

The key themes that emerged from the community's feedback have been fundamental to ALUA's design process, which includes balancing the vision identified by the community within the limitations of the VPCLXR project area. Some stakeholders were interested in elements relating to the whole project while others were interested in the detail. The range of discussions enabled the design team to understand the local context at the Beckenham Station Precinct and the public space surrounding it. Feedback enabled the designers to reflect on and refine the design, to ensure the public space best meets the needs of the local community. Some of the key design outcomes that have been shaped by this consultation process include:

- A high quality and flexible community hub in the Beckenham Station forecourt, which will enable a range of activations including community events (music festivals, food vans, markets etc). The activation of spaces will be reviewed by the local government and PTA. When not activated, the area provides space for seating under the protection of the elevated rail.
- The main drain off Lacey Street will be reshaped to create a landscaped water basin, which will provide an educational and interactive connection to Water Sensitive Urban Design (WSUD) initiatives and habitat creation.
- A BMX pump track has been designed within the public realm opposite the Beckenham Primary School, supporting the feedback received from the school and community. A serpentine path (snaked shaped in design) has also been incorporated for walking and wheels activity, encouraging unisex and multi-generational use.
- Seating nodes with a mix of seating types are proposed, both under the elevated rail and shade shelters.
- Public artwork installation opportunities will be included through the public art strategy implementation process.
- Small exercise nodes will be located along the pedestrian path network.
- Consideration is being given to the elevated rail's facade design along the length of the corridor to be neutral in tone, with diversity of colour and materials associated with the stations and activity nodes.
- Provision of safe accessible footpaths that connect the station with local destinations and facilitate wheelchair access.
- A lighting strategy is under development and will include applied CPTED principles and support safety in and around the station plaza, along shared paths, and secondary pathways.
- Public space design has incorporated buffer zones from youth play areas to major road crossings.
- The online survey identified universally accessible and connected footpaths were a high priority, along with cycle paths. Particular attention has been paid to the commuter cyclist routes and community recreational paths. The design team has tested the path width, reviewed sight lines and considered appropriate signage along the corridor.
- Along the length of the rail corridor people were keen to preserve the effectiveness of the existing shared paths. Elements such as drinking fountains, bike racks and bike shelters will be provided in the station precinct.
- Conflict points along shared paths and other recreational pathways have been reviewed. Paths have been re-aligned to reduce potential collision points and emphasise the need for fast commuters to be located at the outer boundary of the rail corridor and slower, relaxed cycling and walking to occur under the shade of the elevated rail and trees.
- Adequate parking at the station is important to the community. The number of parking bays available at the end of the project will not be less than what is currently available. Bringing all parking together to a centralised location will facilitate ease of access.

- Easy pick up and drop off areas was a reoccurring theme in the feedback and kiss and ride facilities will be made available at both sides of the station plaza.
- Selecting local, “first”, native seeds in the landscape planting.
- Emphasis on creating shade and tree canopy.
- Ongoing intent to retain as many trees as possible.
- Creation of the landscaped basin using native planting to support habitat creation.
- Increasing the extent of green lawn and open spaces in consultation with local government.

Further detail on the process undertaken by ALUA and the outcomes that have influenced the final project design are included in the Beckenham Public Spaces Consultation Report included at Appendix L. Notably, the management and maintenance of the facilities and public realm being delivered by this project will be shared between the PTA and City. The delineation of the various management and maintenance responsibilities is part of an ongoing process and is subject to ongoing discussions between PTA and the City. Generally, the PTA will maintain the rail related infrastructure and the City will maintain the public realm that is being delivered for the community’s use.

Refer to Appendix L - Public Spaces Consultation Outcomes Report

3.1.2 Stakeholder Consultation

ALUA has continued to engage with a number of key stakeholders that are relevant to the VPCLXR project. These have included:

- METRONET;
- Department of Planning, Lands and Heritage Assessment Teams;
- Office of the Government Architect;
- State Design Review Panel;
- Public Transport Authority;
- City of Canning;
- Town of Victoria Park;
- City of Gosnells;
- Community Reference Groups;
- METRONET Noongar Reference Group;
- Main Roads;
- Western Power; and
- Other relevant servicing agencies (i.e. ATCO gas).

4. Site Analysis and Design Response

4.1 Design Principles

State Planning Policy 7.0 – Design of the Built Environment (SPP 7.0) requires that new development proposals and planning frameworks address design principles within the policy which have been identified to promote good design outcomes. ALUA has prepared design principles responses for the Final Place Plans, for the new train station and station precinct and for the landscaped public realm to address how the proposed design of the VPCLXR project responds to the SPP 7.0 design principles. These responses are summarised in Table 2 below.

Table 2 – Assessment Against SPP 7.0

Principle	Response
Context and Character	
Good design responds to and enhances the distinctive characteristics of a local area, contributing to a sense of place.	The overarching project design principles reflect METRONET's initial approach of "collective", "connected" and "specific". This approach set out the strategy of "collective" elements which are consistent across the length of the project, "connected" elements which respond to the separate areas of the project and "specific" elements which respond to the individual station precinct. The new Beckenham Train Station has been carefully designed in response to local context. It has been designed to be a 'good neighbour' by enhancing and celebrating the elements that make the place unique, building on local Aboriginal and post-colonial histories and stories. The station recognises the buildings, streets and landscapes appreciated by the locals from the vernacular Australian homes to the watering holes and wetlands by the Swan River. The stations materiality and colouration is designed to be distinct and responsive to local contexts whilst maintaining a consistent line-wide character. The local context response at Beckenham includes: • A strong sense of community belonging, incorporating a generous station forecourt with community hub area which provides a space for activation or alternatively for informal seating, gathering, waiting, and resting. This space addresses the northern side of the station. The public realm of the station also includes a forecourt to William Street, with road treatments and a planted median to William Street to create a sense of pedestrianization and to assist in slowing traffic; improving pedestrian connections to local schools, shops and businesses. • Beckenham Station uses a light reflective champagne tone material on the soffit of the station in reference to the increased openness and abundance of filtered natural light as the tight urban grain opens up at the base of the Perth Hills. • The roof form of the station reflects the roof forms of the other stations proposed as part of the project to provide line wide consistency in the character of the stations.
Landscape quality	
Good design recognises that together landscape and buildings operate as an integrated and sustainable system, within a broader ecological context.	Consideration has been given to the viaduct design to ensure it will positively impact the surrounding public realm and landscape quality. The location and design of the piers has been carefully considered to minimise their impact on the public realm in terms of both footprint and sightlines. The integrated drainage solution within the piers allows direct infiltration to the areas beneath the viaduct. Additionally, the ground profile beneath the viaduct has been profiled to capture run off and minimise rain shadow effect. The hard and soft landscape, and urban design elements throughout the corridor are imbued with stories and meaningful connection to the community, to First Nations 'Country', to place, and beyond. Each part of the public realm has been carefully designed in a considered manner to provide places that respond to the local identity and streetscape character. The principles applied to each of the areas seeks to enhance sustainability, reinforce identity, encourage connectivity across the rail corridor, connect local communities, create safe and comfortable spaces and to promote activation and development. The consideration of environmental factors such as water and soil management, ground and site conditions, solar access, micro-climate tree canopy, urban heat island impacts, habitat creation and preservation of green infrastructure has also been incorporated in the landscape design. The native planting palette is used to define character and promote biodiversity, with the aim to restore lost and damaged ecosystems and endemic vegetation complexes, where possible.

Principle	Response
Built form and scale	
Good design ensures that the massing and height of development is appropriate to its setting and successfully negotiates between existing built form and the intended future character of the local area.	The design of the viaduct comprises three main elements; the viaduct beams, piers and crossheads and the walkway screens. The viaduct beams are nominally 30 metres in length (each span) and are optimised for engineering efficiency and construction. The profile is consistent through the project, maintaining a simple form. The piers and crossheads have been sculpted with the tapered form visually reducing the mass. The faceted faces profile a finer scale and will respond differently with light. The walkway screen is a continuous ribbon along the viaduct, acting as both a walkway balustrade and a screen for the electrical and communications cable containment. The screen will have a profiled form and perforated pattern to provide visual amenity both at a distance and also when viewed from within the public realm. The scale, massing and height of the station building responds to the form of the viaduct and the need to provide appropriate weather protection to the station whilst also responding to the adjacent planned built fabric and desirable future higher density development. The train station building is prominent, having been designed to be an urban marker without forming a new physical and visual barrier. The built form is broken up into compartments to maximise visual porosity whilst also providing sufficient weather protection. The orientation, proportion, composition, and articulation of the station built form elements responds to the context of the local setting whilst providing a functional train station. This includes: • The roof form diffuses into a lattice structure over the upper part of the stairwell to reference the design approach used elsewhere in the VPCLXR project (at Queens Park, Carlisle and Oats Street Stations). This references the verandah structures found on many inter-war homes in the VPCLXR project area and also provides transparency at the stairwells for passive surveillance. • Use of dual entries to ensure it services the areas both north and south of the station, with the main entrance orientated to the north to integrate with and activate the forecourt / community activation space. • Using a stretched form of a typical pitched residential roof to cover the station areas, to reflect the common roof design with the Queens Park, Carlisle and Oats Street Station roofs. The proposed stretched pitched roof creates a dramatic form that references the residential vernacular found along parts of the VPCLXR project line. • The extent of solid roof is minimised as needed to provide weather protection to platforms and privacy to adjoining properties without unnecessarily adding to the bulk and scale of the station building. • The upper canopy is detached from the station building plinth as much as possible to provide a dynamic design that expresses the buildings' function as a train station that is in harmony with, yet distinct from, the surrounding residential vernacular. Defining the public domain aspects of the station precinct to respond to local character will ensure these areas contribute positively to the character of the adjacent streetscape and open spaces. The station precinct is also designed to provide good amenity for people at ground level with connections to important views, vistas and landmarks.

Principle	Response
Functionality and build quality	
Good design meets the needs of users efficiently and effectively, balancing functional requirements to perform well and deliver optimum benefit over the full lifecycle.	The viaduct piers and headstock will be painted to ensure maintainability and the easy rectification of graffiti. The viaduct beams will remain off form grey concrete (class 2 finish) to minimise ongoing maintenance. The viaduct comprises two 'L' beam elements with a concrete stitch element between. This element will be constructed with a permanent steel formwork with hot dipped galvanised finish. The train station has been designed to be functionally simple and efficient with a clear arrangement of un-paid, paid and service spaces to facilitate good relationships between spaces and ease of use. The design has been planned to provide flexibility and adaptability for future PTA requirements without the need for major modifications. The new rail infrastructure will become a long-term asset that is designed in a robust way to get 'better with age'. Good build quality in the train station will be achieved by using durable materials, finishes, elements and systems that are easy to maintain and weather well over time. Good build quality is also being applied in the public realm, this has been informed by consultation with the City on the materiality and finishes proposed in areas of the public realm that will be managed by the City in the future. Architectural product selections and details have focussed on resilience to wear and tear expected from intended use, upgrade ease and maintenance minimisation. An integrated systems approach has been implemented to achieve a functional and serviceable final outcome, without detriment to aesthetic appearance. Consideration has been given to the full life-cycle of systems and mitigation of potential climate change impact.
Sustainability	
Good design optimises the sustainability of the built environment, delivering positive environmental, social and economic outcomes.	Through the development of the design, the viaduct was optimised to reduce the overall cross-sectional width by approximately 2m. This rationalisation provides significant reduction to the concrete usage. Additionally, the fabrication method of repeated precast elements will minimise wastage. The train station is being designed to achieve a four star Green Star equivalency target rating, both in the design and 'as built'. Initiatives include: • The designs apply a sustainability approach using passive environmental design measures, responding to local climate and site conditions having regard to orientation, shading, thermal performance and natural ventilation. • WSUD and landscape principles have been applied to minimise negative impacts on existing natural features and ecological processes. • The reduction of reliance on technology for heating and cooling will minimise energy use, resource consumption and operating costs over the life-cycle of the project. • The use of sustainable construction materials, recycling, good waste management practices, re-use of materials and existing structures, harnessing of renewable energy sources, and total water cycle management will also be incorporated, where applicable. In addition, the project more holistically will deliver high quality new train stations with increased catchments and improved integration with bus services. This will result in high quality low-emission transport options for thousands of locals, consistent with the principles of sustainability.

Principle	Response
Amenity	
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 corridor's landscape and activity spaces offer universally accessible places and opportunities for people to meet and socialise, providing optimal levels of external amenity and functionality while encouraging social inclusion, equitable access and respect for the public and neighbours. The usability of these spaces is enhanced through the shade and weather protection that is offered by the viaduct. Careful regarding has been given as to how to maximise the weather protection offered by the structure and how this relates to the spaces underneath. Paid zones, service rooms and other internal spaces will be adequately sized, comfortable and easy to use and furnish, with good levels of daylight, natural ventilation and outlook. Where applicable, appropriate levels of acoustic protection and visual privacy, adequate storage space, and ease of access for all will be provided.
Legibility	
Good design results in buildings and places that are legible, with clear connections and easily identifiable elements to help people find their way around.	A movement and access strategy has informed the design of both the train station and the station precinct and public realm improvements to create a legible network of spaces and places. PTA's station access hierarchy prioritises pedestrian access as the most important, followed by cycling, bus access, Kiss 'n' Ride and finally Park 'n' Ride access. The design implements this access hierarchy, which assists in ensuring easy and legible station access for pedestrians and minimisation of conflict points. The hierarchy is used to resolve conflict points between transport modes. Station and public realm legibility will be enhanced with a wayfinding and signage strategy that is to be developed in due course. Design initiatives to aid legibility include: • Retaining most of the existing PSP adjacent to Railway Parade as a primary cyclist route. Utilising pavement, materiality, colour and signage to define the PSP and control speeds. Where the PSP intersects with the train station plaza the PSP merges into plaza paving to denote that this is a shared zone with pedestrian priority. • Providing entries to the commuter car parking area from the western side of the corridor to minimize conflict / crossing points with the PSP. • Providing a recreational shared path within the landscaped corridor for pedestrian and cyclist connectivity which is separated from the higher volume / faster commuter cyclists on the PSP. • Utilising different colours and materiality to distinguish between the path network to aid legibility. • The train station plaza entry points have been located having regard to the surrounding local context to provide connectors and entry points that are orientated and located to direct people into the train station. Permeability is maximized with these fine grain connections. • The train station plaza is designed with a simple open form that provides clearly identifiable entrances that are orientated to be legible opening points to the train station building for intuitive wayfinding. • Lifts and stair access within each station building is located to be readily identifiable and accessible for passenger legibility to the platforms. • Kiss 'n' Ride facilities are located in a highly visible and readily accessible location where they are also proximate to the train station entrance for ready and legible station access. • Bike storage is located to be visible from the PSP. The bike storage is proposed to be located in the ground level station building, accessible from the outside.

Principle	Response
Safety	
Good design optimises safety and security, minimising the risk of personal harm and supporting safe behaviour and use.	Throughout the corridor, safety is a key consideration and the design has been informed by DPLH's Safer Places by Design Guidelines. The design team have focussed on providing clear, open sightlines in and around the pillars throughout the public realm and to / from train station main entrances. Design measures for safety include: • New spaces beside and under the viaduct are designed to encourage activity through the incorporation of a broad range of activity spaces which will aid passive surveillance and safety. • A lighting strategy will ensure that all accessible areas are well lit. • The design of vehicular transport routes such as vehicle drop-offs have been configured to aid connectivity to the train stations in a safe and legible manner. • Within the station building, opportunities for passive surveillance will be maximised through the provision of clearly defined paid and un-paid spaces with well-lit secure access points. • CCTV infrastructure managed by the PTA will be provided within the train station and passenger car parking areas. • Landscaping has been carefully curated to ensure appropriate species are used to not impact on sightlines or create areas concealed by landscaping. • Security fencing is used to restrict access to maintenance areas or at grade areas of the rail line where the public is not permitted.
Community	
Good design responds to local community needs as well as the wider social context, providing environments that support a diverse range of people and facilitate social interaction.	The train station built form, plaza and public realm designs have all been informed by the existing and planned future development in the immediately surrounding context. This ensures that the design encourages social engagement and physical activity in an inclusive, equitable manner and contributes to the activation of public spaces both within and adjacent to the rail corridor. Significant public realm investment is focussed on the community use and benefit in the train station plaza and public realm, delivering flexible spaces that can be activated for community events. The new public spaces being delivered within the public realm have all been informed through the community engagement process undertaken by METRONET and ALUA to ensure that the design is responding to community needs and the social context of the site. As evident from the broad range of different facilities and spaces that are proposed within the public realm, there is a diversity in spaces to facilitate use by a diverse and varied mix of people from the community, facilitating broader social interactions across different community segments. Careful consideration has also been given to integration with local movement networks to improve general access from these highly walkable neighbourhoods to the rail corridor more broadly.

Principle	Response
Aesthetics	
Good design is the product of a skilled, judicious design process that results in attractive and inviting buildings and places that engage the senses.	The look and feel of the station and plaza has been designed with a simple aesthetic that has an emphasis on functionality. The design responds to PTAs requirements in terms of station capacity and functional requirements and has been informed by a careful design process that is the culmination of many months of design work for the VPCLXR project. As set out in the Design Report prepared by ALUA (refer to Appendix F), the design process commenced with the METRONET Preliminary Place Plans, which were derived from engagement with the local community as undertaken by METRONET. ALUA built on this early METRONET work with the preparation of high level concept designs which were then refined and developed with more detailed community engagement undertaken through: the MySay Transport website; Community Reference Groups (CRGs); pop up information booths; and through targeted consultation with business groups and key stakeholders. The Final Place Plans, architectural plans and landscape plans have also been subject to design review and refinement through the SDRP process and the Design Working Group which was formed to continue the consultative design review process in between SDRP reviews and has continued following the final SDRP review. The Design Working Group includes representatives from the Office of the Government Architect (OGA) and METRONET. This represents a comprehensive and judicious design process consistent with the principles of SPP 7.0. Notably in relation to aesthetics, the identity of each train station building and the surrounding precinct has also been carefully curated to reflect the history of the particular area with a themed colour identity that will run through the metalwork, floor finishes, station plaza paving and brickwork for each precinct/building. For the viaduct, one of the key aesthetic principles is to conceal all services. All viaduct drainage has been contained within the piers, with the pipework taken beneath ground level and then relieved into the landscape. All electrical and communications services are reticulated up to viaduct level at each Station and along the rail embankments (trackside). The rail infrastructure, such as masts for the overhead line, is generally located centrally along the viaduct. Signalling poles will be located behind the walkway screen with minor projections 'blisters' required to maintain the walkway around the outside of these elements.

4.2 State Design Review Panel Engagement

The State Design Review Panel (SDRP) provides independent, expert advice to Government agencies, decision makers and proponents regarding the design quality of a range of project types.

The VPCLXR project is a significant public works project and is eligible for SDRP review. In this regard ALUA met with the Office of the Government Architect (OGA) to develop and implement a design review framework that has regard to the overall project objectives, costings and critical timings.

The design review framework agreed with the OGA broadly comprises three (3) separate design reviews with each of these focusing on specific project elements as outlined below:

1. Initial SDRP No. 1 – Previously completed in METRONET Project Definition Plan phase of the project.
2. Interim SDRP No. 2 – Completed in June 2022. This SDRP meeting covered the whole of the project area and scope, including critical infrastructure components (such as the viaduct structures), elements that are exempt from requiring planning approval and initial conceptual ground level public realm elements, built form and character analysis of stations and station precincts.
3. SDRP No. 3 – Completed in August 2022. This SDRP focussed on the built form of all new train stations and associated station precincts.

Feedback received during SDRP No. 3 has been considered by ALUA in consultation with key stakeholders through the Design Working Group, which was formed to continue the consultative design review process in between SDRP reviews and has continued following the final SDRP No. 3 review. The Design Working Group includes representatives from the OGA and METRONET.

The SDRP indicated their support for the overall project, however noted that the design approach was not yet supported and required further development. Notably, the SDRP stated that resolution of key design issues could proceed with the assistance of the Design Working Group. The SDRP provided the following summary comments:

> *This is a significant project, with complex and competing demands. The ambitions and vision for this landscape-driven elevated rail project are strongly supported by the Panel, and it has transformative potential for transport design, precinct development, and as a Western Australian landmark. There is great responsibility to deliver a sophisticated and enduring rail corridor with a high-quality public realm. User experience will determine the success of this project, both as transport and public realm, and these are complex and varied environments in terms of amenity and functionality.*
>
> *The design ambition to balance the cohesion of a line wide solution with a legible response to local context and character in the design of stations and public realm is commended, however not yet fully realised.*

The SDRP requested further information including more detailed plans at a smaller scale, communication on the design in its context to assess connectivity and integration and detailed sections on the public realm to assist with resolution of safety and amenity matters.

Key recommendations from the SDRP that have been pursued by the design team since the August 2022 SDRP No. 3 meeting have included:

- *continued development of a cohesive line wide design solution with differentiation of the design and identity of stations*
- *confirmation of the landscape design approach and detail*
- *minimise / mitigate modal conflicts in landscape and car park design, and in the movement of buses through pedestrian access ways*
- *capitalise on the mass and materiality of the viaduct and its piers, as a design strategy appropriate to the project scale and engineering nature, with consideration to exposing connections between the viaduct and other elements*
- *pursue the folded plane roof canopies as singular, landmark forms, uninterrupted by service elements*
- *progress sustainability strategies*
- *minimise hardscaped surfaces, optimise permeable materials, water attenuation, landscaping, and tree planting*
- *optimise infrastructure for alternative modes of transports such as bike storage and e-charging*
- *maximise reused and recycled materials*
- *maximise rainwater harvesting and reuse*
- *pursue provision of escalators from day one*
- *optimise shelter from wind, glare, sun, and rain through the design of the public realm, station platform and 'folded roof' design*
- *optimise the legibility of stations by heightening visual and physical permeability and develop a strong wayfinding strategy*
- *prepare a CPTED assessment that considers opportunities for activation, passive surveillance, and clear points of egress*
- *develop a lighting strategy*
- *consider how an integrated public art approach could contribute to a line-wide identity, while offering a legible, local response to place.*

A summary of the comments from the SDRP as they relate to the scope of this development application and the manner in which these have since been addressed by the proposal is outlined in Table 3 below.

Table 3 - Summary of SDRP Comments and Design Responses

Principle	SDRP Comment	Design Response
Principle 1 **Context and character**	The SDRP identified the need for further work to develop and differentiate local identities at each station. The SDRP also requested that ALUA build on existing Aboriginal consultation to connect to local stories and develop strategies, that go beyond public art, to inform context specific architecture and public realm responses.	Since the SDRP meeting in August 2022 there has been ongoing refinement to the design concept, including colour, materiality and planting species to develop the station and precinct identities. These are set out in the Design Report prepared by ALUA (refer to Appendix F). The design integration strategy has also progressed since the last SDRP meeting and specific stories have been identified within the Noongar Cultural Context Document which will be used to inform the public art brief for specific works. This is set out in the Design Report prepared by ALUA (refer to Appendix F).
Principle 2 **Landscape Quality**	The SDRP noted the significant opportunity for a continuous linear park and the strong vision held by the ALUA team for this. The SDRP supported the richness, diversity and intensity of landscape proposed, and requested further details on species types, locations, and ongoing maintenance. The SDRP supported planting being taken as close to the viaduct as possible. The SDRP suggest there was a need for further investigation into tree species having regard to disease resistance, water requirements and shading from the viaduct. The SDRP suggested that ALUA should seek to optimise tree planting within car parking and other areas of hardscaping. The SDRP supported landscape buffers at the transitions of at-grade intersections.	The detailed planting selection is an ongoing iterative process that is being coordinated between ALUA and the LGAs. This will continue to be resolved as the detailed design work occurs following the development application process. ALUA is also engaging with PTA to ensure that tree planting can be as close to the viaduct as possible. Tree selection is important to ensure the canopy height doesn't impact on the viaduct. It is noted that most of the hardscaped areas (car parking etc) are located under the viaduct where planting is not supported. Trees are being maximised wherever possible in the corridor.

Principle	SDRP Comment	Design Response
Principle 3 **Built Form and Scale**	The SDRP encouraged further development and refinement of scale, details, and junctions to enhance the differing identities of each station. The SDRP noted that the scale of the viaduct and its piers present an opportunity to work with this mass and materiality and allow it to be an expressed and celebrated form, and to hit the ground strongly. The SDRP encouraged the expression of the viaduct, where it intersects the stations, as a piece of significant infrastructure rather than concealing it in additional built form. The SDRP encouraged ALUA to explore the exposing of junctions, such as where the viaduct meets screens and balustrades, as intentional form rather than attempting to conceal them. Concealment risks overly complex junctions, additional costs, and complex maintenance. The SDRP noted that the folded plane roof canopies are important focal points and present an opportunity to strengthen identity as landmark forms. Ensure that when later intersected with service elements, such as lift overruns, they will not lose their singular language and scale, thus reducing their impact. The SDRP noted that Cannington Station presents with a different architectural form and is the only station with an island configuration to the platform. The SDRP suggested that developing these differences into a distinct form could be explored. Consider whether this typology could accommodate a larger roof form to strengthen this identity. The SDRP welcomed the improved responsiveness to local context as expressed in the brick colour at stations and suggested that this extends to paving variations and fixed furniture at each location. The SDRP also requested that ALUA consider the form of smaller canopies in the landscaped areas, and how these may contribute to the contextual response.	Since the SDRP meeting in August 2022 there has been ongoing refinement to the design concept, including colour, materiality and planting species to develop the station and precinct identities. These are set out in the Design Report prepared by ALUA (refer to Appendix F). Notably in response to the SDRP comments: • the expression of the folded roof plane at the station is an important design strategy. The proximity of the lift to the external face and the height of the lift overruns are constraints that are being handled carefully to ensure the design response is not compromised and that the roof plane elements maintain their strong form and landmark qualities; • the strong form of the viaduct is expressed in the architecture of the stations; • the canopies within the landscaped areas are proposed to be colour themed to correspond to the station and station precinct identities; • individual identity at each train station is being further reinforced through the paving treatment, seating, plant species and other ancillary structures. Further detail on the manner in which the design responds to the SDRP's comments are set out in the Design Report prepared by ALUA at Appendix F

Principle	SDRP Comment	Design Response
Principle 4 **Functionality and Build Quality**	The SDRP requested comprehensive transport and movement plans be developed for each station to enable an evaluation of how the stations manage modal conflict, safety, flows of traffic and legibility of movement. In refining the design, the SDRP requested ALUA review: • pathways to manage conflict points; • the manner in which pedestrians pass through/around the bus interchanges; • location/configuration of the Kiss and Ride to manage conflict points; and • The SDRP suggested consideration be given to phased signalling to manage the potential user conflict between buses, cars and pedestrians at Cannington Station next to the station building. As there is the potential for safety issues and hinderance to movement flow.	A comprehensive and cohesive movement strategy is one of the keys to the success of the development. Movement plans have been reviewed and refined through ongoing engagement with MRWA, the City and Department of Transport (DoT) since the last SDRP meeting in August 2022. Specific access plans have been developed for each train station and station precinct to demonstrate the considered approach to the PSP, pedestrian paths and plaza connectors. These are included in the Design Report prepared by ALUA (refer to Appendix F). The approach to the PSP has also been carefully considered in consultation with MRWA and DoT in relation to it being an at grade PSP that crosses roads and intersects with plaza connectors. The PSP strategy has been carefully tailored to control speeds and maximise safety for all users. Other key aspects of the design include: • The oscillating recreational path and secondary shared path are key components of the overall strategy of 'loops and trails', focused on how the community can use the public realm in different ways. The path network has a hierarchy of widths and treatments to manage how people use each path. • A dedicated path is provided to the parking area to carefully separate pedestrians from vehicles and minimise opportunities for conflict.

Principle	SDRP Comment	Design Response
Principle 5 **Sustainability**	The SDRP noted that hardscapes should be minimised where possible in terms of minimising heat and run-off, suggesting that ALUA investigate permeable materials and infiltration strategies. SDRP requested investigation of e-charging opportunities. SDRP requested investigation of rainwater re-use.	The sustainability initiatives for the project include: • Achievement of a four star rating against the Green Star Railway Stations rating framework. • Achieving tree canopy and urban forest targets for the project. • Utilising low maintenance design opportunities where possible. • Minimising hardscapes near train stations whilst maintaining functionality. • Investigating permeable materials for car parks and plazas with PTA (noting that these do not currently meet PTA standards). This is being further resolved with the Design Working Group. • The combination of landscape WSUD, subsoil drainage and grading are designed to avoid the requirement for underground tanks and gross pollutant traps etc. • Refinement of the drainage design is ongoing and will inform the landscape response. The infrequent flood event areas are all created as usable spaces with integrated play and interpretive elements. • The bike storage proposed reflects the PTA requirements.
Principle 6 **Amenity**	The SDRP requested: • the use of escalators be investigated in all stations; • diagrams be prepared showing how wind, sun, glare and rain impacts are being mitigated on platforms; and • acoustic performance of stations. The SDRP supported the generosity of plazas set away from roads and the intent to include diverse public realm spaces. SDRP requested that platform walkway widths be generous in width for safety and amenity.	Escalators are not proposed at Beckenham Station due to patronage levels which are estimated to remain low through to the forecasts for 2051. On this basis demand is expected to be readily accommodated with the proposed lifts (two per platform). Nevertheless, the designs have been prepared to be able to accommodate escalators in the future if required. Acoustic modelling and testing has informed the design of the new station and associated infrastructure (e.g. car parks, plant rooms etc) to comply with the requirements of the *Environmental Protection (Noise) Regulations 1997*. Wind and rain modelling has been undertaken to inform the location and design of station canopies and bus shelters etc to ensure patron/passenger comfort. The proposed platform widths are designed to meet the PTA's requirements. These widths have been assessed by the ALUA pedestrian modelling team to ensure that the platforms comply with passenger flow and level of service requirements.

Principle	SDRP Comment	Design Response
Principle 7 **Legibility**	The SDRP encourages a strong wayfinding strategy for the project and noted that the visual and physical permeability of stations and legibility of entries are critical for continuity of the pedestrian urban realm and connectivity of the precinct.	A wayfinding consultant has been engaged to prepare a wayfinding signage strategy for the train stations and public realm. This will be enhanced by the architectural approach which seeks to enable intuitive wayfinding with legible entrances to train stations as well as through the thematic approach to the train stations and station precincts, utilising colour, materiality and planting species to develop different train station and precinct identities. The station incorporates legible entrances and visually permeable concourse spaces.
Principle 8 **Safety**	The SDRP recommended: • a comprehensive Crime Prevention Through Environmental Design (CPTED) assessment; • a lighting strategy to ensure stations and public spaces are appropriately lit and activated; • prioritising the visual and physical porosity of stations for perceived and actual safety; • ensuring platform safety with conspicuous and easily located points of access and central lifts; • resolution of the PSP and forecourt areas and how cyclists are managed; and • the SDRP noted a concern about the southern arrival not being sufficiently activated, with the bike storage located in this area.	A security working group has been created for the project which includes members from the PTA security team, WA Police and the City. This group has reviewed the design and CPTED considerations throughout the duration of the project. The CPTED approach is documented in the Design Report prepared by ALUA (refer to Appendix F). A lighting strategy is also included in the Design Report prepared by ALUA (refer to Appendix F). As noted earlier, the visual and physical porosity of the train station designs is an important security element. The upper building façade also provides for visual permeability. The approach to the PSP has been carefully considered in consultation with MRWA and DoT in relation to how this adjoins and passes the train station forecourt. The PSP strategy has been carefully tailored to control speeds and maximise safety for all users. The detail on the PSP approach is included in the Design Report prepared by ALUA (refer to Appendix F).
Principle 9 **Community**	The SDRP supported continued discussions with the LGAs regarding opportunities for revenue generating activities in the public realm and semi-permanent activation of these spaces. The SDRP also requested that consideration be given as to how the stations function at night.	The landscaped space on the northern side of the station has been designed to create opportunities for coffee or food trucks, with associated seating opportunities and connection points for water and power to provide for the activation of this space. The lighting and CPTED strategy have all been considered having regard to night time operations.
Principle 10 **Aesthetics**	The SDRP requested a rigorous approach to public art to ensure that it is integrated into the design of the place and not just a decorative addition. The SDRP suggested that public art could contribute to an overall cohesive line-wide design whilst offering a legible, local response to place. The SDRP supported the ceiling pattern proposed at the Cannington Train Station as a small but impactful detail. The SDRP also requested that the design team explore the exposure of junctions.	The Place Plan for each train station requires an integrated art response and strategy to be located across the elevated rail structure, activity nodes and paths, with a focus on the train stations. As set out in the Design Report at Appendix F, there will be multiple public art opportunities line-wide, including on screening, embankment walls / retaining walls / noise walls, abutments, piers, ceilings/ soffits, shelters, precinct hardscapes, transformers, and play elements.

5. Description of Proposed Development

5.1 Development Overview

This development application relates to the following components of the VPCLXR project that are located within the City:

- Removal of vegetation.
- Piling for the viaduct.
- Viaduct piers and structure.
- Operational railway infrastructure / works (i.e. rail track, maintenance tracks, signalling infrastructure, OLE masts, overhead rail lines and infrastructure etc).
- Electricity works for the railway.
- Temporary work zones within the rail corridor.
- Elevated train station at Beckenham, including ground level station entry and concourse;
- Beckenham Station passenger parking (including Park 'n' Ride and Kiss 'n' Ride parking);
- At grade Principal Shared Path (PSP) modifications to augment the existing PSP adjacent to Railway Parade;
- Public realm initiatives and improvements between the north abutment, which is within the MRS railways reservation just to the south of the intersection of Lacey Street and Railway Parade and the southern abutment adjacent to Linden Close, incorporating construction of a new community node, community park, pathways and landscaping; and
- Local road works and intersection modifications where within the MRS railways reservation.

Further details of each of these aspects of the project are described in greater detail below under each of the following sub-headings:

- Viaduct Piers and Structures;
- Concourse / Entry Building / Platform;
- Public Realm;
- Landscaping;
- Road Network;
- Principal Shared Path;
- Car Parking;
- Bicycle Parking;
- Bus Facilities;
- Architectural Treatments, Materials and Finishes;
- Sustainability and Green Star Rating;
- Signage and Wayfinding;
- Public Art;
- Lighting;
- Land Management and Allocation Arrangements;
- Tree Removal;
- Tree Planting;
- Services;
- Precinct Access Arrangements; and
- Project Delivery.

One of the overarching principles that has guided all aspects of the design is the PTA's station access hierarchy, which prioritises pedestrian access as the most important and highest order of priority followed by cyclist access, bus access, Kiss 'n' Ride and finally, Park 'n' Ride. The design essentially seeks to reward pedestrian, cycle and bus users with shorter travel distances, higher convenience and higher comfort levels than private car users.

5.2 Extent of Works and Exempt Works

Table 4 below provides an overview of the works forming part of the VPCLXR project and identifies whether particular works are exempt from the requirement to obtain planning approval under the proposed amendments to the METRONET Act or require planning approval from the WAPC under the designated PCA that is in place.

Table 4: Summary of Works and Approval Requirement and Exemptions

	METRONET works[2] - as defined in Railway (METRONET) Act 2018	**METRONET station works:** **- railway stations** **- related car parks** **- public transport interchange facilities** **- means of pedestrian or vehicular access to station** **- public realm (within the PCA)**
Works located: • Within PCA, and • Within the MRS railways reservation	WAPC approval required for all works within the PCA and the MRS railways reservation (as included in this application)	WAPC approval required for all works for the new stations, car parks, pedestrian and vehicular access and public realm that are within the PCA and the MRS railways reservation (as included in this application)
Works located: • Within PCA; and • Outside the MRS railways reservation	Exempt – some of the local road works shown in this application are technically exempt where these are outside of the MRS railways reservation. They are however included to provide a holistic overview and for the City and stakeholder review and comment.	WAPC approval required for all works for new stations, car parks, pedestrian and vehicular access and public realm that are within the PCA and outside the MRS railways reservation (as included in this application)
Works located: • Outside PCA; and • Outside the MRS railways reservation	Exempt	N/A – there are no METRONET Station works proposed outside of the PCA
Works located: • Outside PCA; and • Within the MRS railways reservation	Exempt	N/A – there are no METRONET Station works proposed outside of the PCA

[2] METRONET works 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.

Exempt works which will not need planning approval on the basis that they are METRONET works and are located outside both the PCA and the rail corridor[2] include:

- Retaining walls and embankments along the rail corridor where these are supporting the change in level of the existing rail works/line up to the new viaduct.
- Noise walls adjacent to the embankments (which are outside of the PCA).
- Temporary bus stands (shelters and bins) to be used during the required rail line shut down.
- Temporary bus interchanges to be used during the required rail line shut down.
- Temporary laydown / storage areas required to support construction.
- Temporary car parking areas to support construction.
- Rail line turnbacks.

For the purposes of transparency and so that the full extent of the proposed project works can be understood, this development application includes plans that illustrate the following works that are exempt from the requirement for planning approval:

- Retaining walls and embankments along the rail corridor where these are supporting the change in level of the existing rail works/line up to the new viaduct.
- Noise walls.
- Local road works and intersection modifications that are outside of the MRS railways reservation and are associated with the level crossing removal.

5.3 Viaduct Piers and Structure

The viaduct piers, headstock and 'U' trough structures form the key infrastructure required to elevate the existing rail track, allowing for the removal of the existing level crossing that is within the City at William Street.

There are four (4) main viaduct segments for the VPCLXR project, with one (1) located within the municipality of the Town, two (2) within municipality of the City of Canning and one (1) within the City of Gosnells. Viaduct 2, associated with the rail overpass at Welshpool Road, which is within the City of Canning, is located outside of a PCA and is exempt from the requirement for planning approval as METRONET work.

The Beckenham viaduct is approximately 516 metres in length.

The viaduct connects into the existing rail line via abutments located at each end of the viaduct structure. The abutments facilitate an appropriate slope from the viaduct structure into the existing ground level railway line infrastructure. The abutments themselves are located outside of the PCA boundaries and do not form part of this application. Retaining walls and embankment structures that are located beyond the abutments (and outside of the PCA) are exempt works under the METRONET Act.

The viaduct will achieve a minimum three (3) metre height clearance at abutments, with specific clearances allowed for at certain locations as follows:

- Five (5) metres at Beckenham Station; and
- 4.970 metres at William Street.

The viaduct structure is generally of precast concrete construction. It utilises twin 'U' troughs which house the rail line, as shown in Figures 12, 13 and 14. The superstructure 'U' trough consists of two precast L-beams that will be stitched via an in-situ slab to the bottom flange. Detrainment maintenance and emergency walkways are provided on the outer edge of the flange with a clear width of 1000mm.

An architectural screen will be used to screen the train from view and to provide privacy for residential properties adjacent to the rail corridor. It is noted that the details of architectural screens that will form part of the viaduct design are not resolved at this stage. It is proposed that the future provision of these details will be subject to relevant conditions on the approval.

Refer to Appendix G - Civil Structures and Viaduct Drawings

2 Exempt works also include METRONET Works where these are outside the PCA but within the rail corridor.

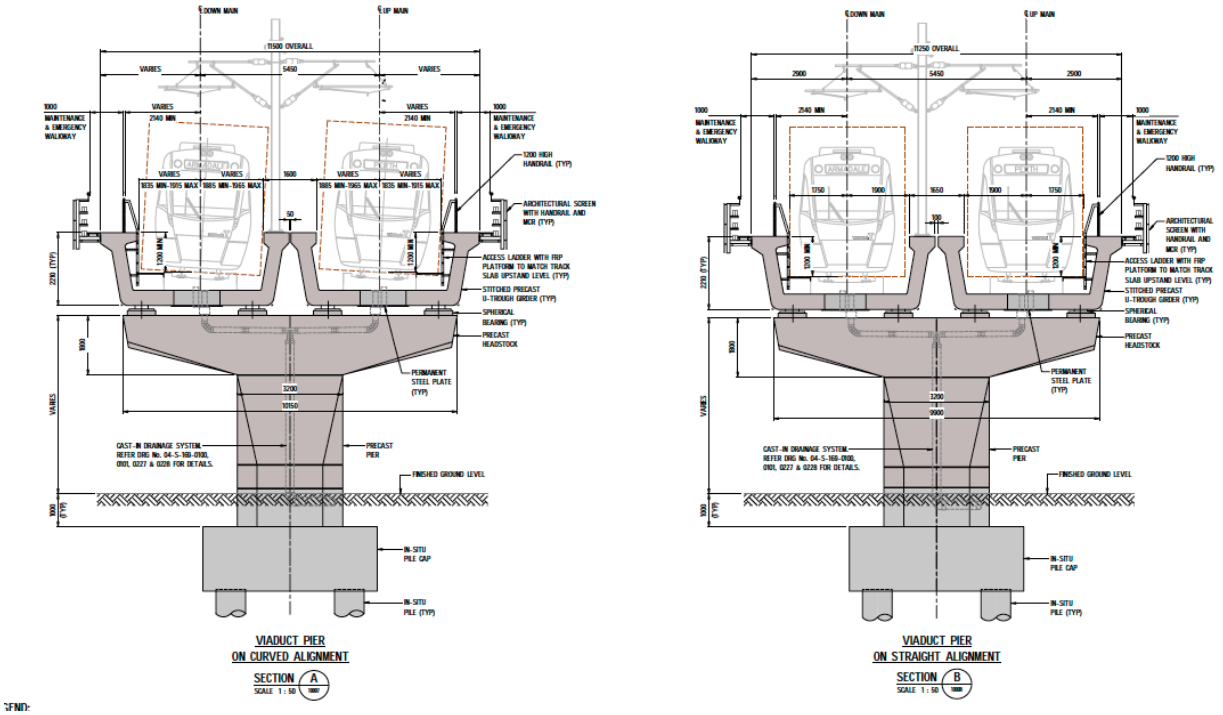


Figure 12. Typical Viaduct Section

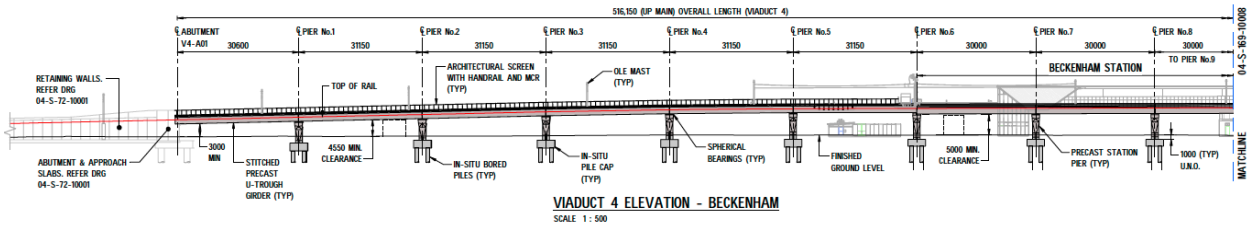


Figure 13. Viaduct Elevation – Beckenham Northern Section

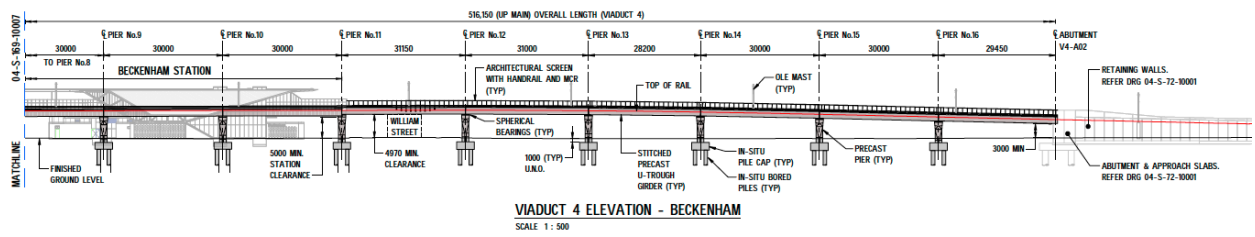


Figure 14. Viaduct Elevation – Beckenham Southern Section

5.4 Concourse / Entry Building / Platform

The proposed new Beckenham Train Station is located immediately north of William Street. The new Beckenham Train Station proposes a single, consolidated station building on the northern side of William Street, replacing the current split station design which has the north bound platform on the northern side of William Street and the south bound platform on the southern side of William Street. A consolidated station entry building with platforms above facilitates improved passenger orientation and station use whilst providing additional benefits in terms of safety and operational efficiency.

The proposed new station incorporates a south facing forecourt to address William Street with a northern entrance that opens into the new community hub / public plaza. The northern entrance provides access for those utilising the new Kiss 'n' Ride and Park 'n' Ride facilities. The combination of entrances from both the northern and southern sides of the building ensures the building is permeable, with legible entrances from all areas of the adjacent public realm.

Refer to Figure 15 – Beckenham Train Station, Southern Forecourt and Northern Community Hub General Arrangement Plan

The placement of Beckenham Train Station and the associated forecourt and northern community hub is designed to allow for connectivity with active edges in the urban realm beyond the new train station. This provides for linking pathways and permeable edges that interface between the railway reserve and the surrounding built form on Sevenoaks Street and Railway Parade.

The community hub within the northern forecourt provide an activation space for events such as markets and food trucks. When not activated, the space provides opportunity for seating under the protection of the viaduct. Connection points for water and power are provided in this space.

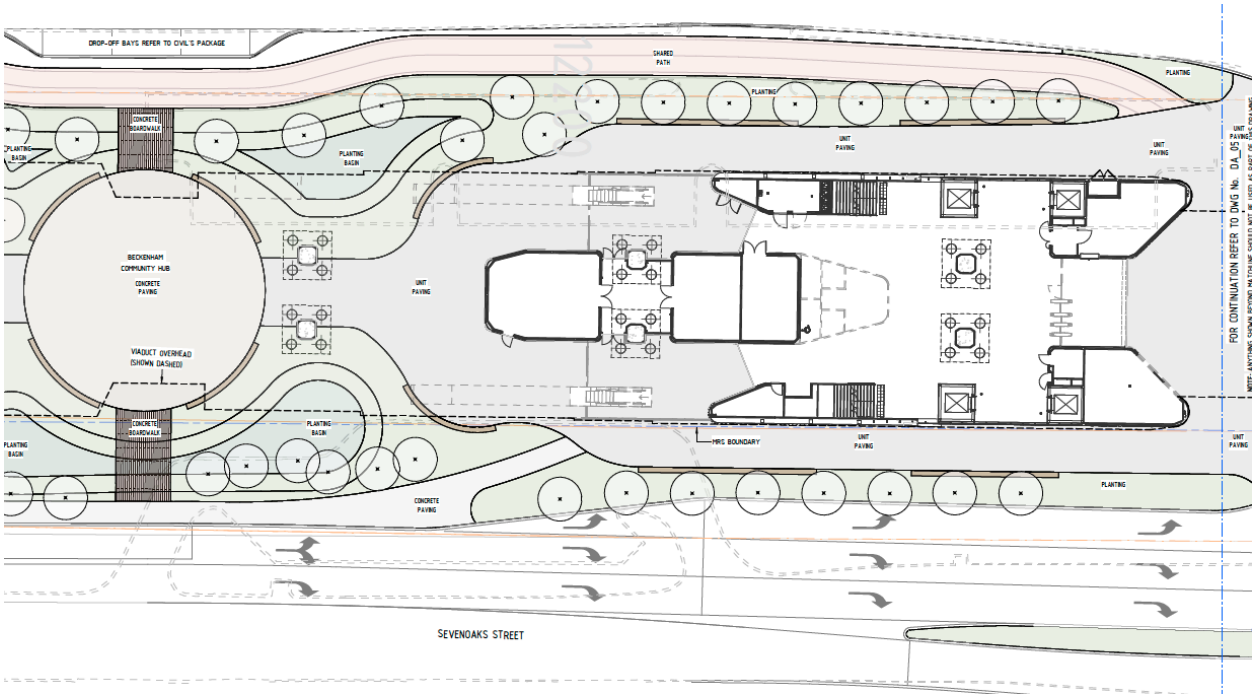


Figure 15. Beckenham Train Station, Southern Forecourt and Northern Community Hub General Arrangement Plan

The new Beckenham Train Station car parking area (Park 'n' Ride and Kiss 'n' Ride facilities) is located partly under the viaduct on the northern side of the new train station. The car park has been carefully located with access from the western side of the railway reserve so as to avoid additional vehicular conflict points with the PSP.

The following provisions have been incorporated into the design of the Beckenham Train Station entry building:

- Bike store, with provision for 32 bikes, which has a glazed façade and which faces the William Street station forecourt;
- A concourse;
- Four lifts (two to each platform);
- Stairwell to each platform; and
- A number of electrical, services, communications and store rooms including:
    - Lobby Communications Room (LCR);
    - Track Side Equipment Room (TSER); and
    - Station Main Communications Room (SMCR).

The eastern and western facades of the new train station incorporate glazed curtain wall facades adjacent to the lift entrances and mesh to the stairwells to provide for passive surveillance from within the station to the nearby public realm and vice versa.

The VPCLXR project uses two side platforms at Beckenham Train Station, with the rail line located centrally. The platforms at the station are designed to facilitate access to six (6) rail carriages. The platform canopies are designed to cover just over 80% of the length of the platforms to ensure that there is sufficient weather protection for passengers.

The Beckenham Train Station will be an unstaffed station and access will be controlled by roller shutter doors which close the main and secondary entrances after hours, securing the building and platforms.

As an unstaffed station, the station does not include any passenger toilets, as these are only provided by the PTA for new/upgraded stations which are staffed. This is to ensure that the toilets can be regularly maintained and monitored to prevent issues associated with vandalism and loitering. Of the five stations being delivered as part of the VPCLXR project, fully accessible passenger toilets within the paid zone are being provided at Oats Street and Cannington Train Stations as both these stations are to be staffed from opening and they also have a bus interchange. The Carlisle, Queens Park and Beckenham Train Stations do not include passenger toilets, but will be future-proofed for expansion, at which time the provision of passenger toilets will be re-considered.

Refer to Appendix I - Architectural Drawings for Beckenham Train Station

5.5 Public Realm

The proposed development seeks to deliver new public realm between the northern and southern abutments within the City, which is generally the area between Lacey Street to the north and Linden Close to the south. This includes recreational and shared paths which traverse the corridor, and landscaped swales and shallow basins as part of the WSUD response and significant new planting. The paths also connect a number of activity nodes and amenities that are being delivered as part of the VPCLXR project.

The proposed new public realm includes:

- The Community Park is to be located on the southern side of William Street. This community park has been designed in response to community need which was identified through community consultation on the VPCLXR project. It provides a youth activity space with a focus on wheel based activities such as bikes, scooters, skateboards and roller-skates. Through the community consultation process it was identified that girls sometimes feel excluded from youth plazas and therefore it is a key intent of this space to provide a gender neutral park with opportunities and engagement for all. The location of the community activity zone takes advantage of the shade of existing trees and the new rail viaduct whilst creating strong connections to the adjacent primary school. The proposed design incorporates: a BMX pump track with opportunities for different ages and skill levels; a wheels serpentine loop, which is a concrete looping path with raised and curved edges for skating round on different wheels; a series of activity nodes for gathering and for wheel practice off the main path and for tricks and play; an exercise node for multi-generational users; and picnic lawns, tables and shade for informal seating and recreation.
- The Beckenham Community Hub is designed to provide an inviting, flexible events space within the northern station forecourt. It is located between Beckenham Train Station and the new Park ‘n’ Ride facilities and includes a flexible space with seating, providing the opportunity for everyday use and a wide variety of events.
- The Basin Park is a Water Sensitive Urban Design (WSUD) activation space. The Basin Park seeks to enhance the existing Lacey Street Main drain (also known as Woodlupine Brook), which crosses the rail corridor. The Lacey Street Main drain currently comprises a steep sided open table drain with eroding banks and little ecological value. The VPCLXR project seeks to enhance the existing drain, creating a vegetated basin that celebrates WSUD best practice. The proposal includes sinking the drain under the proposed Park ‘n’ Ride car park within a large culvert which will outpour into an open vegetated basin with seating and viewing opportunities. The basin will also provide drainage capacity for flood events.
- A Dog Exercise Area has been proposed in response to feedback from the community and the City. It provides a 1,000m^2 fenced area with double airlocked gate, agility features, drinking fountain, picnic table and bench seats. A planted buffer will separate this from the adjoining Sevenoaks Street. The Dog Exercise Area is denoted for an area which is predominantly outside of PCA 175.

Importantly, the design concepts for the above spaces have been directly influenced by the outcomes of the community consultation undertaken for the project (as outlined at Section 3.1.1) and have been designed to respond to both community needs and vision, balanced with the limitations associated with the VPCLXR project/project area.

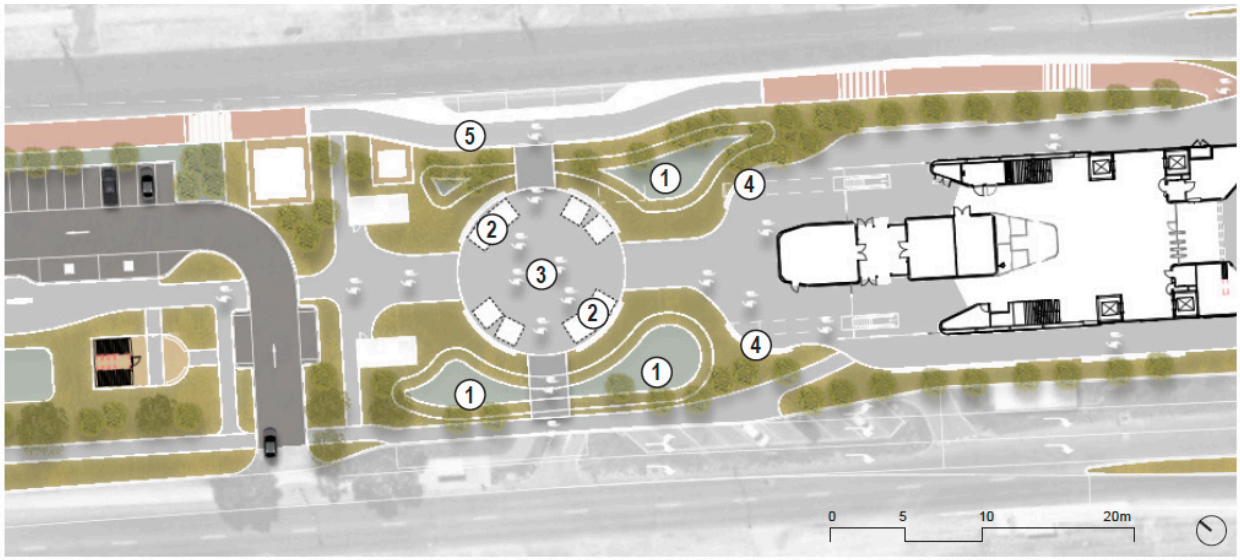
Further, as detailed in section 10.4 of the Design Report at Appendix F, the design of the public realm (fencing, pathways, landscaping, plant selection, lighting, access etc.) are all designed having regard to security and safety to minimise the potential for antisocial behaviour.

A sewer and water connection point will be provided in the public realm, subject to an agreed location being determined in conjunction with the City, to enable the provision of a toilet facility by the City in the future.

Refer to Figures 16 and 17 – Beckenham Community Hub

Refer to Figures 18 and 19 – Beckenham Community Park

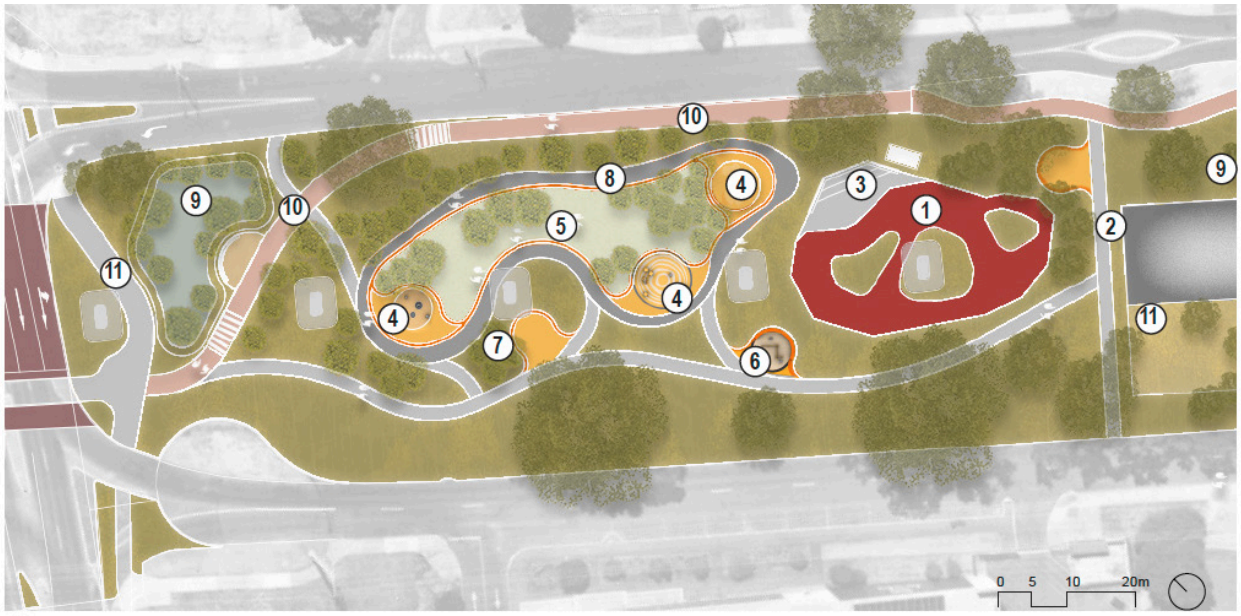
Refer to Appendix F – Design Report



1. Landscape Basins - planted landscape depressions to capture surrounding runoff from hardscape areas
2. Seating, meeting and activity node. Opportunity for activation such as makers markets or coffee karts.
3. Opportunity for integrated art work within the space - refer Art Strategy.
4. Seating walls
5. Principal Shared Path (PSP)

Figure 16. Beckenham Community Hub

Figure 17. Beckenham Community Hub



1. BMX Pump Track with opportunities for different ages and skill levels.
2. Gathering zone for BMX track incorporating seating, picnic tables, BBQ and shade.
3. BMX Hill - high point in track to allow users to watch the track.
4. Activity Node - A series of nodes that incorporate different activities for chilling out, play, rest and community.
5. Community lawn for passive recreation, breakout and community events.
6. Outdoor gym equipment for multi-generational users.
7. Integrated play elements that immerse children within native planting zones.
8. Serpentine path for walking and wheels (Rollerblades, scooters and skates).
9. Shallow drainage basin with landscape planting - locations still to be coordinated.
10. Principal Shared Path (PSP).
11. Cross corridor path connector.
12. The whole serpentine and nodes network create a canvas for street art to surfaces - refer art strategy.

Figure 18. Beckenham Community Park

Figure 19. Beckenham Community Park

5.6 Landscaping

The design principles that have been applied in preparing the landscape design response for the VPCLXR project have included:

- Enhancing sustainability with rehabilitation planting, opportunities for re-wilding insects, reptiles and birds and providing opportunities to connect with nature and greenspace.
- Integrating stormwater natural systems to retain and treat water on site in a thoughtful and explicit way utilising best practice WSUD principles.
- Retaining as many existing trees as possible and reusing all felled timber on site (for mulch, habitat logs and nature play opportunities etc).
- Utilising waterwise planting and focussing irrigation to primary and high use areas such as stations and activity nodes.
- Considering whole of life costs throughout the project process and utilising robust materials that are sourced responsibly.
- Developing a detailed site wide design narrative that responds to the Preliminary Place Plan framework of Collective, Connected and Specific, the METRONET Noongar Cultural Context Document and the METRONET "Gnarla Biddi - Our Pathways" Strategy.
- Implementing an engagement strategy with the community, traditional owners and stakeholders to ensure stories and narrative are developed appropriately.
- Encouraging connections across the rail corridor through generous user friendly station plazas with high levels of pedestrian and user permeability, pathway connections across the corridor at intersections with adjacent streets and clear direct movement paths to link adjacent community facilities, parks and services.
- Providing clear and direct movement paths between stations and associated transport modes.
- Creating visual and physical permeability across the rail corridor allowing intuitive wayfinding.
- Facilitating and retaining natural water crossings and swales where possible.
- Connecting communities through connecting pathways linking key roads, destinations and future developments and through community activation nodes adjacent to associated community uses.
- Facilitating flexible community spaces and facilities for programming and activation.
- Providing a range of spaces that accommodate different users and numbers from small intimate spaces to larger social gathering areas.
- Creating safe and comfortable spaces where people will wish to dwell and enjoy by reducing heat load by retaining vegetation (where possible), providing new increased canopy and understorey planting, by retaining water via WSUD best practice and by creating new permanent shade structures.
- Encouraging activity with walking loops, seating and rest points and ensuring universal access to encourage activity for all ages and ability.
- Providing two shared paths to separate user speeds and mitigate potential conflict.
- Providing natural surveillance to minimise antisocial behaviour.
- Ensuring adequate lighting within nodes, plazas and pathways.
- Creating defined spaces and clear ownership boundaries.
- Providing clear pathways and access points reinforced through wayfinding and signage.
- Promoting activation and development with a high quality public realm and landscape spaces that complement adjacent community uses and neighbourhood centres.
- Providing links to or flexibility for, future connections to potential development sites and anticipated adjacent uses.
- Ensuring future proposed road crossing points are facilitated within the landscape design.

Refer to Appendix J - Civil Corridor Landscape and Urban Design Package

5.7 Road Network

The removal of the level crossing at William Street provides the opportunity to undertake intersection modifications to improve the utility of the intersection and increase safety for pedestrians and cyclists crossing the intersection. It also has significant advantages for vehicle traffic in that the removal of the level crossing will:

- reduce traffic congestion and delays caused by having to give way to trains;
- increase vehicular safety, eliminating the temptation for drivers to cross the tracks as trains are approaching and before the boom gates are lowered; and
- reduce the complexity of the intersection more generally, increasing its safety for all road users.

As shown in the Traffic Impact Assessment (TIA) at Appendix K, the level crossing intersection currently experiences relatively high levels of collisions and so it is expected that the intersection improvements arising from this project will reduce the number of collisions thus improving safety for all road users. Notably William Street / Sevenoaks Street is currently identified as a black spot, indicating a high risk accident location.

Copies of the proposed road and intersection modifications are included at Appendix O.

Refer to Appendix O – Roads and Drainage General Arrangement Plans

The key changes to the road intersection layouts are described in the TIA included at Appendix K.

Refer to Appendix K – Traffic Impact Assessment Report

As shown on the civil plans and explained in the TIA the key changes to the William Street intersection with Sevenoaks Street and Railway Parade are as follows:

- Signalisation of the William Street and Sevenoaks Street intersection, including new, longer and wider medians on the northern leg of Sevenoaks Street and on William Street with pedestrian cut throughs;
- Two dedicated right turn lanes out of Sevenoaks Street (south bound) into William Street and one dedicated left turn lane;
- Provision of a cul-de-sac head on the southern leg of Sevenoaks Street to partially close this road and limit movements to left in only from William Street;
- Modified median islands with pedestrian cut throughs where Railway Parade intersects with William Street;
- The right turn out of William Street (west bound) into Railway Parade (north bound) will be removed with right turns only permitted into Sevenoaks Street; and
- Signalisation of the PSP crossing.

The proposed intersection modifications will enhance pedestrian and cyclist safety. SIDRA analysis of the performance of the modified intersection also demonstrates that the intersection will perform within capacity during both AM and PM peaks both at opening and five (5) years after opening. Further detail on the expected traffic flows are included in the TIA included at Appendix K.

5.8 Children's Crossing

The existing traffic warden controlled school children's crossing on William Street (east of the Railway Parade intersection) is proposed to be relocated further to the east along William Street as part of the intersection upgrade works. The location of this crossing is shown indicatively on the plans included at Appendix O. Further consultation will occur with relevant stakeholders to confirm the final location for this crossing.

A new footpath connection is also being provided across the rail corridor between Sevenoaks Street and Railway Parade (with a modified median within Railway Parade to facilitate safe crossing). This is to be provided clear of the proposed viaduct abutment opposite Linden Close.

Refer to Appendix O – Roads and Drainage General Arrangement Plans

5.9 Principal Shared Path

The PTA requires ALUA to provide a continuous PSP along the length of the project other than at the intersections which are not grade separated. The PTA scope also requires that the existing PSP be maintained wherever possible on the eastern side of the rail corridor.

The existing PSP is aligned outside the railway reserve on its eastern side (on the western side of Railway Parade) other than where it merges with the existing Beckenham Station plazas near William Street.

The existing PSP is generally being maintained with the location unchanged other than at the William Street crossing and near the new Kiss 'n' Ride parking spaces on Railway Parade, where it veers slightly to allow for this indented parking.

At William Street the PSP is designed to slow cyclist traffic down to cross the road. Incremental speed reduction for this purpose is achieved with a combination of path geometry, utilising 30, 20 and 10km/hr curves which brings cyclist speeds down to 10km/hr before the crossing and entry into the station forecourt. The path geometry is reinforced via line marking and signage to denote the zones of change.

Refer to Figure 20 – PSP Geometry/Speed Reduction Zones and Crossing Points at William Street and Beckenham Station

Maintaining the PSP in its existing alignment on the eastern side of the railway reserve ensures that conflict points with cars and buses is minimised, as the car park access is situated on the western side of the railway reserve. This arrangement is supported by the pedestrian access report, traffic assessment, universal access report and community engagement feedback.

Relevantly, because Railway Parade carries lower volumes of traffic than Sevenoaks Street, maintaining the PSP on the eastern side of the railway reserve adjacent to Railway Parade means that it can be more accessible for cyclists or pedestrians joining the PSP intermittently along the path. If the PSP were aligned adjacent to Sevenoaks Street it would be necessary to incorporate a road safety barrier into the design of the PSP which would significantly inhibit its accessibility from the adjoining urban realm and the ability for pedestrians and cyclists to join the PSP at intermittent points along the path.

The proposed PSP configuration satisfies security and CPTED requirements with clear sightlines and intuitive wayfinding. Vegetated buffers and alignment on the eastern edge of the corridor serves to minimize conflict points and maximise its attractiveness and usability for locals wishing to rely on the PSP network.

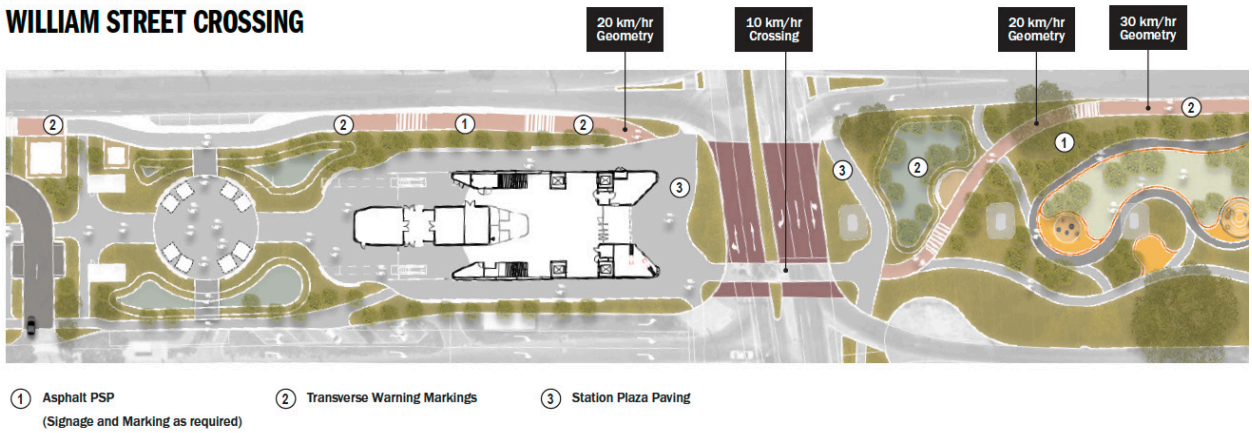


Figure 20. PSP Geometry/Speed Reduction Zones and Crossing Points at William Street and Beckenham Station

5.10 Car Parking

New car parking facilities are proposed to support the proposed new train station. The new parking facilities have been designed to enhance the user experience of the parking facilities with increased shade from new tree planting and legible paths and crossing points.

A new Park 'n' Ride car parking area is proposed to the north of the station with an entry only ingress point from Sevenoaks Street at the southern end of the car park. Egress is at the northern end of the car park. The car park provides for one (1) way traffic movement only.

The existing and proposed quantum of parking for the Beckenham Train Station is as follows:

- Three (3) formalised Kiss 'n' Ride car parking bays provided as embayed bays on Railway Parade immediately north of the new station (an increase from no Kiss 'n' Ride bays currently);
- Four (4) formalised Kiss 'n' Ride car parking bays within the new Park 'n' Ride car parking area at the southern end of the car park, closest to the station. Two (2) of these are ACROD bays;
- Four (4) ACROD bays in total (which includes two Kiss 'n' Ride ACROD spaces). This is a reduction in one (1) ACROD bay; and
- 90 car parking bays including the ACROD bays, increasing from the current provision of 67 bays (spread across three (3) separate car parking areas).

Refer to the TIA for further details.

Refer to Appendix K – Traffic Impact Assessment Report

Refer to Figure 21 – Proposed Beckenham Train Station Park 'n' Ride Parking Facilities

5.11 Bicycle Parking

New dedicated bicycle parking facilities are proposed as part of the VPCLXR project. This is part of an integrated transport offering that promotes multi modal and sustainable transport options. The proposed bicycle parking facilities include:

- 32 bicycle parking spaces in a dedicated bicycle storage room that is located within the southern façade of the Beckenham Train Station entry building. The bicycle storage room is directly accessible from the exterior of the building.
- 40 bicycle parking spaces in a dedicated bicycle shelter room that is located north of the train station, adjacent to the car park entry point.

This represents an increase from the 18 spaces (accommodated in one shelter); four (4) bicycle lockers and eight (8) u-rails that are currently provided at Beckenham Train Station.

Refer to the TIA for further details.

Refer to Appendix K – Traffic Impact Assessment Report

5.12 Bus Facilities

A bus stop is required at Beckenham Train Station on Sevenoaks Street to provide for Train Replacement Services. This is directly accessible from the northern station forecourt. There are currently no regular Transperth bus routes which service Beckenham Train Station as the adjoining residential catchment to the east is serviced by bus routes that utilise the Cannington Train Stration as their primary bus to train transfer point. Modal surveys have indicated very low demand for bus to train transfer trips at the Beckenham Station and therefore, there are no other permanent bus facilities planned for the Beckenham Train Station at this point in time.

The closest existing bus stop to the east is located 450m from Beckenham Train Station on Lena Street. The closest bus stop to the west is located 746m away from Beckenham Train Station on Albany Highway.

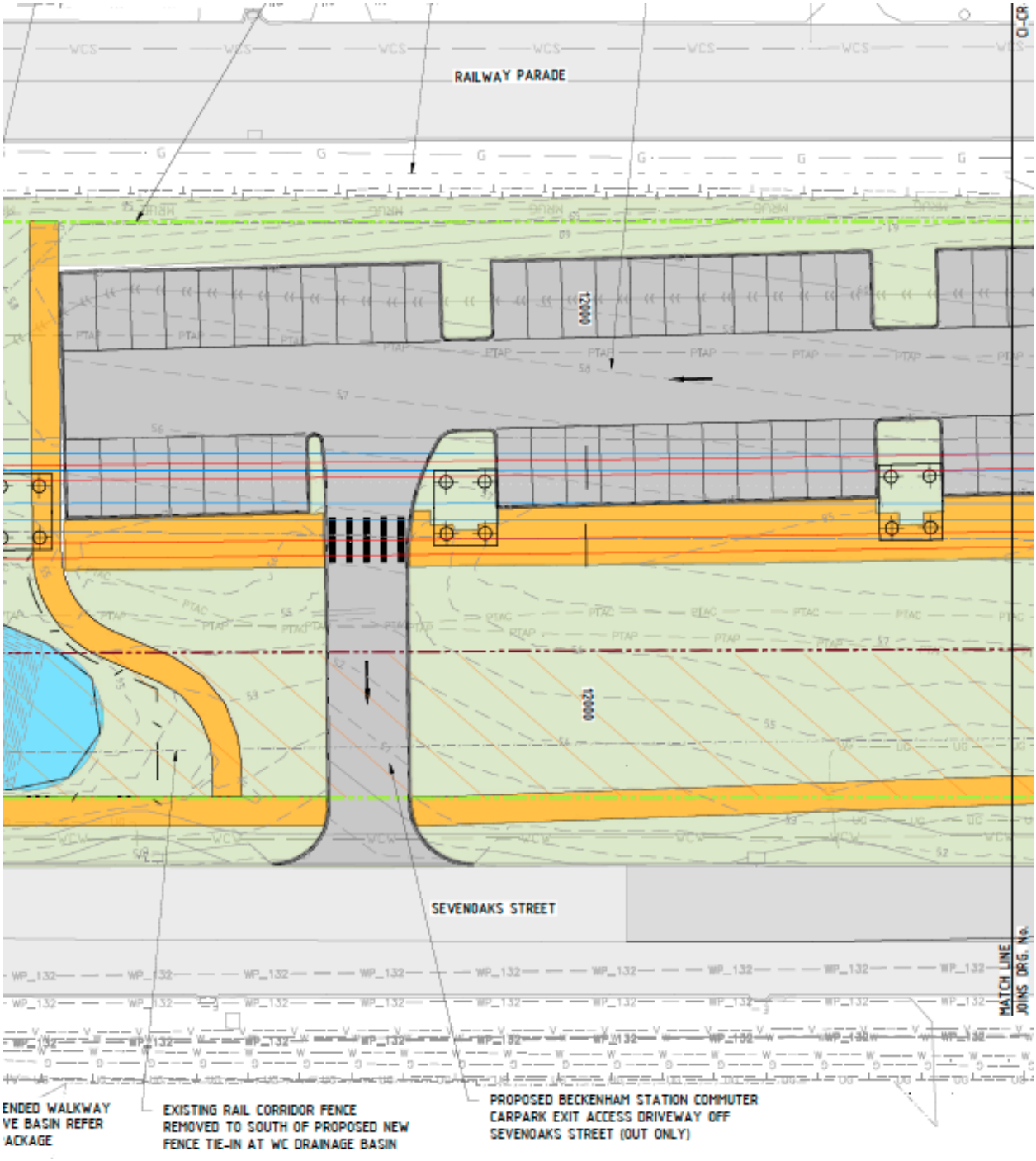


Figure 21. Proposed Beckenham Train Station Park ‘n’ Ride Parking Facilities (Left Side)

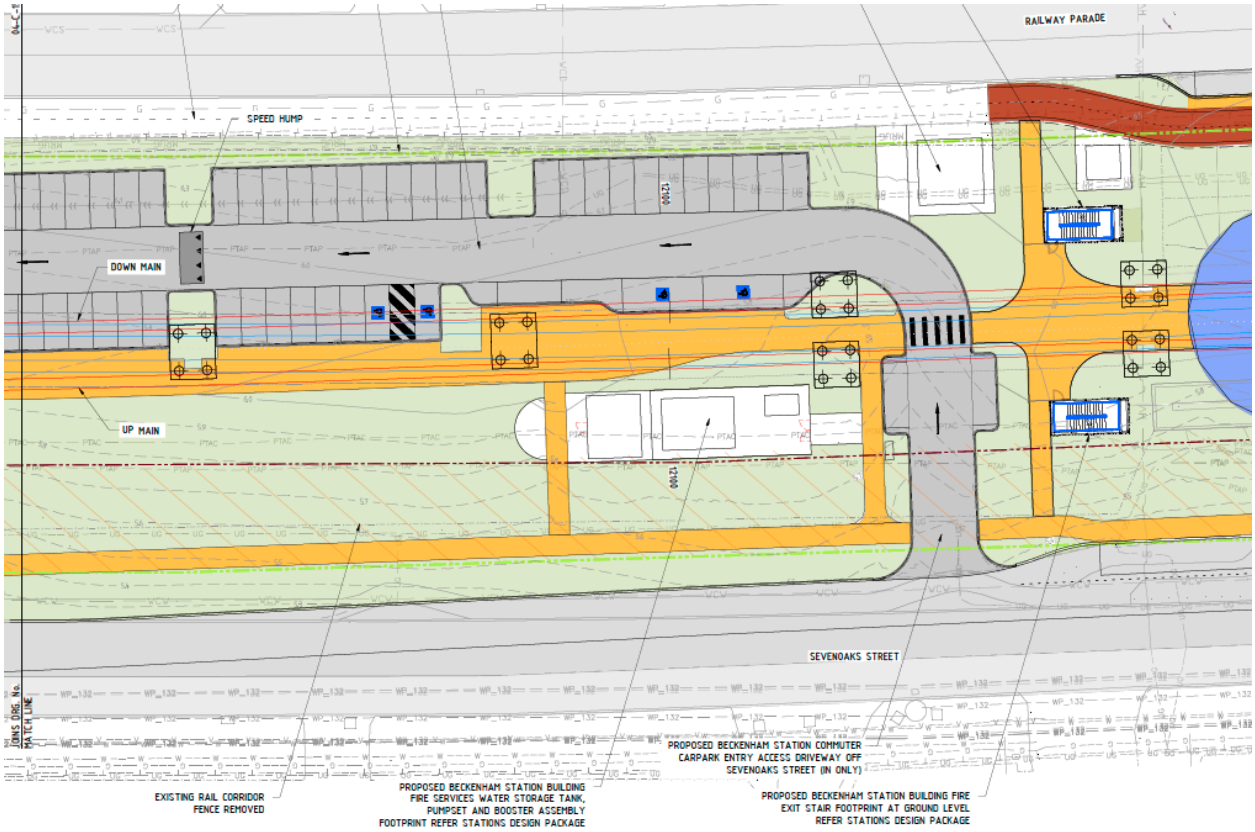


Figure 21. Proposed Beckenham Train Station Park 'n' Ride Parking Facilities (Right Side)

5.13 Architectural Treatments, Materials and Finishes

The new train station's materiality and colouration has been designed to be distinct and responsive to the local context, whilst maintaining a consistent line-wide character. Beckenham Station utilises a face brick plinth and aluminium roof in colours that reflect and respond to the local vernacular, which is consistent with the architectural approach proposed at the Carlisle, Oats Street and Queens Park Train Stations further north. In terms of more detailed materiality, Beckenham Train Station utilises a dark grey face brick colour and monument coloured metallic roofing to respond to the urban character of the surrounding area.

A materials schedule for the station, including swatches, is included in the Design Report at Appendix F.

Also in the Design Report is a full schedule of brickwork, platform tiles, mesh lattice and concourse tiles for each station in the VPCLXR project demonstrating how these have been selected to respond to the colour identity that is being proposed for each station and station precinct.

Refer to Appendix F – Design Report

5.14 Sustainability and Green Star Rating

The development has been designed having regard to the sustainability framework outlined in the METRONET Sustainability Strategy. In this respect the proposed design has been developed with the intention of achieving a four (4) star rating against the Green Star Railway Stations rating framework (or equivalency rating).

Notably, station and precinct design has considered the use of passive design measures, such as natural ventilation, shading, weather protection and thermal performance. Where applicable, the station precincts and buildings will also incorporate sustainable construction materials that are sourced locally, will include recycling facilities, good waste management strategies and WSUD outcomes.

Energy use and operational costs across station life cycles have also been considered as an integral design feature, specifically in the selection of materials and finishes that will meet the requirements of the PTA.

5.15 Signage and Wayfinding

Efficient wayfinding ensures smooth passenger flow to and from the train station platforms from the public realm, bus interchange and car parking facilities. It determines how easily people can navigate the stations, bus stops and bus interchanges and the surrounds, particularly during peak times.

Poor wayfinding can create barriers to the use of train stations, and can create confusion, congestion and poor user experiences. Given the importance of signage and wayfinding to the design of the VPCLXR project, wayfinding has been a central pillar in the design approach to the development. Key design cues to assist with wayfinding include:

- Providing clear lines of sight to station entrances;
- Providing permeable station buildings with multiple connection points and legible entrances that connect to the railway reserve corridor and adjacent public realm;
- Providing expansive open concourses around the station entries;
- Providing recreation paths which lead to station plazas and forecourts and a PSP which diverts past the station entrances;
- Designating pedestrian crossings; and
- Use of landscape markers and a thematic station, station precinct and public realm design to provide wayfinding cues in the public realm.

At this stage of the design process a detailed signage and wayfinding plan has not yet been developed. The intention is that this will be prepared prior to the operation of the new train stations. It is anticipated that this requirement will be conditioned as part of the approval of the development.

5.16 Public Art

An indicative plan for integrating art and cultural content into the VPCLXR project has been prepared by Artify in alignment with Gnarla Biddi, METRONET'S Aboriginal Engagement Strategy. The plan has a particular focus on two applications; integrated design concepts and public art.

Integrated design concepts are embedded into the urban realm, landscape and station architecture. A number of integrated design concepts are big, symbolic opportunities that are often deeply abstracted in their form and presence, which visually and thematically connect the corridor as a whole.

Themes and narratives will inform the project at a more granular, detailed scale through layered opportunities that are connected to specific sites. These narratives and stories will be expressed through physical and digital interpretation, public artwork opportunities and community participation projects.

Whilst integrated design concepts will explore and celebrate cultural narratives in a high-level, abstracted way, public art themes will allow for specific and detailed narratives of place, people and events to be explored and shared.

The project sits within a richly diverse historical, social, economic, and environmental context. There are four (4) broad themes to ensure a balanced and nuanced narrative is explored, detailed as follows:

- Places of Significance;
- People of Significance;
- Rail History; and
- Abundant Country.

The following methodology has been adopted by Artify, Barry McGuire and Carol Innes in the preparation of the Plan for Integrating Art + Cultural Content:

- Review the Gnarla Biddi Aboriginal Engagement Strategy and the VPCLXR Cultural Context document, sharing insights and key findings with the project team to ensure a deep understanding and appreciation for the work undertaken by METRONET, Nyungar Birdiyia and the METRONET Noongar Reference Group.
- Develop the Art + Culture Vision for the project which aligns with METRONET and ALUA's aspirations and intent for the VPCLXR project, including the Gnarla Biddi Aboriginal Engagement Strategy and relevant Place Plans.
- Develop a series of objectives which define the tangible goals the project sets out to achieve, providing a framework for assessing the project over time.
- Develop a series of values as a filter through which decision making and intangible benefits are evaluated for the lifespan of the project.
- Undertake additional research and investigation into local historic, cultural, environmental and social contexts and stories outlined into the Cultural Context document.
- Building on the ideas and narratives outlined in the VPCLXR Cultural Context Document, develop a Cultural Framework which outlines two streams of interpretation.
- How generative concepts and themes will conceptually and aesthetically inspire integrated design concepts within the architectural and landscape design.
- How layered opportunities, including digital interpretation, physical interpretation, public art, education programs and place activation, will provide an opportunity for deep and site specific storytelling.

The public art plan preparation has followed the following methodology:

- Review METRONET Public Art Strategy, METRONET Armadale Line Public Art Guide and Place Plans for each of the stations.
- Define high-level public art opportunities across the station precincts detailing the following information.
    - Approximate location within the station precinct;
    - Relevant themes and narratives;
    - Artwork typology and scale; and
- Prepare a cost analysis, based on benchmark projects, to inform the overall public art budget.

The Place Plans require an integrated art response and strategy to be located across the elevated rail structure and activity nodes and paths, with a focus on stations. There will be multiple public art opportunities line-wide, including screening, embankment walls / retaining walls / noise walls, abutments, piers, ceilings/ soffits, bus shelters, precinct hardscapes, transformers, and play elements. Further detail on the specific public art opportunities identified for the VPCLXR project can be found in the Public Art Opportunities document prepared by ALUA and included at Appendix R.

Ownership of public art is defined through the commissioning process, the contract and the land on which it is located. Through the contract with the artist, the artwork usually becomes the property of the commissioning body once the art is supplied and paid for. However, the contract may enable the commissioner and the artist to own joint copyright of the artwork. Artwork located on public land is the responsibility of the managing authority of the land on which the art is located.

Refer to Appendix R - Public Art Plan and Opportunities Document

5.17 Lighting

Lighting plays an important role in enhancing the sense of safety within the public realm in and around the new train stations. Good lighting design can assist in reducing antisocial behaviour, improve visibility and therefore more frequent use of the public realm by the community.

The lighting objectives for the VPCLXR project include:

- Enhance the perception that the spaces are a safe, welcoming environment;
- Be integrated into and accentuate the design;
- Provide a destination experience for pedestrians;
- Activate the space both day and night at station precincts;
- Increase visibility at night;
- Assist wayfinding;
- Enrich the user experience; and
- Meet the required specifications.

Three types of lighting categories have been identified for use within the VPCLXR project. These include:

- Train Stations: Within station buildings, plazas and associated car park and bus interchange areas lighting will be required at different levels both inside and outside operational hours for differing levels of security. During operational hours these will be lit from dark until the last train/bus of the evening. After operational hours they will be lit for security, which will be from the last operational train or bus services until dawn.
- Parkland: Within parkland spaces the recreational shared path and activity nodes will be lit to LGA requirements. These will typically be lit from dusk until 9.00pm.
- Urban Connectors: Pathways that form part of the urban grid such as the PSP, cross connectors where perpendicular streets intersect, and verge footpaths will require lighting throughout the night to ensure safe travel of users across the corridor. These will be lit from dusk throughout the night.

A Lighting Strategy is included in the Design Report at Appendix F, which contains further information regarding the approach to lighting.

Refer to Appendix F – Design Report

5.18 Land Management and Allocation Arrangements

The PTA has been involved in ongoing discussions with the City to resolve the final agreements for the management of land following the completion of the development and the commencement of operation of the rail infrastructure. Management arrangements are proposed to be as follows:

- City:
    - Roads and verges generally (including where roads go under the rail infrastructure);
    - PSP where it is located within the road reserve adjacent to Railway Parade; and
    - Public realm between station concourses/plazas.
- PTA:
    - Concourses and plazas around the station entry buildings;
    - Commuter car park;
    - Viaduct and station platforms; and
    - PSP where it introduces path geometry to bring the PSP to crossing points.

5.19 Tree Retention and Removal

A Tree Management Plan (TMP) has been prepared by ALUA and is included at Appendix Q. The TMP identifies the trees to be retained as part of the project and the trees to be removed. Notably, only the works that are within the rail corridor and the PCA require planning approval. However, given that works impact trees outside of this area and to ensure that the impacts of the project can be understood holistically, the full extent of tree removal/protection/relocation is shown on the TMP included in this development application.

Importantly all trees were assessed by an arborist to determine which should and could be retained having regard to the proposed construction methodology and to ensure that significant trees could be retained wherever practically possible.

A summary of the trees that are to be retained and removed are reflected in the Design Report included at Appendix F. Within both the PCA and the broader project area boundary, where located within the City, it is proposed that:

- 43 trees be retained; and
- 152 trees be removed.

It is noted that the TMP is a working drawing. Given that the design processes and construction methodology are still being resolved for this project there may be additional trees that are identified for either removal or retention as the design progresses. It is anticipated that minor changes to the TMP may be able to be managed through the condition clearance process in consultation with the City and DPLH.

The approach adopted by the VPCLXR project is that the ultimate canopy within the project area will exceed the existing canopy that needs to be removed to facilitate project construction and delivery.

Refer to Appendix Q - Tree Management Plan

Refer to Appendix F – Design Report

5.20 Tree Planting

The VPCLXR project recognises that trees are a core aesthetic and environmental component of the urban landscape. Trees influence air quality, reduce urban heat, provide health benefits, manage storm water and offer many other advantages.

The approach to tree planting across the precincts is based on the following principles:

- Develop a planting palette that responds to and reinforces the design narrative and framework - Collective, Connected and Specific.
- Retain existing mature trees where possible.
- Reinforce the existing adjacent streetscape planting in consultation with the individual LGAs.
- Use robust Australian native trees for shade to parkland and station forecourt areas.
- Add an overlay of local tree and understorey species endemic to the site vegetation complexes.
- Utilise trees where possible to create green volume and screening to minimise the scale and visual impact of the viaduct from surrounding residents.

The proposal incorporates 575 new trees within both the PCA and the broader project area boundary within the City. The existing canopy cover in this area, based on the net site areas calculated using the project extent but excluding areas of road, viaduct, station and at grade rail is 26.2%. The future canopy cover of the proposal, with trees at maturity will be 34.7% which is a significant increase in the existing canopy cover.

Refer to Figure 22 – Diagrammatic representation of tree and canopy proposal (source: ALUA)

Refer to Appendix F - Design Report

Refer to Appendix J - Civil Corridor Landscape and Urban Design Package

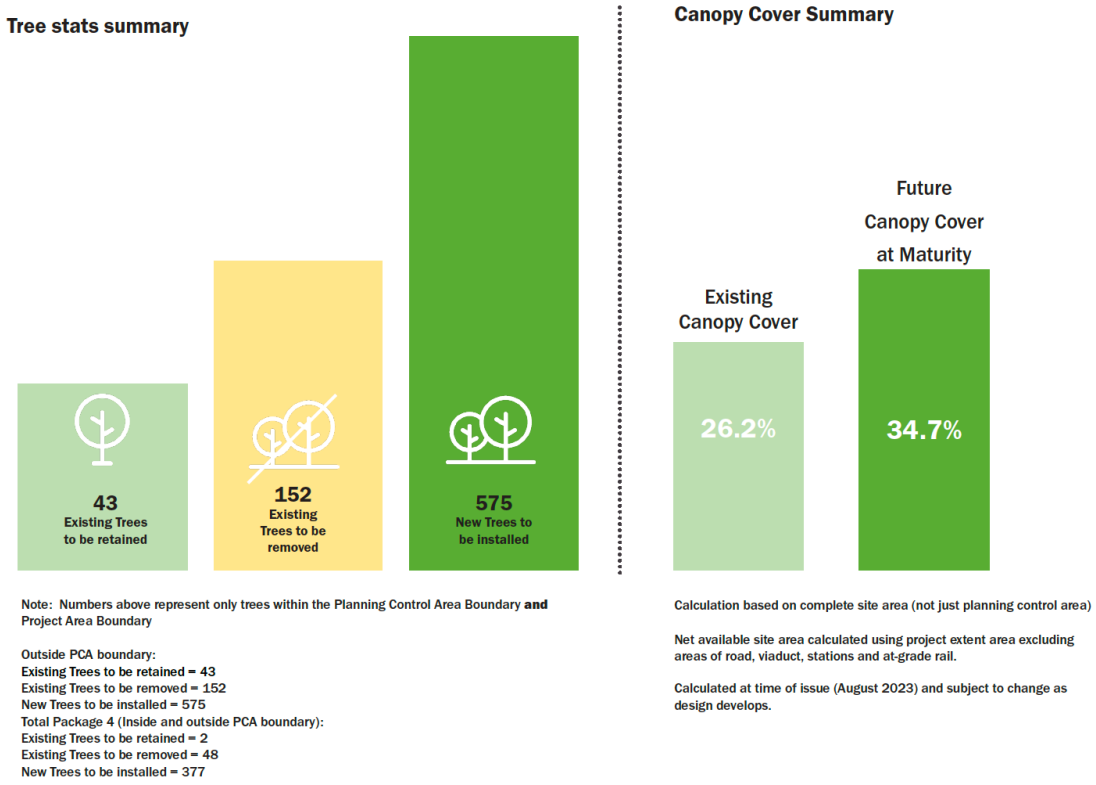


Figure 22. Diagrammatic representation of tree and canopy proposal (source: ALUA)

5.21 Services

There are a number of critical urban services that are being managed as part of the construction process either by avoiding, protecting or relocating major existing infrastructure. The work associated with removing or relocating services or providing new services to the viaduct was commenced within the PCA prior to current PCA No.175 being declared and, as such, continue to be exempt works.

New and upgraded utility connections required for the train stations, car parking areas and PSP will be coordinated directly with the service providers and/or the City as relevant.

5.22 Precinct Access Arrangements

The public will be able to access the train stations and bus interchange facilities as part of their public transport journey during station opening hours (currently 5:15am to 1am Sunday to Thursday and 5:15am to 2:30am on Friday and Saturday).

The areas around the exterior of the station entry buildings will remain open and publicly accessible 24 hours a day, 7 days a week. These have been designed to be part of an integrated public realm arrangement.

PTA operations and maintenance staff will have access to the precinct for parking and any operational requirements (e.g. structural inspections, services maintenance, etc.).

5.23 Project Delivery

The VPCLXR project is to be constructed predominantly during the 18-month shut down period commencing on the 20 November 2023. The 18-month shutdown was carefully considered by the PTA along with several alternative options, including multiple temporary and shorter shutdowns over a longer period of time.

It was determined shorter shutdowns could have unnecessarily prolonged the project and cause more disruption than necessary to passengers and the community.

The shutdown will effectively create a ‘greenfield site’ which will allow for a more efficient construction of the elevated rail, which delivers the project in a shorter timeframe and provides a safer environment for construction workers.

Transperth has invested considerable time and resources into analysing the travel patterns of existing patrons to plan a network of train replacement bus services. These new services will utilise more than 100 additional buses, which are designed to continue to provide an effective public transport network for patrons during the shutdown period.

6. Key Planning and Design Considerations

6.1 Relationship with Surrounding Urban Context

The VPCLXR project traverses through the suburb of Beckenham within the City's local government area. The VPCLXR project will elevate the Armadale Rail Line within the City from the abutment adjacent to Lacey Street and the southern abutment adjacent to Linden Close.

The area surrounding this section of elevated rail infrastructure is characterised by a mix of land uses including single storey residential, multiple dwellings and grouped dwellings, light industrial and commercial uses on both the western and eastern sides of the Armadale Rail Line corridor. Beckenham Primary School and a number of retail showrooms and commercial tenancies including Anaconda, The Good Guys and Snooze are located in close proximity to Beckenham Station.

The surrounding area has a mixed character and includes a number of underdeveloped sites and vacant land parcels. The area is one in which significant population growth and new development is anticipated over the next two decades as set out in the Beckenham Station Precinct Activity Centre Plan.

There are therefore opportunities for new development in the area to leverage from the significant investment in public infrastructure. In this respect, the VPCLXR project is anticipated to act as a catalyst for future growth and development investment within the City in close proximity to the rail corridor and beyond. This application will specifically support this through allowing for the following outcomes:

- Provision of a high quality new train station that is readily accessible and legible from the surrounding urban realm;
- Provision of a permeable network of paths to facilitate greater connectivity within and across the railway reserve;
- Carefully integrated bus and train services to better facilitate sustainable transport choices;
- Flexible open spaces to promote community activation; and
- High quality community nodes that respond to the communities expressed desires for new community activation spaces, fitness nodes, playgrounds and pump tracks, which will facilitate greater social connectivity and cohesion.

Refer to Figure 23 Existing Beckenham Train Station Context

Figure 23. Existing Beckenham Train Station Context

6.2 Applicable Planning Framework

6.2.1 The Purpose and Intent of Applicable Planning Schemes

The following planning schemes are relevant to this development application:

- **Metropolitan Region Scheme:**
  - The MRS defines the future use of land and provides the legal basis for planning in the Perth Metropolitan Region. It also provides the regulatory planning framework that typically exempts all METRONET work[3] inside railways reservations from the need for planning approval. Notwithstanding the exemptions provided by the MRS a PCA has been placed over parts of the project area, which requires all works in the PCA to be approved by the WAPC, as mentioned in Section 5.2.
  - The VPCLXR project aligns with the reserve description for 'Railways' as the project is providing upgraded public transport facilities that promote connectivity and accessibility.
  - Parts of the VPCLXR project are located in Other Regional Road (ORR) reserves under the MRS. Importantly, all significant infrastructure including station buildings, fire boosters, substations and transformers etc, are being located outside of areas in the ORR that may be needed for road widening in the future. This is discussed further at Appendix C.

Refer to Appendix C – Planning Assessment

3 METRONET work and 'Permitted development' under the MRS are defined to cover the same extent of works. 'Permitted development' for the purposes of land reserved for Railways under the MRS is defined as works "for the purpose of or in connection with a railway, but this 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".

- **City of Gosnells Local Planning Scheme No. 6:**
  - The purpose of the City's LPS 6 is to set out the local government's zones and reserves, planning aims and intentions for the scheme area.
  - As the zoning of the subject site is established by the MRS, LPS 6 does not provide specific requirements or objectives for the railways reservation. LPS 6 does however establish the zonings for the surrounding land parcels which are in close proximity to the subject site.
  - One of the aims of LPS 6 is *"To promote the health, safety, convenience and the economic and general welfare of the community"*. In this respect, it is noted that the VPCLXR project is for a new elevated rail line, new train stations and public parking (Kiss 'n' Ride and Park 'n' Ride) facilities within the MRS Railways Reservation. The development will deliver high quality public transport services and public realm arrangements which will improve the amenity and convenience of those residents living in proximity to the project.
  - As this development application is being made within a PCA, development approval is not required under the normally applicable local planning scheme. Nonetheless, the success of the project rests in part, on the manner in which the development responds to and interacts with adjoining land uses, both existing and future. Accordingly, the objectives of the local reservations and/or land use zones of LPS 6 have been considered in terms of the manner in which the public realm and station realm connects to and interacts with adjoining land. The development is considered to be consistent with the objectives of LPS 6 in this respect. Some of these design responses include (but are not limited to):
    - Responding to the specific context of Beckenham and providing an appropriate bespoke design response.
    - Focussing the activity nodes closest to the train stations, which are adjacent to the areas of most intensive existing and proposed future development.
    - Carefully resolving the design of Beckenham Station and the surrounding public realm having regard for the potential future widening of Sevenoaks Street in the ORR reserve.
    - Maintaining the PSP adjacent to Railway Parade to provide a more accessible PSP as a PSP adjoining Sevenoaks Street would necessitate a traffic barrier (due to traffic volumes on Sevenoaks Street), which would result in a less accessible PSP for residents of the area.

6.2.2 Relevant State and Local Planning Policies

The following State and local planning policies and other identified planning instruments are relevant to this development application:

- State Planning Policy 7.0 - Design of the Built Environment
- Development Control Policy 5.1 – Regional roads (vehicle access)
- Local Planning Policy 4.1 – Public Consultation
- Local Planning Policy 4.9 - Signage
- Local Planning Policy 4.11 – Public Art
- Local Planning Policy 4.12 – Design Review

The proposed development has been assessed against the planning framework documents listed above in Appendix C.

Refer to Appendix C – Planning Assessment

6.2.3 Orderly and Proper Planning and Preservation of Amenity

The principles of orderly and proper planning require that new development is a logical and efficient extension of existing development, and consistent with the planning vision and strategic direction for the locality. This project represents a significant investment by the WA Government in enhancing the capacity of the train network to support long term future population growth and urban consolidation, improving safety and congestion issues associated with existing level crossings and improving the amenity of the VPCLXR project area to support urban renewal and consolidation.

Within the City, the VPCLXR project will deliver a new train station and associated station entry building, new station plaza, new Kiss 'n' Ride and Park 'n' Ride parking facilities, that integrate with the new train station and significant new ground plane public realm revitalisation and improvement, inclusive of new bespoke community gathering and play spaces all within the existing railway reserve. In addition, the proposal seeks to ensure that the existing PSP is augmented to provide a safe and functional route for cyclists and pedestrians that provides appropriate connectivity to the station and a safe crossing point across William Street.

Specific regard has been had to:

- The location of the station, parking areas and public realm uses within the railway reserve to respond to the existing approved use of adjacent land along the railway reserve.
- The design and scale of the proposed development has had careful regard to the context established by existing surrounding development.
- The location of the proposed development is generally contained within the established MRS Railways Reserve (other than local road network improvements) and some specific areas where the ORR reserve extends into the PTA's existing rail corridor (refer to Appendix C).
- The development will provide high quality facilities that will encourage the use of the rail infrastructure and new public spaces by local residents and workers, providing a significant new community asset that meets contemporary standards and requirements in terms of accessibility, safety and functionality.
- The proposal will enhance the functionality of train services and the operation of the PSP as well as pedestrian movements across and within the railway reserve.
- The design of the development is high quality and responds to the context and characteristics of the site generally.
- The design direction of the proposed development has been generally supported by the SDRP and the Design Working Group.
- The proposal will maintain and supplement the availability of Park 'n' Ride and Kiss 'n' Ride parking for commuters.
- The proposed development has been designed with careful regard for weather protection and the application of CPTED principles and will ensure safe and protected use of the spaces being delivered as appropriate to the functionality of the space. Shade and amenity will be significantly increased as a result of the project.
- The proposal has been shaped by a detailed consultation process with the community and other stakeholders.

Given the above, the proposed development is considered to be consistent with the principles of orderly and proper planning.

6.3 Crime Prevention Through Environmental Design

The WAPC's recently adopted *Safer Places by Design: CPTED Guidelines* guides the design of places having regard to crime prevention. ALUA in consultation with key stakeholders has had regard to CPTED principles in relation to the proposed station and station curtilage design, Kiss 'n' Ride and Park 'n' Ride design, bus stop and public realm design.

The principles of CPTED that have been applied to the design of the development, consistent with the DOCP Guidelines, include:

- to maximise the use of public transport by a wide range of people over extended operational hours in a safe environment;
- to discourage anti-social behaviours;
- to encourage all users to feel safe by increasing safety provisions; and
- to promote surveillance.

There are a number of design and operational measures proposed to ensure that safe places and spaces are provided for all users consistent with the *Safer Places by Design: CPTED Guidelines*. These include:

- Ensuring passive surveillance at station entrances and active surveillance with CCTV cameras positioned at the entry (with ancillary views of these spaces).
- Clear sightlines at station entries.
- Public routes and station entries being generally well viewed from adjacent properties and roadways.
- Small areas that are confined on most sides by building elements such as pillars, walls or other non-opaque entrapment spots or places where intruders may be concealed being avoided in the design.
- Clear sightlines being provided to stairwell and lift entrances.
- Transparent materials being utilised in the station design, increasing natural surveillance and light.
- Clear sight lines provided through the car parks.
- The PSP being separated from other pathways and routes, such as to the bus to station and car park to station routes, providing clarity in zones and improved safety.
- Shrubbery and vegetation being planned to allow direct sightlines and maximise security and wayfinding.
- CCTV being coordinated with tree placement and lighting location/coverage.
- Security lighting being provided.
- Furniture and finishes being selected to avoid misuse, dumping or tagging.
- Community uses and ownership of the spaces being encouraged to facilitate positive social interactions in the public realm and to avoid conflicting uses.

The following further processes are either underway or are proposed to inform the detailed design phases for the project:

- Security / Crime Risk Assessment Workshops – which are being held with relevant stakeholders such as the PTA (Transit Officers/N&I), LGAs and WA Police.
- Human Factor Workshop with CPTED principles incorporated in safety risk mitigation during construction.
- Lighting coverage modelling to demonstrate adequate lighting is provided to improve users' feeling of safety.
- CCTV modelling to demonstrate viewing objectives especially in high-risk areas as per PTA standards are met.

It is acknowledged that the overall construction period associated with the VPCLXR project is relatively long. Therefore, ALUA in consultation with key stakeholders are committed to ensuring that spaces surrounding the construction site are safe and fit for purpose to limit risks to pedestrians as far as practically possible.

6.4 Sustainability Approach

The METRONET Sustainability Strategy 2021 (Sustainability Strategy) aims to create a sustainable legacy for Perth through the planning, design, procurement, and construction of transport infrastructure, train stations and precincts.

The VPCLXR project has had regard to the social, environmental and economic themes of the Sustainability Strategy. Importantly, Beckenham Station is being designed to achieve a four (4) star Green Star equivalency target rating, both in design and 'as built'.

The sustainability initiatives incorporated into the works included in this development application include:

- The designs apply a sustainability approach through the use of passive environmental design measures, responding to local climate and site conditions having regard to orientation, shading, thermal performance and natural ventilation.
- The reduction of reliance on technology for heating and cooling will minimise energy use, resource consumption and operating costs over the life-cycle of the project.
- Utilising low maintenance design opportunities in both the station, public realm and landscape where possible.
- Achieving tree canopy and urban forest targets for the project.
- WSUD and landscape principles have been applied to minimise negative impacts on existing natural features and ecological processes. Furthermore, the combination of landscape WSUD, subsoil drainage and grading are designed to avoid the requirement for underground tanks and gross pollutant traps etc.
- The use of sustainable construction materials, recycling, good waste management practices, re-use of materials and existing structures, harnessing of renewable energy sources, and total water cycle management will also be incorporated, where applicable.
- Minimising hardscapes near train stations whilst maintaining functionality.
- Investigating permeable materials for car parks and plazas with the PTA (noting that these do not currently meet PTA standards).
- Incorporating bike storage to reflect PTA requirements with designs that enable increases in capacity in the future.

In addition, the project more holistically will deliver high quality new train stations with improved integration with bus services and improved walkability as a result of the improved network of paths, crossing points, shade and weather protection more generally. This will result in high quality low-emission transport options for thousands of locals, consistent with the principles of sustainability.

7. Key Technical Considerations

7.1 Acoustic Considerations

An Operational Noise and Vibration Assessment is currently being finalised by ALUA[4]. The purpose of this assessment is to indicate the extent of mitigation required to achieve compliance with the relevant noise and vibration criteria within the City.

The report will outline the design response to the assessment of operational rail noise and vibration modelling. Whilst not yet currently available for review, the preliminary findings of the assessment indicate that a number of acoustic barriers (noise walls) will be required south of the southern abutment, on both sides of the corridor where the rail line runs down an embankment to return to its current location at grade. These noise walls are anticipated to be up to 2.4 metres in height. The final location and requirement for the noise walls will be coordinated with the City as a number of significant trees have the potential to be impacted.

Refer to Appendix N - Civil Corridor General Arrangement Plans for indicative noise wall locations requirements.

It is expected that with these noise walls the rail noise levels achieve the LAeq,day, LAeq,night and LAmax at all receivers.

Notably, all of the noise walls proposed to mitigate noise and achieve compliance with the rail noise criteria are located outside of the PCA boundaries and will be subject to METRONET works exemptions after the METRONET Act amendments take effect, however they have been documented within this application, consistent with the principles of transparency.

Acoustic assessment reports are currently also being prepared for the station. The purpose of these assessments is to assess and determine the level of compliance of the design (or stations and car parking areas etc) having regard to surrounding noise-sensitive premises and to ensure that passenger station areas meet appropriate standards having regard to noise and vibration.

These assessments will be used to influence the detailed design and material selection as the project moves into the detailed design phase.

Vibration

ALUA will continue to consider the design of the rail infrastructure in detail to limit vibration and meet the relevant rail vibration criteria. At this point in time the vibration modelling is still underway.

4 The acoustic and vibration assessment has not yet been completed for the section of rail in the City of Gosnells, due to the late inclusion of Beckenham in the VPCLXR project.

7.2 Wind and Rain

ALUA is required by the PTA to undertake wind and rain assessments of passenger areas including station platforms, station entries and bus interchanges and stops. This is to ensure that the external environmental comfort for passengers is appropriate and that the design responds to any risk areas where passengers may feel uncomfortable as a result of wind and/or rain.

These climatic studies have informed the platform canopy designs. The studies are ongoing and will continue to inform the design as it progresses into the detailed design phase for construction.

7.3 Construction and Traffic Management

The project is to be principally constructed during the 18 month shut down period during which the rail line will be closed and there will be replacement bus services in operation. METRONET has publicly acknowledged that this shutdown process will be disruptive to the community, however it was determined as the most appropriate option to deliver the new rail line quickly and safely. Temporary bus stops and bus interchanges will be established during this period to support the replacement bus services that are operational during this time and until the new permanent bus stops and interchanges come on line as part of the VPCLXR project.

The construction of the stations, car parks, bus interchanges, road works and public realm will be managed holistically with the construction of the viaduct during the 18 month shut down period. In general, the footprint required to construct the VPCLXR project will be confined to the railways reservation as far as practically possible, limiting any impacts to the surrounding area. Notwithstanding this, it is anticipated that temporary road closures will be necessary to complete certain elements of the project works.

A Construction Management Plan (CMP) will be prepared and provided to the City and DPLH for approval that provides traffic management strategies that will be deployed to coordinate temporary traffic management arrangements.

The CMP will also include details on a number of other matters, including but not limited to:

- Office accommodation;
- General lighting details;
- Working hours including out of office working hours;
- Maintenance during construction;
- Construction constraints;
- Temporary fencing and hoardings;
- Storage of materials;
- Construction site cleanliness;
- Fire precautions;
- Temporary works;
- Public amenity relocation; and
- Site reinstatement.

There will be periods in which work is undertaken at night. Relevant approvals will be sought and all work outside of hours will be undertaken in accordance with a noise management plan.

7.4 Geotechnical Considerations

A significant amount of testing has been undertaken including through cone penetration testing and bore holes to determine the ground conditions. This information has been taken into account and informed the engineering design requirements.

7.5 Water Management

Stormwater management for the VPCLXR project comprises a number of elements as follows:

- To manage post development flows within the public realm, WSUD principles have been applied within the drainage design. This includes shallow basins/swales with landscaped plants/vegetation to treat (remove pollutants) the surface water runoff from the viaduct, roof catchments, hard and soft landscaped areas. The WSUD principles that have been applied in the public realm design are detailed in the Design Report included at Appendix F.
- Soak wells and high-level overflow catchpits will be positioned within some shallow basins / swales as the inlet and outlet respectively. The pipe outlet from the high-level overflow catchpit will then connect into adjacent basins or the existing local road drainage network, ensuring the flows remain at pre-development rates to not adversely impact the existing drainage network. High-level preliminary calculations show that the existing drainage network has sufficient capacity to retain 1% AEP storms.
- Basins are anticipated to have a depth of 300mm and up to 500mm where required (noting that fencing may be required where these are greater than 300mm in depth). Underground drainage storage tanks will be considered if the 500mm deep retained basin does not have sufficient capacity to meet the 300mm freeboard and pre-development flow requirements of the project.
- Drainage runoff from the viaduct will flow down the centre of the pier and will freely discharge at ground level onto rock pitching into swale treatments to provide natural irrigation. Where piers are located within a hard landscaped area (i.e. stations, forecourts, pavement, etc.), the design involves a PVC outlet below finished ground level into an atco drain for inspection/maintenance and then connected into a piped system for further conveyance.
- Where possible, surface runoff from car parks will sheet flow into vegetated swales / rain gardens. The vegetated swales / rain gardens will help to manage the post development flows and treat the surface runoff prior to discharging into the existing local road drainage network. Where there are existing trees or limited space and hence swales / rain gardens cannot be proposed, then pit and pipe systems with gross pollutant traps are proposed to be used.
- Where the rail corridor has restricted access with a 1.8 metre high chain link fence (outside of the PCA), 1.5 metre deep basins can be proposed with 1V:3H side slopes to help manage the pre-development flows.
- Road drainage design replicates the existing drainage scenario as much as possible. It is proposed to design new drainage structures to suit the road design (widened lanes, amended kerbs, etc.), connecting to the existing City drainage structures, which outlet to existing basins. The drainage design is to have no adverse impacts to the City's existing drainage network.
- It is noted that the existing rail corridor and road stormwater drainage does not include any specific water treatment infrastructure to treat runoff from the roads. Through the proposed drainage design for the rail corridor, at-source treatment is proposed prior to any connections to the existing road network. However, if any further water treatment is required prior to discharging into the existing Water Corporation basins (such as GPT's on the existing pipe networks downstream of the project), it is assumed that there are existing measures in place, and it is not part of the corridor and drainage scope of work.
- Groundwater will be utilised to meet operational irrigation requirements, in line with METRONET's target of utilising 100% non-potable water for all landscaping beyond the establishment phase. An irrigation strategy outlining the approach to irrigation is under development and will need to be agreed with the City.
- Prior to use for irrigation purposes, bore water shall be treated to minimise risk of iron staining. A strategy for this approach is yet to be confirmed.

Refer to Appendix F – Design Report

Refer to Appendix M – Drainage General Arrangement Plans

7.6 Services and Infrastructure

A number of new services and upgraded utility service connections will be required for the new train stations, public precincts, car parks, railway communications and supply lighting for the PSP. All service related matters will be implemented by ALUA's Utilities and Services Team, who will be responsible for the following:

- Locating all services within the project footprint;
- Engaging asset owners to design and construct relocation of assets where required;
- Engaging asset owners and where required design and/or construct all new and upgraded utility connections for train stations, traction power and other assets;
- Providing effective management of service and utility relocations by third parties and ALUA;
- Constructing the Water Corporation assets that require relocation or extension;
- Designing and construct any protection work for utilities and services not being relocated and any works required to protect railway infrastructure if services develop leaks in the future;
- Ensuring services that are remaining in place, both permanently and temporarily, are avoided and protected;
- Removing or making safe by grouting redundant services in the works area that have potential to impact on project works or existing assets; and
- If required engaging asset owners and designing and/or constructing any additional services that require relocation.

ALUA is engaging with service providers and the City as relevant to facilitate the new connections.

8. Conclusion

This report has been prepared by **element**, on behalf of ALUA, in support of a development application for the following VPCLXR project components:

- Removal of vegetation.
- Piling for the viaduct.
- Viaduct piers and structure.
- Operational railway infrastructure / works (i.e. rail track, maintenance tracks, signalling infrastructure, OLE masts, overhead rail lines and infrastructure etc).
- Electricity works for the railway.
- Temporary work zones within the rail corridor.
- Demolition of the existing Beckenham Train Station.
- A new elevated train station at Beckenham, including ground level station entry and concourse;
- Beckenham Station passenger parking (including Park 'n' Ride and Kiss 'n' Ride parking);
- At grade PSP modifications to augment the existing PSP adjacent to Railway Parade;
- Public realm initiatives and improvements between the north abutment, which is within the MRS railways reservation just to the south of the intersection of Lacey Street and Railway Parade and the southern abutment adjacent to Linden Close, incorporating construction of a new community node, community park, pathways and landscaping; and
- Local road works and intersection modifications where within the MRS railways reservation.

The VPCLXR project represents a major upgrade to the Armadale Rail Line and a significant investment in new public realm facilities for the community. As part of the broader METRONET rail program, it represents the single largest investment in public transport that Perth has seen and will deliver a multitude of benefits to the local resident and worker community as a result of the new public transport infrastructure and new public realm that is being delivered as part of this project.

Based on the justification provided throughout this report, we respectfully request that the City support and recommend approval of this application to the WAPC and that the WAPC approve the application subject to appropriate and reasonable conditions.