

13 Urban design and visual amenity

This chapter provides an assessment of the urban design, landscape character and visual amenity for the M4-M5 Link project (the project). A detailed urban design report has been carried out for the project and is provided in **Appendix L** (Technical working paper: Urban design) and a detailed landscape and visual impact assessment has been carried out for the project and is provided in **Appendix O** (Technical working paper: Landscape and visual impact).

The Secretary of the NSW Department of Planning and Environment (DP&E) has issued environmental assessment requirements for the project. These are referred to as the Secretary's Environmental Assessment Requirements (SEARs). **Table 13-1** sets out these requirements and the associated desired performance outcomes that relate to urban design and visual amenity, and identifies where they have been addressed in this environmental impact statement (EIS).

Table 13-1 - SEARs – urban design and visual amenity

Desired performance outcome	SEARs	Where addressed in the EIS
<p>8. Visual amenity</p> <p>The project minimises adverse impacts on the visual amenity of the built and natural environment (including public open space) and capitalises on opportunities to improve visual amenity.</p>	<p>1. The Proponent must assess the visual impact of the project and any ancillary infrastructure on:</p> <ul style="list-style-type: none"> a) views and vistas; b) streetscapes, key sites and buildings; c) heritage conservation areas and heritage items including Aboriginal places and environmental heritage; and d) the local community (including view loss and overshadowing). <p>2. The proponent must provide artist impressions and perspective drawings of the project from a variety of locations along and adjacent to the route to illustrate how the project has responded to the visual impact through urban design and landscaping.</p>	<p>Visual impacts are assessed in section 13.4, section 13.5, and Appendix O (Technical working paper: Landscape and visual impact). Visual impacts on heritage conservation and heritage items are assessed in Chapter 20 (Non-Aboriginal heritage) and Chapter 21 (Aboriginal heritage).</p> <p>Impacts on overshadowing are assessed in Chapter 12 (Land use and property) and Appendix M (Shadow diagrams and overshadowing).</p> <p>Urban design and landscaping aspects and visualisations of the project are described in section 13.5 and Appendix L (Technical working paper: Urban design).</p>
<p>7. Urban design</p> <p>The project design complements the visual amenity, character and quality of the surrounding environment.</p>	<p>1. The Proponent must:</p> <ul style="list-style-type: none"> a) identify the urban design and landscaping aspects of the project and its components to enhance the appearance of ventilation outlets, interchanges, potential connections to The Bays Precinct and transport linkages, tunnel portals, bridges, noise walls, ancillary buildings, and any additional surface infrastructure, 'cut and cover' arrangements; 	<p>Urban design and landscaping aspects of the project are identified in section 13.5.</p>

Desired performance outcome	SEARs	Where addressed in the EIS
The project contributes to the accessibility and connectivity of communities.	b) identify measures aimed at improving 'north-south' connectivity between Balmain/Rozelle and Sydney Harbour;	Measures to preserve north-south connectivity are discussed in section 13.5.3 , section 13.5.4 and Appendix N (Technical working paper: Active transport strategy).
	c) identify measures aimed at preserving the 'east-west' connectivity between White Bay and the Rozelle Rail Yards;	Measures to preserve east-west connectivity are discussed in section 13.5.3 and Appendix N (Technical working paper: Active transport strategy).
	d) consider resulting residual land treatments, and demonstrate how the proposed hard and soft urban design elements of the proposal would be consistent with the existing and desired future character of the area traversed or affected by the proposal;	An assessment of the consistency of the project with the desired future character of the project footprint is provided in Appendix O (Technical working paper: Landscape and visual impact).
	e) identify opportunities to utilise surplus or residual land, particularly for the provision of community space (passive and recreational) and utilise key structures (such as ventilation outlets) for multiple uses i.e. integration with other structures;	Consideration of residual land treatments are discussed in section 13.5.7 and Chapter 12 (Land use and property).
	f) evaluate the visual impacts and urban design aspects of the proposal and its components (such as the ventilation outlets and interchanges) on surrounding areas, taking into consideration the urban and landscape design of the M4 East and New M5 Motorways and WestConnex Urban Design Corridor Framework;	A visual impact assessment is outlined in section 13.5 and an assessment against urban design principles developed for the project is provided in section 13.5.9 .
	g) explore the use of Crime Prevention Through Environmental Design (CPTED) principles during the design development process, including natural surveillance, lighting, walkways, signage and landscape;	CPTED principles are discussed in section 13.5.8 .
	h) identify urban design strategies and opportunities to enhance healthy, cohesive and inclusive communities;	Urban design strategies are discussed in section 13.5 and Appendix L (Technical working paper: Urban design) and benefits to the community associated with these strategies are discussed in Chapter 14 (Social and economic).
	i) describe urban design and landscape mitigation measures, having regard to the urban design and landscape objectives for the proposal.	Urban design and landscape mitigation measures are provided in section 13.6 .

Desired performance outcome	SEARs	Where addressed in the EIS
	3. The Proponent must identify opportunities for local centre street revitalisation improvements, pedestrian and cyclist access and connectivity and provision of community and social facilities.	Opportunities for urban renewal and local revitalisation are identified in Chapter 14 (Social and economic).
<p>9. Socio-economic, land use and property</p> <p>The project minimises adverse social and economic impacts and capitalises on opportunities potentially available to affected communities.</p> <p>The project minimises impacts to property and business and achieves appropriate integration with adjoining land uses, including maintenance of appropriate access to properties and community facilities, and minimisation of displacement of existing land use activities, dwellings and infrastructure.</p>	3. The Proponent must identify opportunities for local centre street revitalisation improvements, pedestrian and cyclist access and connectivity and provision of community and social facilities.	Opportunities for urban renewal and local revitalisation are identified in Chapter 14 (Social and economic).

13.1 Assessment methodology

The landscape character and visual impact assessment presented in this chapter has been undertaken in accordance with *Environmental Impact Assessment Practice Note – Guidelines for Landscape Character and Visual Impact Assessment (EIAG)* (NSW Roads and Maritime Services (Roads and Maritime) 2013a). This method is widely accepted by the NSW Government and is relevant to the project in that it addresses changes to corridor infrastructure within an urban setting.

The methodology comprised two components: an urban design process and a landscape character and visual impact assessment. These are described in the following sections.

An integrated urban design and engineering process

The urban design, landscape character and visual impact assessment presented in this chapter is based on the concept design for the project. The concept design defines:

- A definition of property acquisition requirements sufficient to allow construction to proceed
- A project footprint, including for construction and operation
- A clear description of the design principles, extent of impacts and impact management requirements
- A sound and clear basis for later development of the detailed design to a standard required to support project delivery.

The concept design would continue to be refined where relevant to improve road network and safety performance, minimise impacts on receivers and the environment, and in response to feedback from stakeholders.

Landscape character and visual impact assessment

An assessment of landscape character involves the assessment of the built, natural and cultural character or sense of place whereas an assessment of visual impacts assesses the day to day impacts of a project on views.

The assessment methodology involved:

- A desktop assessment including:
 - Consideration of relevant legislation and policy requirements
 - Review of the landscape context of the study area (defined below)
 - Determination of sensitive receiver locations and potential viewpoints
 - Review of the WestConnex Motorway Urban Design Framework (Roads and Maritime 2013a)
- Surveys of the study area to confirm significant landforms and existing viewpoints
- Assessment of potential landscape character and visual impacts (including cumulative impacts)
- Identification of measures to mitigate potential impacts.

13.2 Landscape character and visual impact assessment

Landscape character zones

To assess landscape character impact, landscape character zones (LCZ) were identified within the study area. The landscape character zones are defined as areas of landscape with similar properties or strongly defined spatial qualities that are visually distinct from adjoining areas. As much of the project would comprise of tunnelled motorway, the landscape character zones were focussed around areas of proposed surface works where permanent operational infrastructure would be located.

LCZs related to the Wattle Street interchange at Haberfield were assessed as part of the M4 East EIS. Where components of the M4-M5 Link project would be located within the footprint of the M4 East project, with no additional operational impacts resulting from the M4-M5 Link project, these LCZs have not been re-assessed. A description of LCZs identified for Haberfield can be found within WestConnex M4 East Urban Design, Landscape Character and Visual Impact Assessment (AECOM 2015) (refer to LCZ 10 and LCZ 12 for relevance to M4-M5 Link project).

Existing views

In order to assess visual impact, existing views have been identified based on a range of criteria, including:

- Where there is potential for a significant change between the before and after view
- Where there is potential for a significant adverse visual outcome for sensitive receptors
- Where there is potential for a significant adverse visual outcome to locations of high visual amenity
- Where there is potential for a significant adverse visual outcome to heritage listed items or Heritage Conservation Areas (HCAs)
- Where the view is representative of other similar settings, in which there was potential for a similar adverse outcome, eg on the character of a streetscape.

Site management works

Roads and Maritime is carrying out a suite of site management works on part of the Rozelle Rail Yards site. The works are needed to manage the existing environmental and safety issues at the site and would also improve access to surface conditions, which would allow for further investigation into the location of utilities and the presence of contamination and waste.

The existing landscape character and visual setting of the Rozelle Rail Yards would be characterised by these completed site management works. The assessment presented in this EIS assumes that the site management works are completed.

Refer to **Chapter 2** (Assessment process) for further detail regarding the site management works.

13.2.1 Legislation and policy framework

The legislation and policy framework for the landscape character and visual aspects of the project has been established with regard to relevant local environment plans, development control plans, and regional planning documents. The desired future character of the area to be occupied by the project has been determined based on the strategic direction provided in these documents. Further detail on the existing land use zonings and land use and property impacts are provided in **Chapter 12** (Land use and property).

In addition, guidelines relating to urban design and visual amenity have been considered in the development of the project. A full list of the local environment plans, development control plans, regional planning documents, as well as guidelines relating to urban design and visual amenity is provided in **Appendix O** (Technical working paper: Landscape and visual impact).

13.2.2 Urban and landscape design

Key objectives outlined in the WestConnex Motorway Urban Design Framework (Roads and Maritime Services 2013a) and Beyond the Pavement: Urban Design Procedures and Design Principles (Roads and Maritime Services 2014a) have informed the development of guiding principles for the urban design for the M4-M5 Link. The relevant urban design principles of the project are outlined in **Table 13-2**.

Table 13-2 Urban design principles and their application to the project

Principle	Application to the project
<p>Integrated and collective approach</p> <p>Create holistic and integrated design solutions generated by collaboration across disciplines, the community, stakeholders and government bodies.</p>	<ul style="list-style-type: none"> • Working across disciplines • Holding regular stakeholder workshops and contributing to design outcomes • Prioritising community input • Working with all future plans and government bodies • Considering all relevant regulatory frameworks.
<p>Environmental vision</p> <p>Create a sustainable and enduring design response which enhances and connects local ecologies and green spaces.</p>	<ul style="list-style-type: none"> • Enhancing waterways, creeks and rivers • Utilising, where possible water-sensitive urban design • Connecting disconnected green spaces • Enhancing local ecology and vegetation • Utilising durable, sustainable and long lasting materials and timeless design.
<p>Cross scale connection of spaces</p> <p>Prioritise both locally and regionally significant connections that respond to the broader issues of the local neighbourhoods and city.</p>	<ul style="list-style-type: none"> • Enhancing connectivity between streets, facilities, neighbourhoods, green spaces, cyclist and pedestrian connections across the project footprint and city • Integrating and connecting transport modes • Connecting local and regional road, cyclist, public transport and pedestrian links.
<p>A motorway integrated within its context</p> <p>Understand the existing landscape and respond in a respectful manner that seeks to enhance and or contribute back to its context.</p>	<ul style="list-style-type: none"> • Responding to landform natural patterns • Respecting and working with the local landform • Enhancing the interface between existing open spaces and the motorway.
<p>Place sensitive design</p> <p>Celebrate and work with the character of each place and destination, responding to their unique histories, materiality, architecture, built fabric, cultural context, landform and topography.</p>	<ul style="list-style-type: none"> • Incorporating heritage items and areas into the urban design • Respecting and responding to cultural contexts • Complementing the existing built fabric • Increasing the legibility of places, buildings, streets and landmarks.
<p>Multidimensional user force</p> <p>Consider holistically how a diversity of users experience space including all ages, abilities and transport modes for a truly inclusive, universally accessible and safe outcome.</p>	<ul style="list-style-type: none"> • Ensure Crime Prevention Through Environmental Design (CPTED) driven designs (see section 13.5.8) • Safe, legible connections with way finding for all user types • Ensuring universal design outcomes • Considering the user experience for all modes including drivers, pedestrians, cyclists and public transport.
<p>Revitalisation, opportunity and economics</p> <p>Establish opportunities for development that supports and connects existing neighbourhoods, complements and stimulates local economies and provides opportunity for growth across existing and future local industries.</p>	<ul style="list-style-type: none"> • Contributing to urban structure and revitalisation • Capitalising on traffic reduction to enhance local streets and increase neighbourhood liveability • Creating opportunities for urban renewal.

The urban design principles of the project are outlined in **Table 13-2** would be developed into detailed designs under Urban Design and Landscape Plans (UDLPs) for the various components of the project. These UDLPs would relate to one another and the other stages of WestConnex.

13.2.3 Approach to the assessment of potential impacts

Assessment of landscape character and visual impacts

The method applied to measure both landscape character and visual impact comprised a sensitivity analysis of existing landscape zones or views subject to change, and an assessment of the magnitude of change on that zone or view.

Sensitivity and magnitude ratings are applied according to the matrix provided in **Table 13-3**. Concepts such as sensitivity and magnitude are explained further in **Appendix O** (Technical working paper: Landscape and visual impact).

Table 13-3 Landscape character and visual impact rating matrix

Visual impact		Magnitude of change			
		High	Moderate	Low	Negligible
Sensitivity of receivers	High	High	High–Moderate	Moderate	Negligible
	Moderate	High–Moderate	Moderate	Moderate–Low	Negligible
	Low	Moderate	Moderate–Low	Low	Negligible
	Negligible	Negligible	Negligible	Negligible	Negligible

Source: Roads and Maritime (2013)

Landscape character and visual impact ratings represent the potential impact of the project before the environmental management measures outlined in **section 13.6** have been applied. Potential landscape character and visual impact would be reduced by the application of environmental management measures.

Visual envelope mapping

The likely visibility of the permanent project infrastructure from surrounding areas has been broadly mapped to create a visual envelope. This provides a measure of the parts of the project that are likely to be viewed from large areas of surrounding development, and which may potentially be more visually sensitive when compared to other components of the project where direct views may be limited. The mapping typically shows ‘worst case’, ie some receivers may only see the tip of a ventilation facility; closer receivers may view a substantial part of the infrastructure element.

Consideration of landscape treatments

Vegetation proposed as part of the project is considered in the assessment process, but only applies to the early stage (ie after 12–18 months after planting), in accordance with the EIAG as outlined in **Appendix O** (Technical working paper: Landscape and visual impact).

Visualisations

Photographic panoramas have been used as a base for graphic visualisations which depict the concept designs for elements of the project. These ‘artists impressions’ illustrate what the project infrastructure may look like in the landscape. The final design of the infrastructure is subject to a detailed design process during the preparation of UDLPs. Visualisations are included in **section 13.5** and **Appendix O** (Technical working paper: Landscape and visual impact).

Assessment of night lighting impacts

A broad assessment of the impacts of night lighting during both the construction and operation of the project was undertaken, by applying the methodology for assessment of visual impacts described above. Key visual receivers have been separately assessed and include neighbouring residential properties, users of recreational space and motorists in local streets.

A detailed lighting concept would be developed and would be based around the considerations identified in **Appendix L** (Technical working paper: Urban design), and would be developed in accordance with AS/NZS 1158 Lighting for roads and public spaces, AS 2560 Guide to sports lighting, AS 4282 Control of the obtrusive effects of outdoor lighting, and AS/NZS 60598 – Series Luminaires.

The assessment of night lighting impacts is therefore based on assumptions that have been made with regard to the types and extent of lighting likely to be installed for both the construction and operation phases consistent with applicable guidelines.

13.3 Existing environment

The existing environment of the areas that would be subject to the operational components of the project is highly urbanised, and is broadly comprised of:

- Major roads such as Victoria Road, City West Link, Parramatta Road and the Princes Highway
- Residential areas including established low density residential areas at Rozelle, Haberfield, Lilyfield and Leichhardt, and medium and high density residential development around Rozelle and St Peters
- Commercial and industrial areas, predominantly around St Peters, Victoria Road at Rozelle, Rozelle Rail Yards and marine and port areas of Rozelle Bay
- Open space including King George Park and Easton Park at Rozelle and Sydney Park at St Peters.

13.3.1 Landscape character zones

LCZs have been identified in those areas that have the potential to be impacted by the operational components of the project. The LCZs reflect the differences in character that are inherent in such a densely urbanised setting, due to factors such as the mix and period of housing types, interweaving of land uses, and the number of different land uses as described above. Thirty-three LCZs have been identified within the study area. These are described in the following sections and shown in **Figure 13-1** to **Figure 13-4**.

State and locally listed Aboriginal and non-Aboriginal heritage items located within or closely adjoining identified LCZs have been identified and taken into consideration when assessing the sensitivity of these zones and potential impacts on important views. Visual impacts on non-Aboriginal heritage are discussed in **Chapter 20** (Non-Aboriginal Heritage) and mapping of listed Aboriginal and non-Aboriginal heritage items within the LCZs for the study area is provided in **Appendix O** (Technical working paper: Landscape and visual impact). As identified in **Chapter 21** (Aboriginal heritage), no surface expressions of Aboriginal objects or places were identified within areas of surface disturbance within the project footprint. Visual impacts related to Aboriginal heritage are therefore not considered further.

Darley Road

The existing landscape character and visual setting in this area is characterised by:

- Low density, single storey residential buildings on small lots at Leichhardt
- A large commercial building and ancillary parking located north of Darley Road and the Inner West light rail line, including the Leichhardt North light rail stop located south of City West Link, to the north of the site area.

The existing landscape character and visual setting at Darley Road has been characterised into three distinct LCZs (the central west LCZs). The area of the central west LCZs is generally bound by City West Link to the north, Catherine Street to the east, Darley Road to the west and Allen Street and Hill Street to the south. The central west LCZs are shown in **Figure 13-1**.

Rozelle interchange

The existing landscape character and visual setting in this area is centred on the Rozelle Rail Yards. The Rozelle Rail Yards consist of disused land which is mainly flat with some gentle gradients. The landscape character of the Rozelle Rail Yards would be influenced by the completion of site management works (see **section 13.2 and Chapter 2** (Assessment process)). A summary of the historical significance of the Rozelle Rail Yards is provided in **Chapter 20** (Non-Aboriginal heritage).

The existing landscape character and visual setting surrounding the Rozelle Rail Yards is characterised by:

- Primarily one to two storey residential buildings and neighbourhood centres in the suburbs of Lilyfield, Rozelle and Annandale
- Commercial land uses (low rise factories and warehouses) on Lilyfield Road and Halloran Street
- Rozelle Bay and the Rozelle Bay wharves and associated maritime land uses
- Transport infrastructure including City West Link, Victoria Road and the Inner West light rail line
- Areas of open space including Easton Park, Whites Creek Valley Park and the adjoining Federal Park, Jubilee Park and Bicentennial Park which form the Glebe foreshore parklands
- The decommissioned White Bay Power Station.

The existing landscape character and visual setting at the Rozelle interchange has been characterised into 16 distinct LCZs (the central east LCZs). The area of the central east LCZs is generally centred on the Rozelle Rail Yards and is bound by Darling Street to the north, Balmain Road and Cecily Street to the west, White Bay and Anzac Bridge to the east and Annandale Street to the south and east. The central east LCZs are shown in **Figure 13-2**.

Existing active transport networks around the Rozelle Rail Yards include the Bay Run, Glebe Foreshores, Anzac Bridge cycleway and GreenWay (between Cooks River and Iron Cove). At present there is poor connectivity between these networks, as the Rozelle Rail Yards is a significant barrier between the communities of Annandale, Rozelle and Lilyfield.

Iron Cove Link

The existing landscape character and visual setting in this area is characterised by:

- The Victoria Road corridor east of Iron Cove Bridge
- Single storey residential buildings on small lots to the south of Victoria Road
- Medium to high density buildings including high-rise apartment buildings to the north of Victoria Road
- Areas of open space including active and passive recreation facilities such as King George Park along the foreshore area south of Iron Cove Bridge
- A light industrial precinct to the east of Victoria Road north of Wellington Street
- Darling Street, which is characterised by a mix of restaurants, retail shops, community facilities and commercial enterprises.

The existing landscape character and visual setting at the Iron Cove Link has been characterised into seven distinct LCZs (the northern LCZs). The area of the northern LCZs is generally centred on Victoria Road and is bound by the Parramatta River and Rozelle Bay to the west, Manning Street to the south, the Rozelle/Balmain suburb boundary to the north and Darling Street to the east. The northern LCZs are shown in **Figure 13-3**.

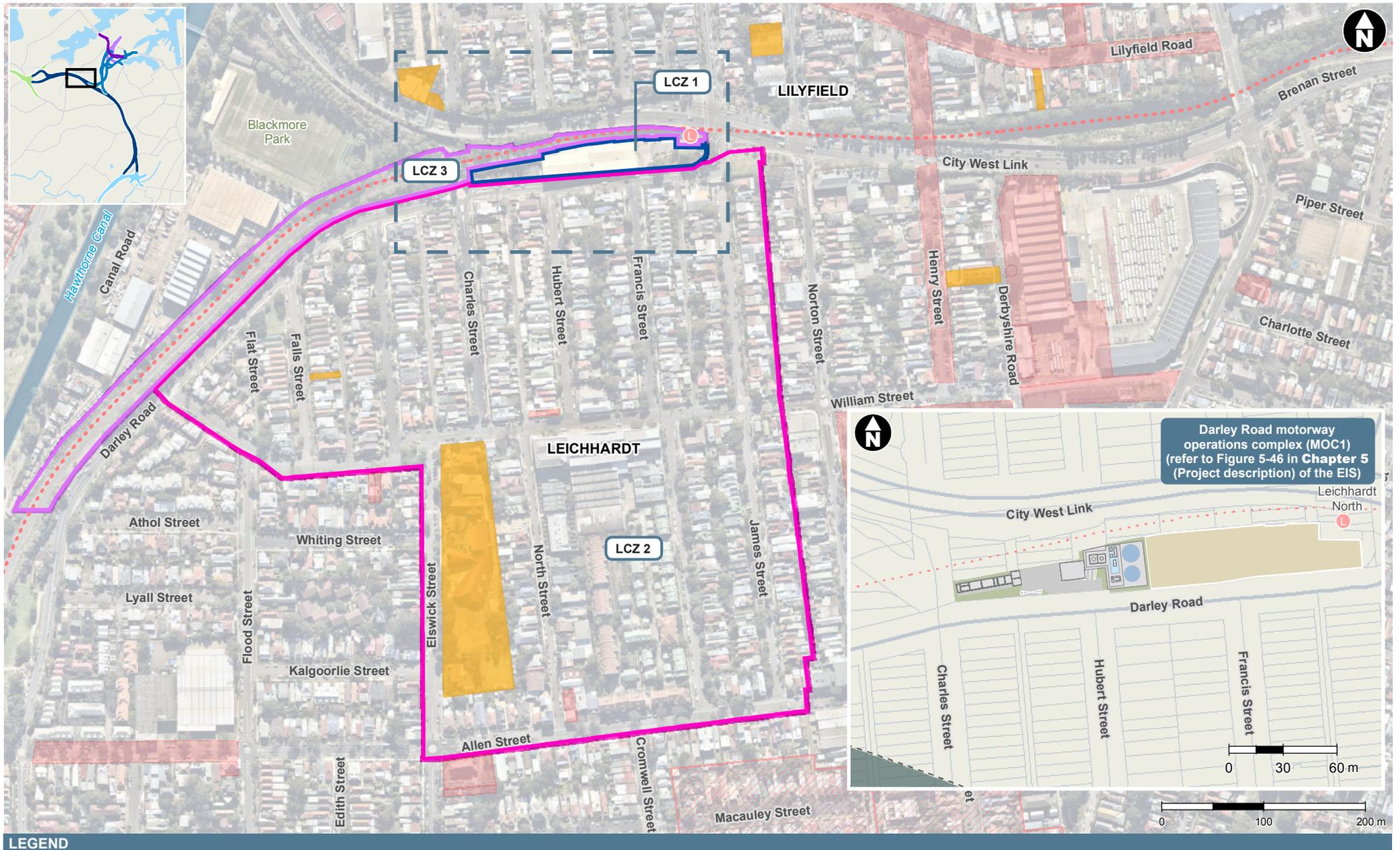
Active transport networks at Iron Cove consist primarily of the Bay Run and Victoria Road. Iron Cove is bordered by the Bay Run which is a seven kilometre shared pedestrian and cyclist path that is a popular regional walk for a range of users. Victoria Road is lined on both the northern and southern sides of the road with a shared pedestrian and cyclist path. The path does not adequately serve the needs of pedestrians and cyclists due to the width of the path, uneven surface and lack of amenity due to the proximity to traffic on Victoria Road.

St Peters interchange

The existing landscape character and visual setting in this area is characterised by

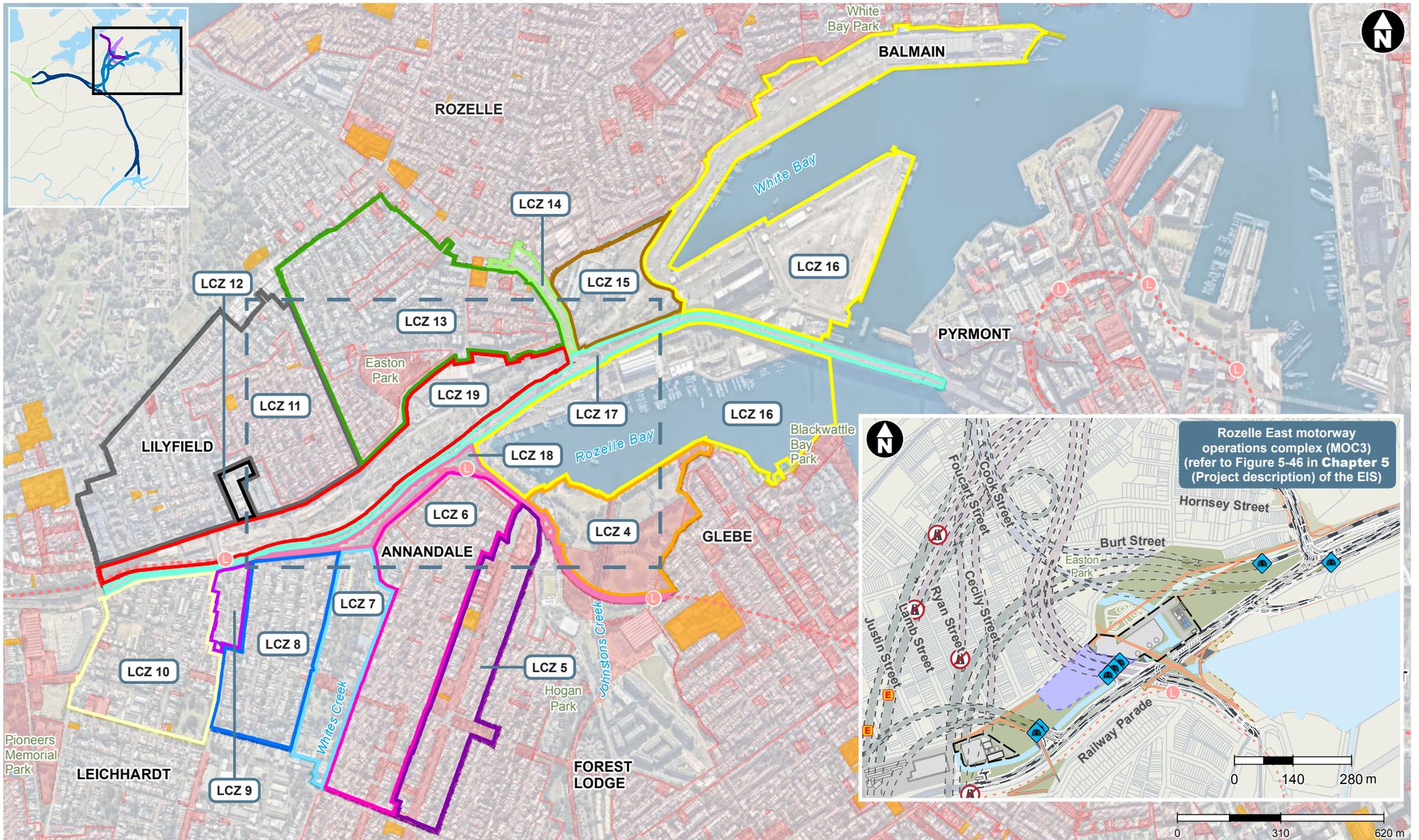
- Residential areas around Campbell Road consisting primarily of double storey 'Victorian' terrace houses
- Sydney Park, which comprises open space areas and pockets of dense 'bush character' vegetation
- Industrial land uses around the Alexandra Canal
- Commercial and medium to high density mixed land uses around the Princes Highway.

The existing landscape character and visual setting at St Peters interchange has been characterised into seven distinct LCZs (the southern LCZs). The area of the southern LCZs is generally bound by the Princes Highway to the north, Sydney Park to the east, Canal Road to the west and the Alexandria Canal to the south. The southern LCZs are shown in **Figure 13-4**.



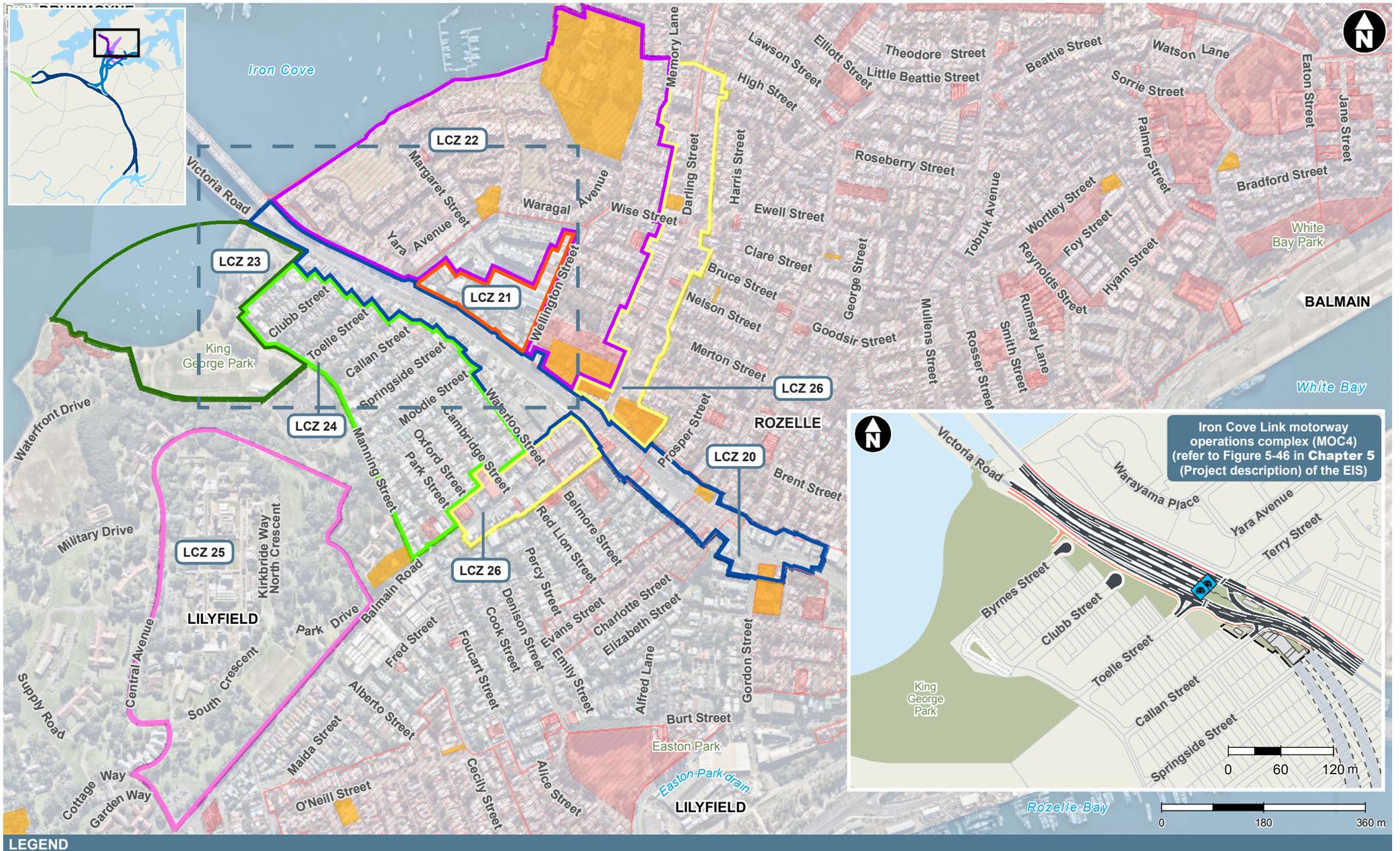
LEGEND		Local Environmental Plan
Existing features	Landscape character zones	Heritage item
Light rail	Darley Road commercial precinct	Heritage conservation area
Light rail stop	Darley Road residential precinct	
Community facility	Leichhardt light rail precinct	

Figure 13-1 Central west landscape character zones



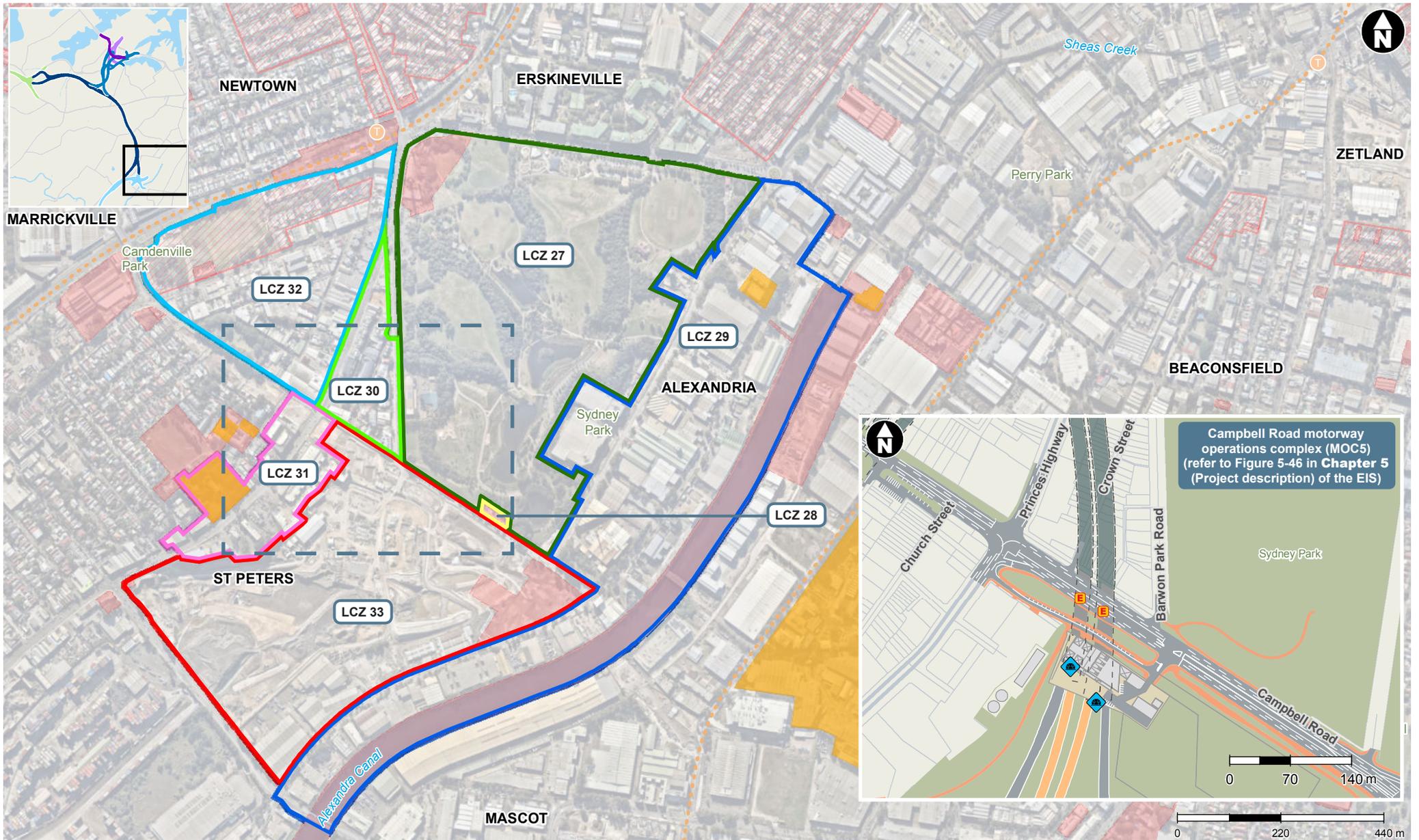
LEGEND		Local Environmental Plan	
Existing features	Landscape character zones	Easton Park residential precinct	Rozelle light rail corridor and Whites Creek canal precinct
Light rail	Annandale Street and Young Street precinct	Glebe foreshore parklands precinct	Rozelle Rail Yards precinct
Light rail stop	Balmain Road precinct	Halloran Street commercial precinct	Victoria Road south precinct
Community facility	Catherine Street neighborhood centre precinct	Johnston Street precinct	White Bay Power Station precinct
	Catherine Street precinct	Nanny Goat Hill residential precinct	Whites Creek valley precinct
	City West Link precinct	Rozelle Bay wharves precinct	
			Heritage item
			Heritage conservation area

Figure 13-2 Central east landscape character zones



LEGEND		Landscape character zones		Local Environmental Plan	
	Community facility		Iron Cove residential precinct		Sydney College of the Arts precinct
	Callan Park residential precinct		King George Park precinct		Victoria Road light industrial precinct
	Darling Street precinct		Victoria Road north precinct		Heritage item
					Heritage conservation area

Figure 13-3 Northern landscape character zones



LEGEND	
Existing features	Landscape character zones
<ul style="list-style-type: none"> Orange dashed line: Railway Orange circle with 'T': Railway station Orange square: Community facility 	<ul style="list-style-type: none"> Blue outline: Alexandria Canal industrial precinct Green outline: Barwon Park residential precinct Light blue outline: St Peters Triangle precinct Red outline: St Peters interchange precinct Green outline: Sydney Park precinct Yellow outline: Sydney Park residential precinct
<ul style="list-style-type: none"> Pink outline: Princes Highway commercial precinct Red outline: St Peters interchange precinct 	<ul style="list-style-type: none"> Local Environmental Plan Pink square: Heritage item Red hatched square: Heritage conservation area

Figure 13-4 Southern landscape character zones

13.3.2 Existing night lighting environment

The existing night lighting environment at the sites where the construction ancillary facilities would be located is outlined in **Table 13-4**. Construction ancillary facilities that would operate during daytime construction hours only have not been assessed for night lighting impacts. At each construction ancillary facility, lighting would be designed to minimise light spillage to adjoining properties and would be generally consistent with the requirements of AS 4282-1997 Control of the obtrusive effects of outdoor lighting. Lighting would also adhere to established guidelines to avoid impacts on airport operations as discussed in **Chapter 25** (Hazard and risk). The impact on pedestrians has not been assessed due to the relatively low number of pedestrians walking at night for recreation.

Table 13-4 Existing night lighting environment

Construction ancillary facility	Existing sources of night lighting
Wattle Street civil and tunnel site (C1a)	Street lighting associated with Parramatta Road, local streets and associated vehicular traffic, lighting associated with construction activities being undertaken at the site as part of the M4 East project and illuminated windows of surrounding residential properties on Wattle Street.
Haberfield civil and tunnel site (C2a)/Haberfield civil site (C2b)	Street lighting associated with Parramatta Road, local streets and associated vehicular traffic, lighting associated with construction activities being undertaken at the site as part of the M4 East project and illuminated windows of surrounding residential properties on Walker Avenue and the commercial buildings along Parramatta Road.
Northcote Street civil site (C3a)	Street lighting associated with Parramatta Road, Wattle Street and Northcote Street local streets, lighting associated with construction activities being undertaken at the site as part of the M4 East project and associated vehicular traffic and illuminated windows of the surrounding residential properties and the commercial buildings along Parramatta Road.
Parramatta Road West civil and tunnel site (C1b)	Security lighting associated with the existing use of the site, street lighting associated with Parramatta Road, local streets and associated vehicular traffic, and illuminated windows of the surrounding residential properties.
Parramatta Road East civil site (C3b)	Security lighting associated with the existing use of the site, street lighting associated with Parramatta Road, Alt Street and Bland Street with associated vehicular traffic and illuminated windows of the surrounding residential properties.
Darley Road civil and tunnel site (C4)	Street lighting associated with the Leichhardt North light rail stop, City West Link, Darley Road, local streets, traffic, illuminated windows of surrounding residential properties and illuminated windows of the existing commercial warehouse building (located within the identified facility footprint). Lighting associated with City West Link is predominantly screened by a vegetated buffer, a high noise wall and the commercial warehouse building currently on the site (about 13 metres high at its western end).
Rozelle civil and tunnel site (C5)	Street lighting associated with City West Link, Lilyfield Road, Victoria Road and Catherine Street as large arterial roads, local streets, associated vehicular traffic and illuminated windows of surrounding residential properties.
Pymont Bridge Road tunnel site (C9)	Street lighting associated with Parramatta Road and Pymont Bridge Road as large arterial roads, local streets, vehicular traffic and illuminated windows of the commercial properties at the site and surrounding residential and commercial properties.

Construction ancillary facility	Existing sources of night lighting
Campbell Road civil and tunnel site (C10)	Street lighting associated with Campbell Road including a new signalised intersection, Albert Street, the share pathway running along the western edge of the interchange, some lighting to the facades and windows of fringing industrial and residential development, lighting associated with construction activities being undertaken at and around the site as part of the New M5 project and illuminated windows of the surrounding residential properties.

13.4 Assessment of potential construction impacts

This section assesses visual impacts on receivers during construction. An overview of visual impacts is provided, including the impact assessment ratings for sensitivity and magnitude at each facility. Site layouts are indicative and dimensions of structures and buildings mentioned in this section, including noise walls, hoarding, fences and acoustic sheds, would be confirmed during detailed design.

Receivers with views of construction ancillary facilities and construction activities could include:

- Residents that adjoin and/or have views of the project
- Workers in commercial properties that adjoin and/or have views of the project
- Road users and pedestrians
- Users of recreation areas/reserves with views of the project.

Visual impacts during construction would result from the introduction of construction ancillary facilities into the existing landscape. This would include night lighting at sites that involve tunnelling activities or that support tunnelling activities.

Construction activities that would take place at the construction ancillary facilities are discussed in **Chapter 6** (Construction work). In general, visible construction activities would include (where required):

- Vegetation removal
- Noise barriers/hoarding/fencing
- Heavy and/or light vehicle access potentially 24 hours a day, seven days a week
- Staff amenities buildings
- Workshops and storage containers
- Stockpile and laydown areas
- The operation of plant and equipment, including cranes
- Lighting for night-time works
- Water storage tanks
- The construction of infrastructure for the operation of the project.

The potential night lighting impacts at the relevant construction ancillary facilities are also assessed.

Impact ratings for visual and night lighting impacts during construction are included in the summary tables for each construction ancillary facility assessed in this section. A detailed explanation of these impact ratings is provided **Appendix O** (Technical working paper: Landscape and visual impact).

The detailed design of construction ancillary facilities would include the consideration of CPTED principles, which are outlined in **section 13.5.8**.

13.4.1 Visual impacts on sensitive receivers

Representative receiver locations have been identified at each construction facility and potential visual impacts on these receivers are summarised in **Table 13-5**. The location of representative receiver locations is shown in **Figure 13-5** to **Figure 13-16**.

Table 13-5 Summary of construction visual impacts on sensitive receivers

Receiver		Sensitivity to change	Magnitude of change	Overall impact rating
Wattle Street civil and tunnel site (C1a)¹				
C1a-1	Religious congregation – Wattle Street	Low	Moderate	Moderate–Low
C1a-2	Residents – Wattle Street, Walker Avenue and Ramsay Street	High	Moderate	High–Moderate
C1a-3	Motorists on Wattle Street, Ramsay Street and Parramatta Road	Low	Low	Low
C1a-4	Pedestrians –Wattle Street, Walker Avenue, Ramsay Street and Parramatta Road	Low	Low	Low
Haberfield civil and tunnel site (C2a)				
C2a-1	Motorists on Wattle Street, Walker Avenue and Parramatta Road	Low	Low	Low
C2a-2	Religious congregation – Wattle Street	Low	Moderate	Moderate–Low
C2a-3	Residents – Wattle Street and Walker Avenue	High	Moderate	High-Moderate
C2a-4	Pedestrians – Wattle Street, Walker Avenue and Parramatta Road	Low	Moderate	Moderate–Low
Northcote Street civil site (C3a)¹				
C3a-1	Religious congregation – Wattle Street	Low	Low	Low
C3a-2	Motorists – Wattle Street, Parramatta Road	Low	Moderate	Moderate-Low
C3a-3	Residents – Wattle Street, Northcote Street, Wolseley Street, Parramatta Road	Moderate	Moderate	Moderate
C3a-4	Pedestrians – Wattle Street, Northcote Street, Wolseley Street, Parramatta Road, Page Avenue, Earle Avenue, Frederick Street	Low	Low	Low
Parramatta Road West civil and tunnel site (C1b)				
C1b-2	Residents – Alt Street, Bland Street and Parramatta Road	High	High	High
C1b-1	Motorists on Alt Street, Bland Street and Parramatta Road	Low	Moderate	Moderate–Low
C1b-3	Pedestrians – Alt Street, Bland Street and Parramatta Road	Low	Moderate	Moderate–Low
Parramatta Road East civil site (C3b)				
C3b-1	Motorists – Alt Street, Bland Street and Parramatta Road	Low	Moderate	Moderate–Low
C3b-2	Residents – Alt Street, Bland Street and Parramatta Road	Moderate	Moderate	Moderate
C3b-3	Pedestrians – Alt Street, Bland Street and Parramatta Road	Low	Low	Low

Receiver		Sensitivity to change	Magnitude of change	Overall impact rating
Darley Road civil and tunnel site (C4)				
C4-1	Pedestrians – Darley Road, City West Link pedestrian bridge	Low	Low	Low
C4-2	Motorists – Darley Road	Moderate	Low	Moderate-Low
C4-3	Residents – Darley Road, Charles Street, Hubert Street (south of Darley Road), Francis Street (south of Darley Road) and James Street	High	High	High
C4-4	Light rail users – Leichhardt North light rail stop	Low	High	Moderate
Rozelle civil and tunnel site (C5)				
C5-1	Motorists – City West Link	Moderate	Moderate	Moderate
C5-2	Residents – Foucart Street and Cecily Street	High	High	High
C5-3	Residents – Lilyfield Road near Denison Street	High	High	High
C5-4	Residents – Breillat Street	Moderate	Low	Moderate-Low
C5-5	Recreational users – Easton Park	Moderate	High	High-Moderate
C5-6	Recreational users – Glebe Foreshore Parklands	High	Moderate	High-Moderate
The Crescent civil site (C6)				
C6-1	Residents – Bayview Crescent and Johnston Street	High	High	High
C6-2	Motorists – The Crescent	Low	Moderate	Moderate-Low
C6-3	Recreational users – Rozelle Bay	Moderate	Moderate	Moderate
C6-4	Recreational users – Glebe Foreshore Parklands	High	Moderate	High-Moderate
Victoria Road civil site (C7)				
C7-1	Residents – Lilyfield Road	Moderate	Moderate	Moderate
C7-2	Residents – Hornsey Street and Quirk Street	High	High	High
C7-3	Motorists – Victoria Road	Low	Low	Low
Iron Cove Link civil site (C8)				
C8-1	Recreational users – King George Park	Moderate	Moderate	Moderate
C8-2	Pedestrians – footpath across Iron Cove bridge	Low	High	Moderate
C8-3	Pedestrians – footpath near Byrnes Street	Low	Moderate	Moderate-Low
C8-4	Residents – Callan Street, Springside Street, Toelle Street and Clubb Street	High	High	High
C8-5	Residents – Nagurra Place, Terry Street and Victoria Road	Moderate	Moderate	Moderate
C8-6	Motorists – Victoria Road	Low	Moderate	Moderate-Low
Pymont Bridge Road tunnel site (C9)				
C9-1	Residents – Pymont Bridge Road	Moderate	High	High-Moderate
C9-2	Residents – Booth Street and Mallett Street	High	Moderate	High-Moderate
C9-3	Motorists – Parramatta Road	Low	Low	Low
C9-4	Residents – Parramatta Road	Moderate	Moderate	Moderate

Receiver		Sensitivity to change	Magnitude of change	Overall impact rating
Campbell Road civil and tunnel site (C10)				
C10-1	Residents – houses on Campbell Street	High	High	High
C10-2	Residents – corner of Barwon Park Road and Campbell Street	High	Moderate	High–Moderate
C10-3	Pedestrians –Campbell Road	Moderate	Low	Moderate–Low
C10-4	Residents – terraces on Campbell Road	High	Moderate	High–Moderate
C10-5	Motorists – Campbell Road	Low	Low	Low

Note 1: The visual impact of this facility during construction of the M4–M5 Link project would be comparable to the visual impact associated with the existing use of the site as a construction ancillary facility (civil and tunnelling) for the M4 East.

13.4.2 Construction lighting impacts

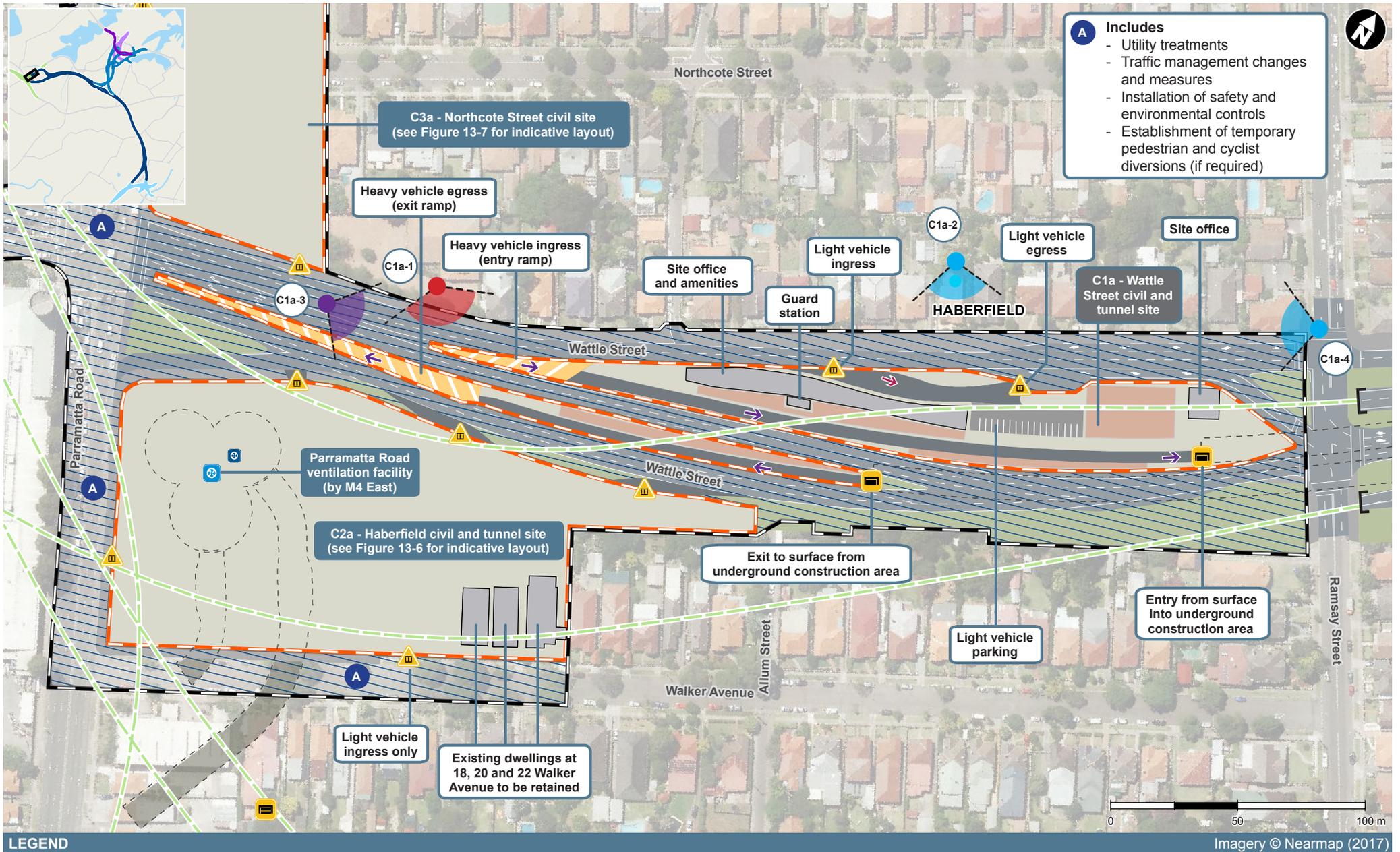
Potential night lighting impacts on receivers at representative receiver locations for each construction ancillary facility are summarised in **Table 13-6**. It is anticipated that construction works at The Crescent civil site (C6), the Victoria Road civil site (C7) and the Iron Cove Link civil site (C8) would be carried out during standard daytime construction hours and therefore impacts on night lighting have not been assessed at these locations. The location of representative receiver locations is shown in **Figure 13-5** to **Figure 13-16**.

Table 13-6 Summary of construction lighting impacts

Receiver		Sensitivity to change	Magnitude of change	Overall impact rating
Wattle Street civil and tunnel site (C1a)¹				
C1a-1	Religious congregation – Wattle Street	Low	Low	Low
C1a-2	Residents – Wattle Street, Walker Avenue and Ramsay Street	Low	Moderate	Moderate–Low
C1a-3	Motorists on Wattle Street, Ramsay Street and Parramatta Road	Low	Low	Low
C1a-4	Pedestrians –Wattle Street, Walker Avenue, Ramsay Street and Parramatta Road	Low	Low	Low
Haberfield civil and tunnel site (C2a)				
C2a-1	Motorists on Wattle Street, Walker Avenue and Parramatta Road	Low	Low	Low
C2a-2	Religious congregation – Wattle Street	Low	Moderate	Moderate–Low
C2a-3	Residents – Wattle Street and Walker Avenue	Low	Moderate	Moderate–Low
C2a-4	Pedestrians – Wattle Street, Walker Avenue and Parramatta Road	Low	Low	Low
Northcote Street civil site (C3a)				
C3a-1	Religious congregation – Wattle Street	Low	Low	Low
C3a-2	Motorists – Wattle Street, Parramatta Road	Low	Low	Low
C3a-3	Residents – Wattle Street, Northcote Street, Wolseley Street, Parramatta Road	Low	Moderate	Moderate–Low
C3a-4	Pedestrians – Wattle Street, Northcote Street, Wolseley Street, Parramatta Road, Page Avenue, Earle Avenue, Frederick Street	Low	Low	Low

Receiver		Sensitivity to change	Magnitude of change	Overall impact rating
Parramatta Road West civil and tunnel site (C1b)				
C1b-2	Residents – Alt Street, Bland Street and Parramatta Road	Low	Moderate	Moderate–Low
C1b-1	Motorists on Alt Street, Bland Street and Parramatta Road	Low	Low	Low
C1b-3	Pedestrians – Alt Street, Bland Street and Parramatta Road	Low	Low	Low
Parramatta Road East civil site (C3b)				
C3b-1	Motorists – Alt Street, Bland Street and Parramatta Road	Low	Low	Low
C3b-2	Residents – Alt Street, Bland Street and Parramatta Road	Low	Moderate	Moderate–Low
C3b-3	Pedestrians – Alt Street, Bland Street and Parramatta Road	Low	Low	Low
Darley Road civil and tunnel site (C4)				
C4-1	Pedestrians – Darley Road, City West Link pedestrian bridge	Low	Low	Low
C4-2	Motorists – Darley Road	Low	Low	Low
C4-3	Residents –Darley Road, Charles Street, Hubert Street (south of Darley Road), Francis Street (south of Darley Road) and James Street	High	Moderate	High–Moderate
C4-4	Light rail users – Leichhardt North light rail stop	Low	Moderate	Moderate–Low
Rozelle civil and tunnel site (C5)				
C5-1	Motorists – City West Link	Low	Moderate	Moderate–Low
C5-2	Residents – Foucart Street and Cecily Street	Moderate	Moderate	Moderate
C5-3	Residents – Lilyfield Road near Denison Street	High	High	High
C5-4	Residents – Breillat Street	Low	Low	Low
C5-5	Recreational users – Easton Park	Low	High	Moderate
C5-6	Recreational users – Glebe Foreshore Parklands	Low	Low	Low
Pymont Bridge Road tunnel site (C9)				
C9-1	Residents – Pymont Bridge Road	Low	Low	Low
C9-2	Residents – Booth Street and Mallett Street	Moderate	Low	Moderate–Low
C9-3	Motorists – Parramatta Road	Low	Low	Low
C9-4	Residents – Parramatta Road	Low	Low	Low
Campbell Road civil and tunnel site (C10)				
C10-1	Residents – houses on Campbell Street adjacent to the western end of site	Low	Low	Low
C10-2	Residents – corner of Barwon Park Road and Campbell Street	Moderate	Low	Moderate–Low
C10-3	Pedestrians –Campbell Road	Low	Low	Low
C10-4	Residents – terraces on Campbell Road	High	Moderate	High–Moderate
C10-5	Motorists – Campbell Road	Low	Low	Low

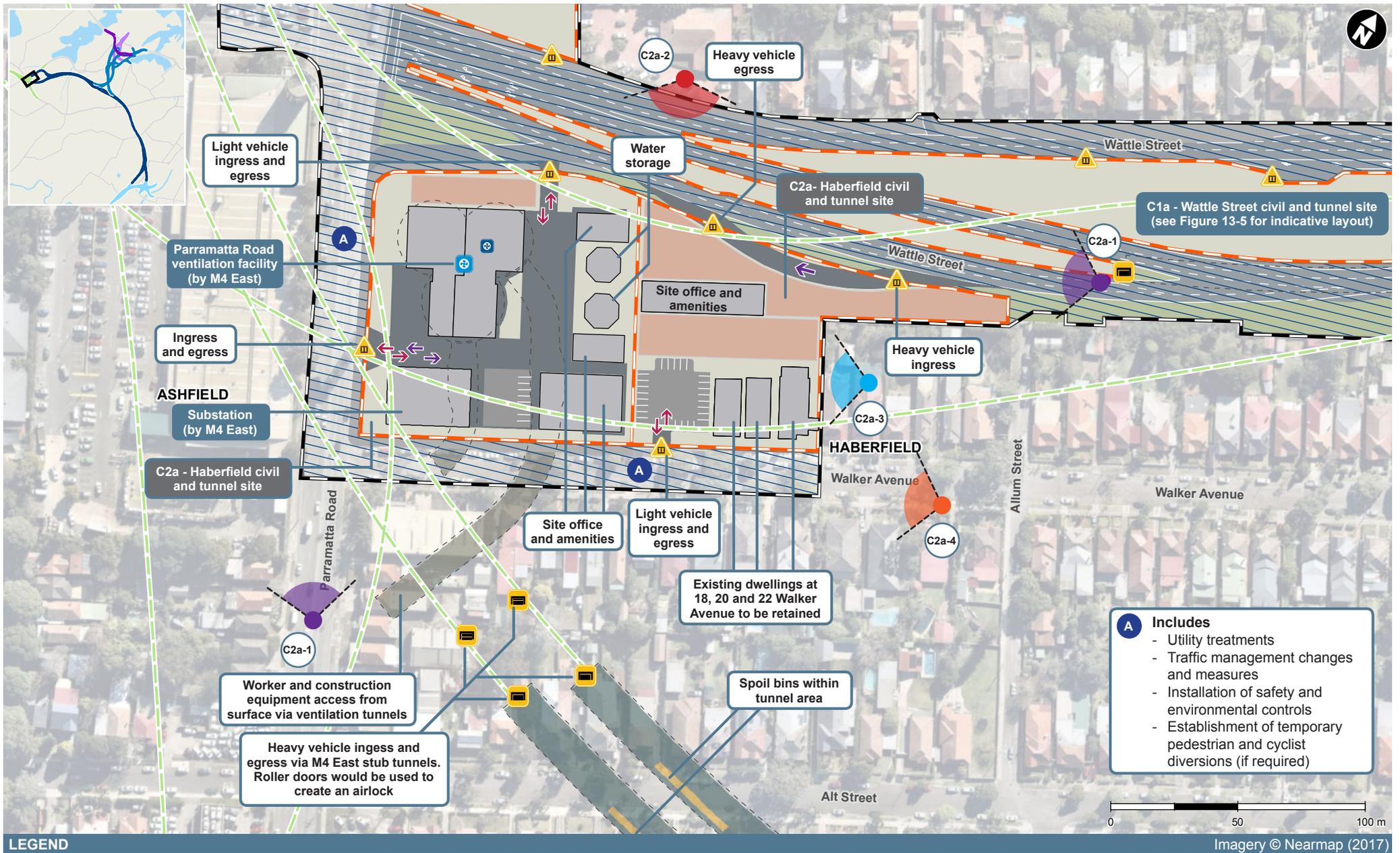
Note 1: The night lighting impacts of this facility during construction of the M4–M5 Link project would be comparable to the night lighting impact associated with the existing use of the site as a construction ancillary facility (civil and tunnelling) for the M4 East.



- A Includes**
- Utility treatments
 - Traffic management changes and measures
 - Installation of safety and environmental controls
 - Establishment of temporary pedestrian and cyclist diversions (if required)

M4 East	M4-M5 Link	Surface construction	Underground construction	Access and egress	Vehicle movements	Project features	Receiver location
Tunnel	Project footprint	Access road	Mainline tunnel	Site gate	Light vehicle	Ventilation outlet	Church congregation
Land subject to M4 East UDLP	Ancillary facility	Laydown area	Temporary access tunnel	Roller door	Heavy vehicle	Ventilation facility	Motorists
	Surface works						Residents

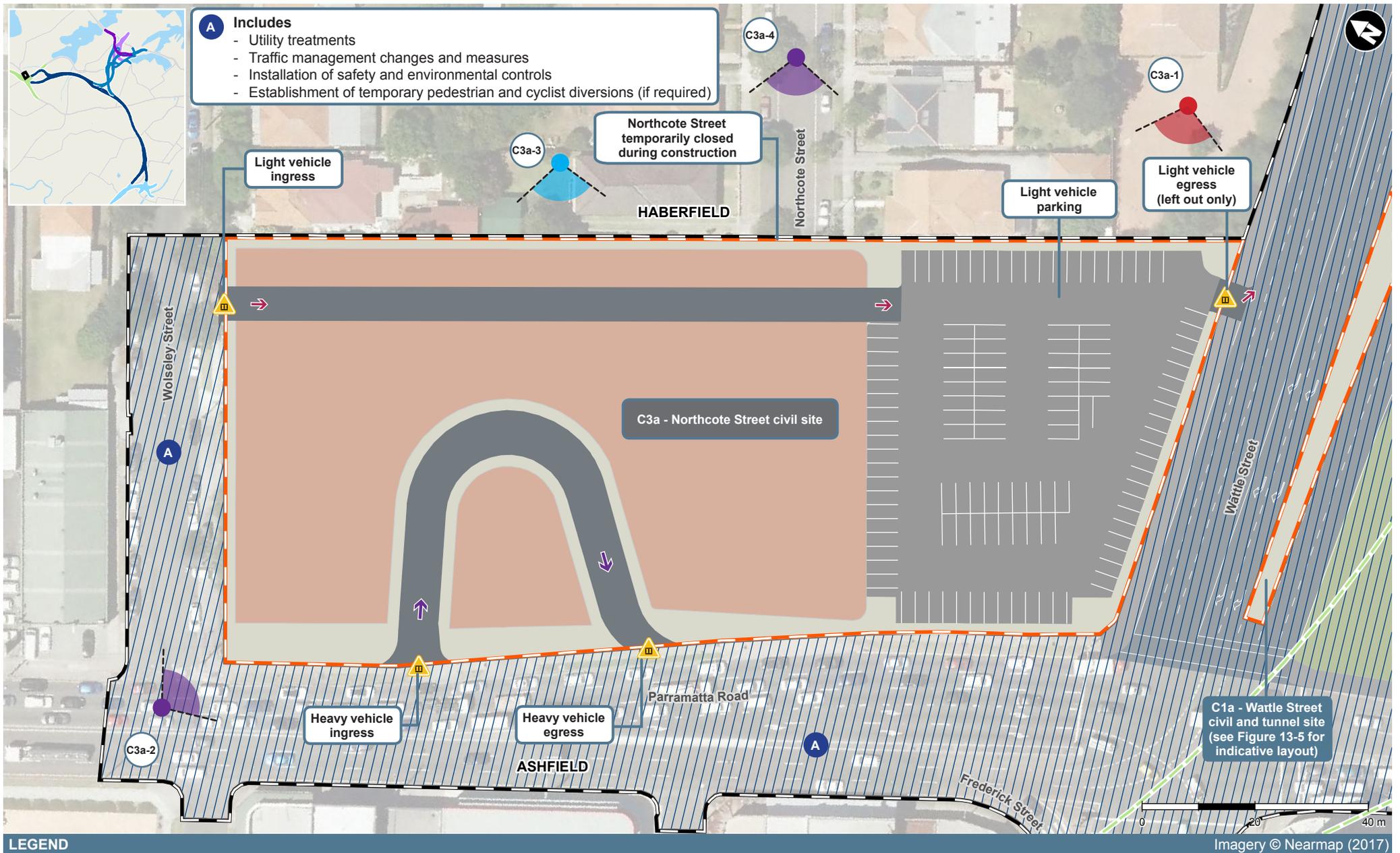
Figure 13-5 Wattle Street civil and tunnel site (C1a) representative receiver locations



- A Includes**
- Utility treatments
 - Traffic management changes and measures
 - Installation of safety and environmental controls
 - Establishment of temporary pedestrian and cyclist diversions (if required)

LEGEND		M4-M5 Link		Access and egress		Vehicle movements		Project features		Receiver location	
Tunnel	Project footprint	Surface construction	Access road	Site gate	Light vehicle	Ventilation outlet	Ventilation facility	Church congregation	Motorists	Pedestrians	Residents
Surface road	Ancillary facility	Laydown area	Mainline tunnel	Roller door (below ground)	Heavy vehicle						
Land subject to M4 East UDLP	Surface works		Temporary access tunnel								

Figure 13-6 Haberfield civil and tunnel site (C2a) / Haberfield civil site (C2b) representative receiver locations



- A Includes**
- Utility treatments
 - Traffic management changes and measures
 - Installation of safety and environmental controls
 - Establishment of temporary pedestrian and cyclist diversions (if required)

Northcote Street temporarily closed during construction

Light vehicle ingress

Light vehicle parking

Light vehicle egress (left out only)

HABERFIELD

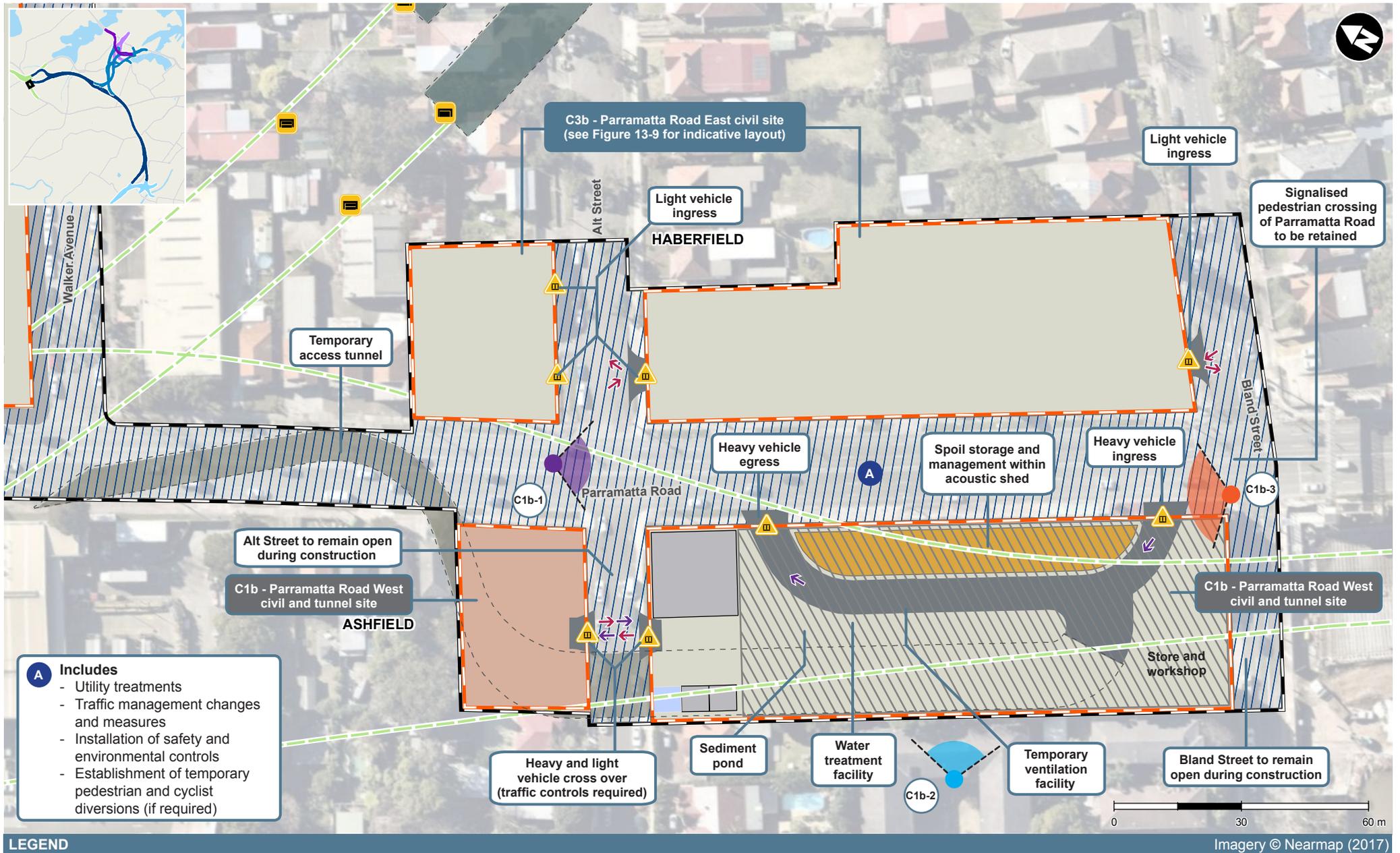
C3a - Northcote Street civil site

C1a - Wattle Street civil and tunnel site (see Figure 13-5 for indicative layout)

LEGEND

M4 East	M4-M5 Link	Surface construction	Access and egress	Vehicle movements	Receiver location
--- Tunnel	▭ Project footprint	▭ Access road	⚠ Site gate	➡ Light vehicle	● Church congregation
▭ Surface roads	▭ Ancillary facility	▭ Laydown area		➡ Heavy vehicle	● Motorists
▭ Land subject to M4 East UDLP	▭ Surface works				● Residents

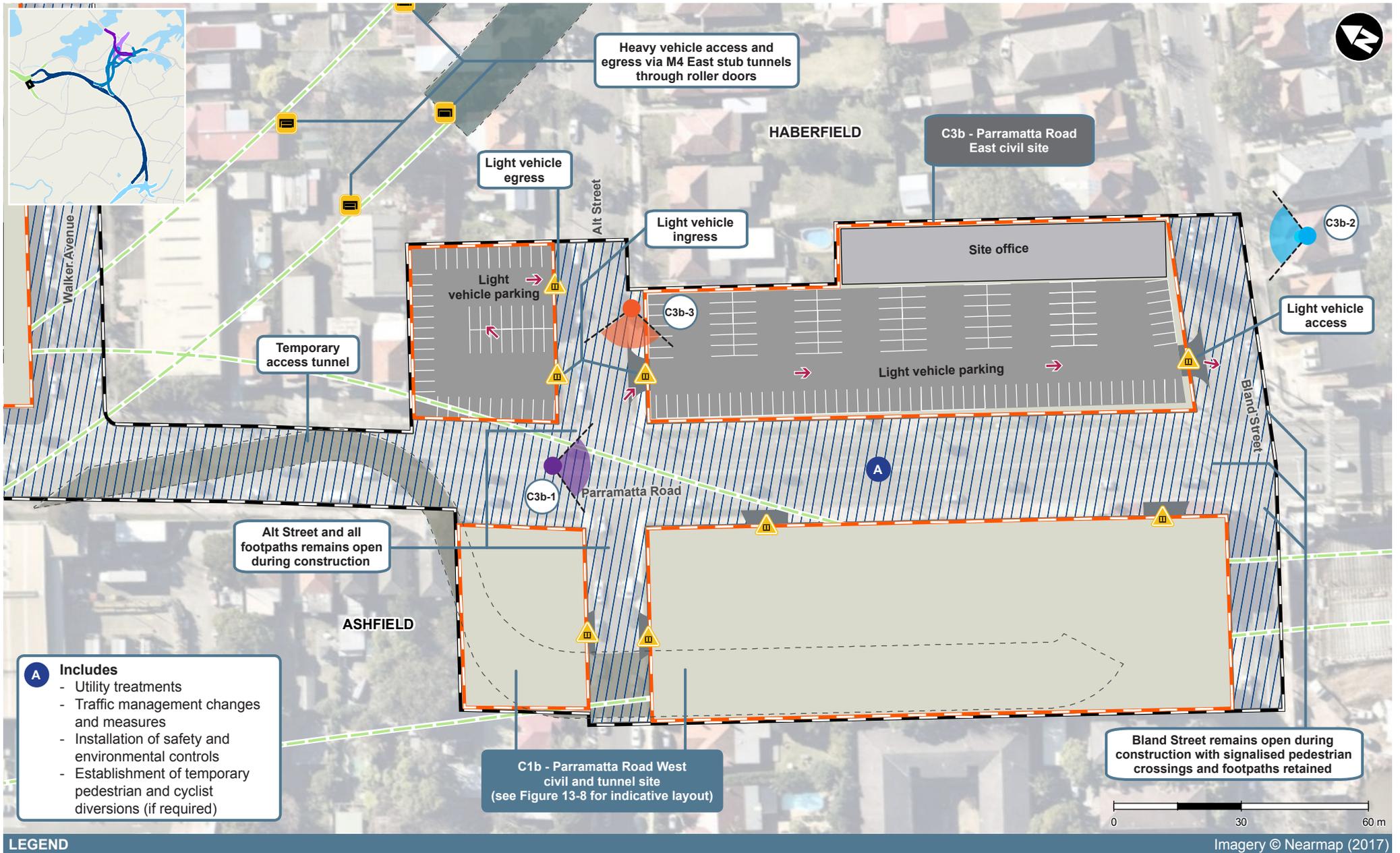
Figure 13-7 Northcote Street civil site (C3a) representative receiver locations



LEGEND

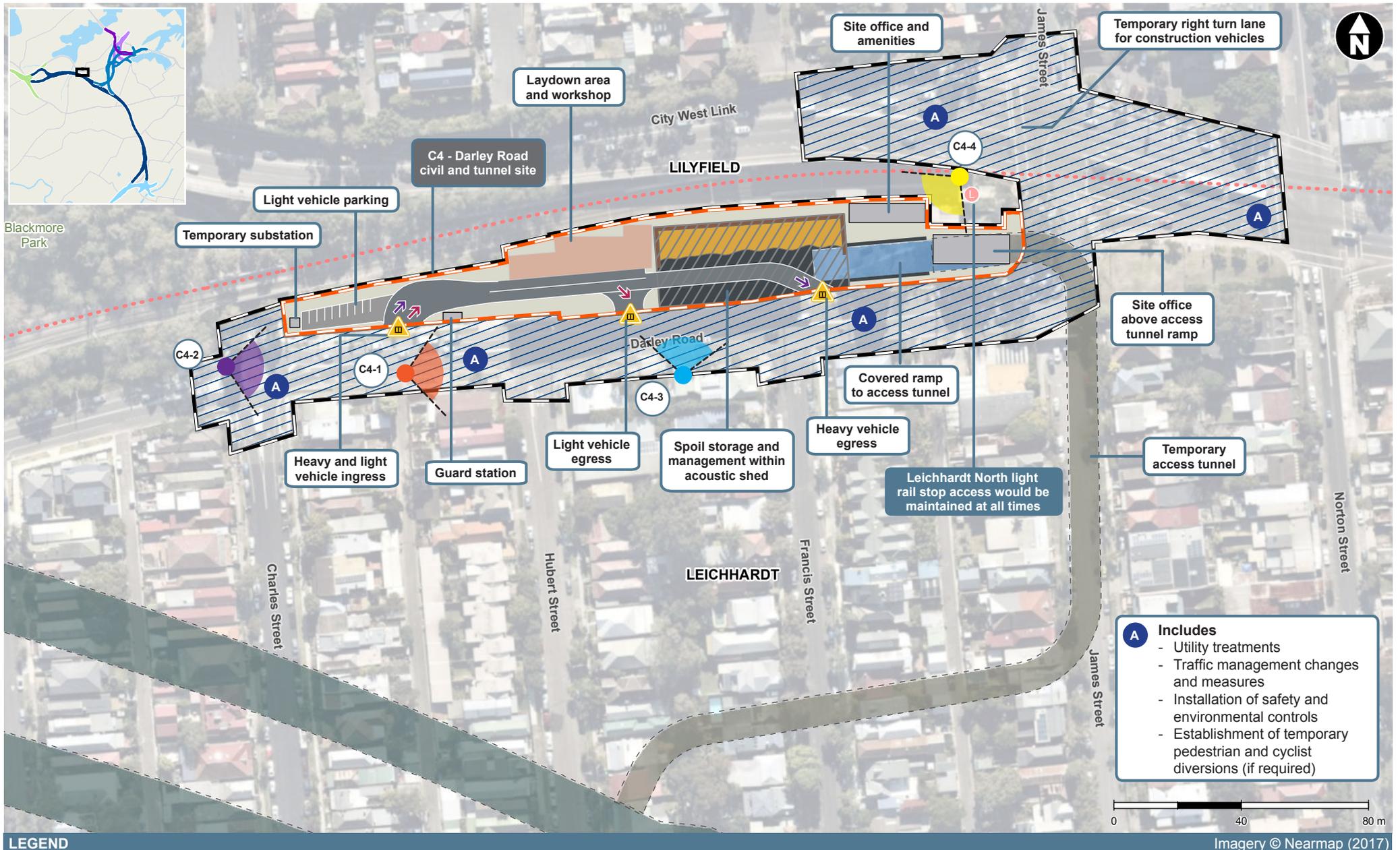
M4 East	M4-M5 Link	Surface construction	Underground construction	Access and egress	Vehicle movements	Receiver location
<ul style="list-style-type: none"> Tunnel Surface road Land subject to M4 East UDLP 	<ul style="list-style-type: none"> Project footprint Ancillary facility Surface works 	<ul style="list-style-type: none"> Access road Laydown area Acoustic shed 	<ul style="list-style-type: none"> Mainline tunnel Temporary access tunnel 	<ul style="list-style-type: none"> Site gate Roller door 	<ul style="list-style-type: none"> Light vehicle Heavy vehicle 	<ul style="list-style-type: none"> Motorists Pedestrians Residents

Figure 13-8 Parramatta Road West civil and tunnel site (C1b) representative receiver locations



LEGEND		M4-M5 Link		Access and egress		Vehicle movements		Receiver location	
Tunnel	Project footprint	Access road	Mainline tunnel	Site gate	Light vehicle	Motorists	Light vehicle	Pedestrians	Residents
Surface road	Ancillary facility	Laydown area	Temporary access tunnel	Roller door	Heavy vehicle				
Land subject to M4 East UDLP	Surface works	Acoustic shed							

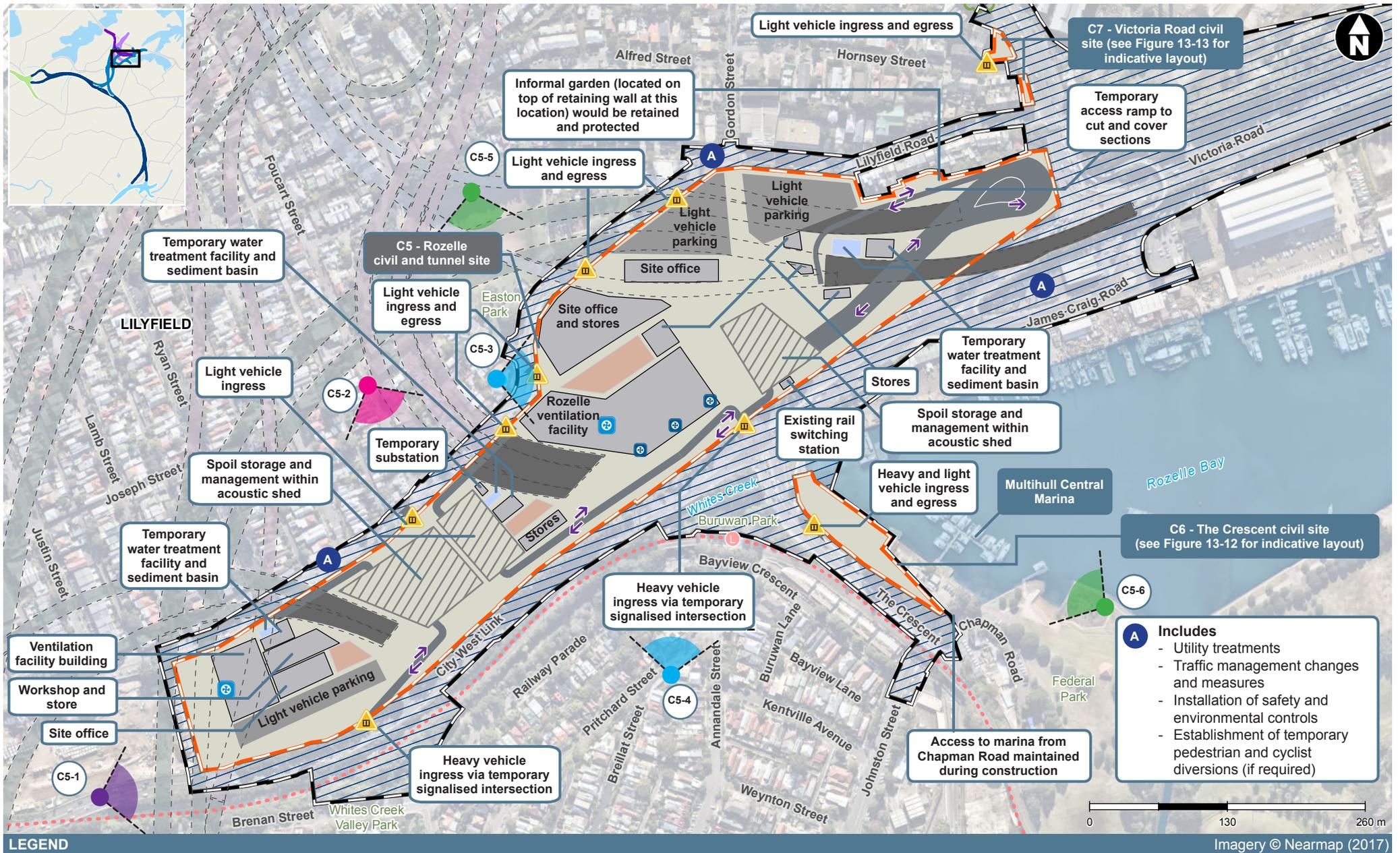
Figure 13-9 Parramatta Road East civil site (C3b) representative receiver locations



LEGEND Imagery © Nearmap (2017)

Existing infrastructure	M4-M5 Link	Boundaries	Surface construction	Underground construction	Access and egress	Vehicle movements	Receiver location
Light rail	Light rail stop	Project footprint	Access road	Mainline tunnel	Site gate	Light vehicle	Light rail
		Ancillary facility	Laydown area	Temporary access tunnel		Heavy vehicle	Motorists
		Surface works	Acoustic shed				Pedestrians
							Residents

Figure 13-10 Darley Road civil and tunnel site (C4) representative receiver locations



Existing infrastructure M4-M5 Link

- Light rail
- Light rail stop

Boundaries

- Project footprint
- Ancillary facility
- Surface works

Surface construction

- Access road
- Laydown area
- Acoustic shed
- Cut and cover

Underground construction

- Rozelle interchange tunnel
- Iron Cove Link tunnel
- Proposed future WHTBL connections (civil construction only)

Access and egress

- Site gate

Vehicle movements

- Light vehicle
- Heavy vehicle

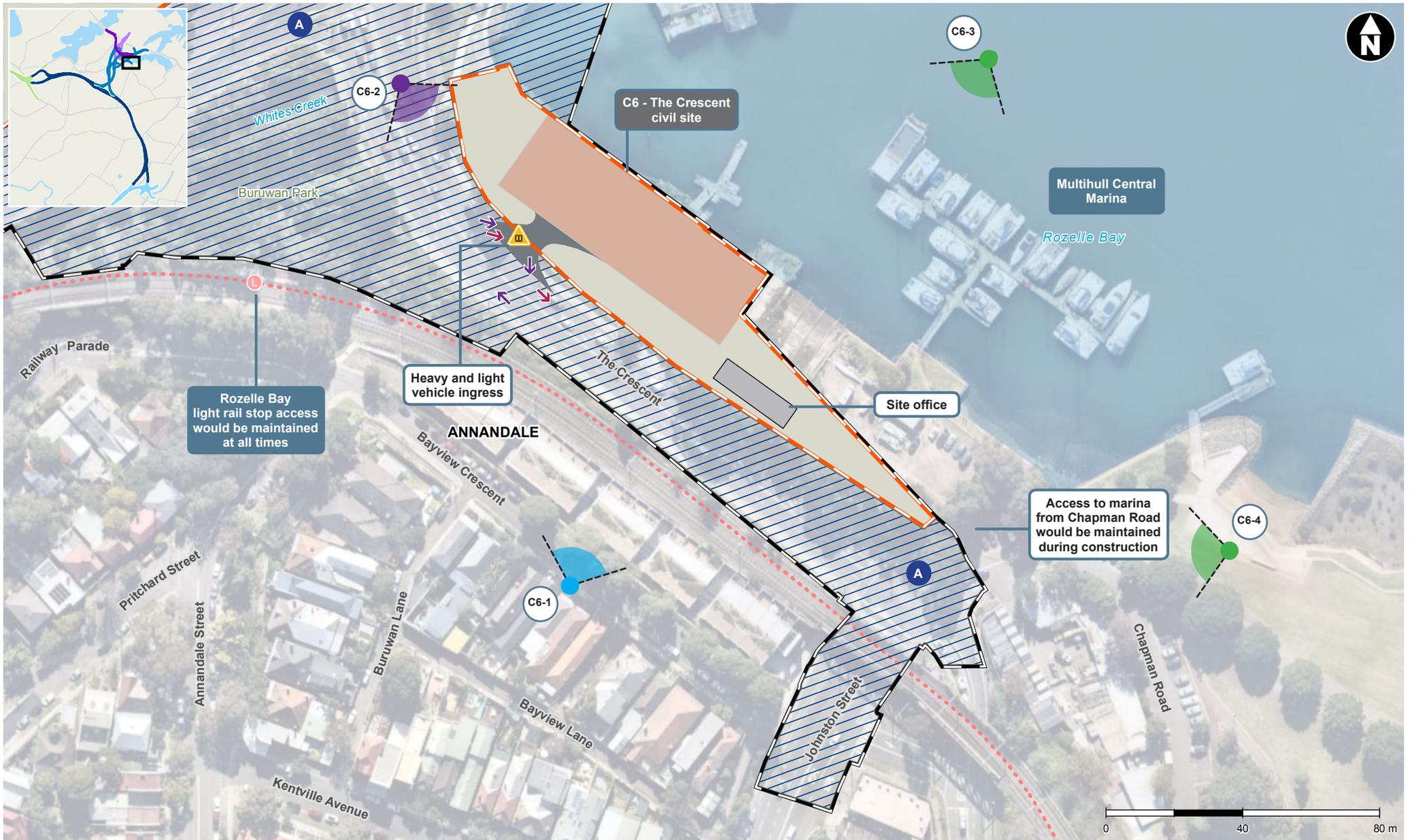
Project features

- Ventilation outlet
- Ventilation facility

Receiver location

- Motorists
- Recreation
- Residents
- Residents and motorists

Figure 13-11 Rozelle civil and tunnel site (C5) representative receiver locations



LEGEND

Existing infrastructure	M4-M5 Link	Boundaries	Surface construction	Access and egress	Vehicle movements	Receiver location
- - - Light rail	○ Light rail stop	▭ Project footprint	▭ Access road	△ Site gate	→ Light vehicle	● Motorists
		▭ Ancillary facility	▭ Laydown area		→ Heavy vehicle	● Recreation
		▭ Surface works				● Residents

A Includes

- Utility treatments
- Traffic management changes and measures
- Installation of safety and environmental controls
- Establishment of temporary pedestrian and cyclist diversions (if required)

Figure 13-12 The Crescent civil site (C6) representative receiver locations

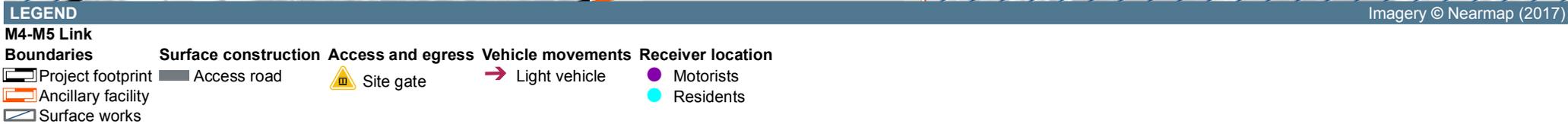
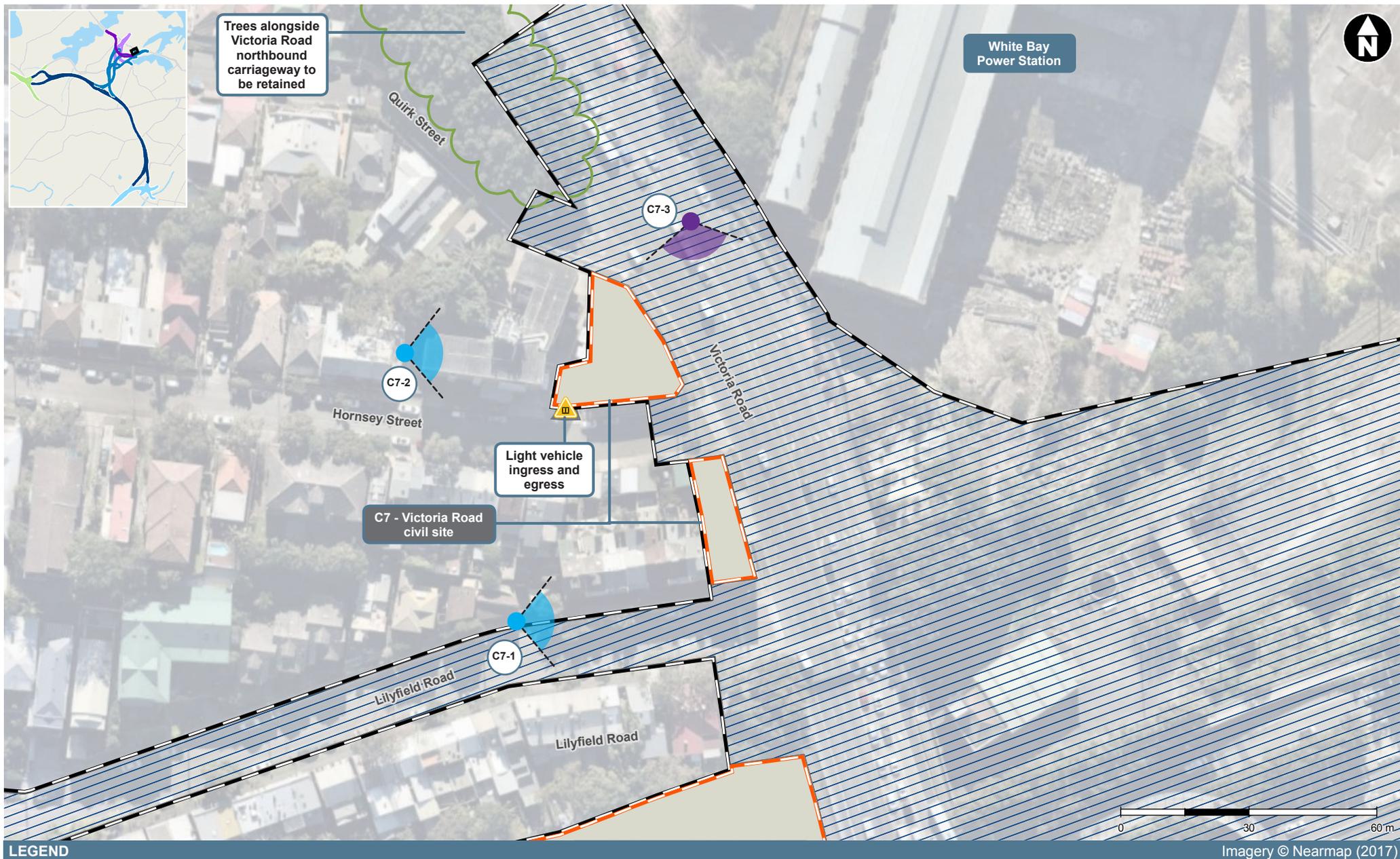
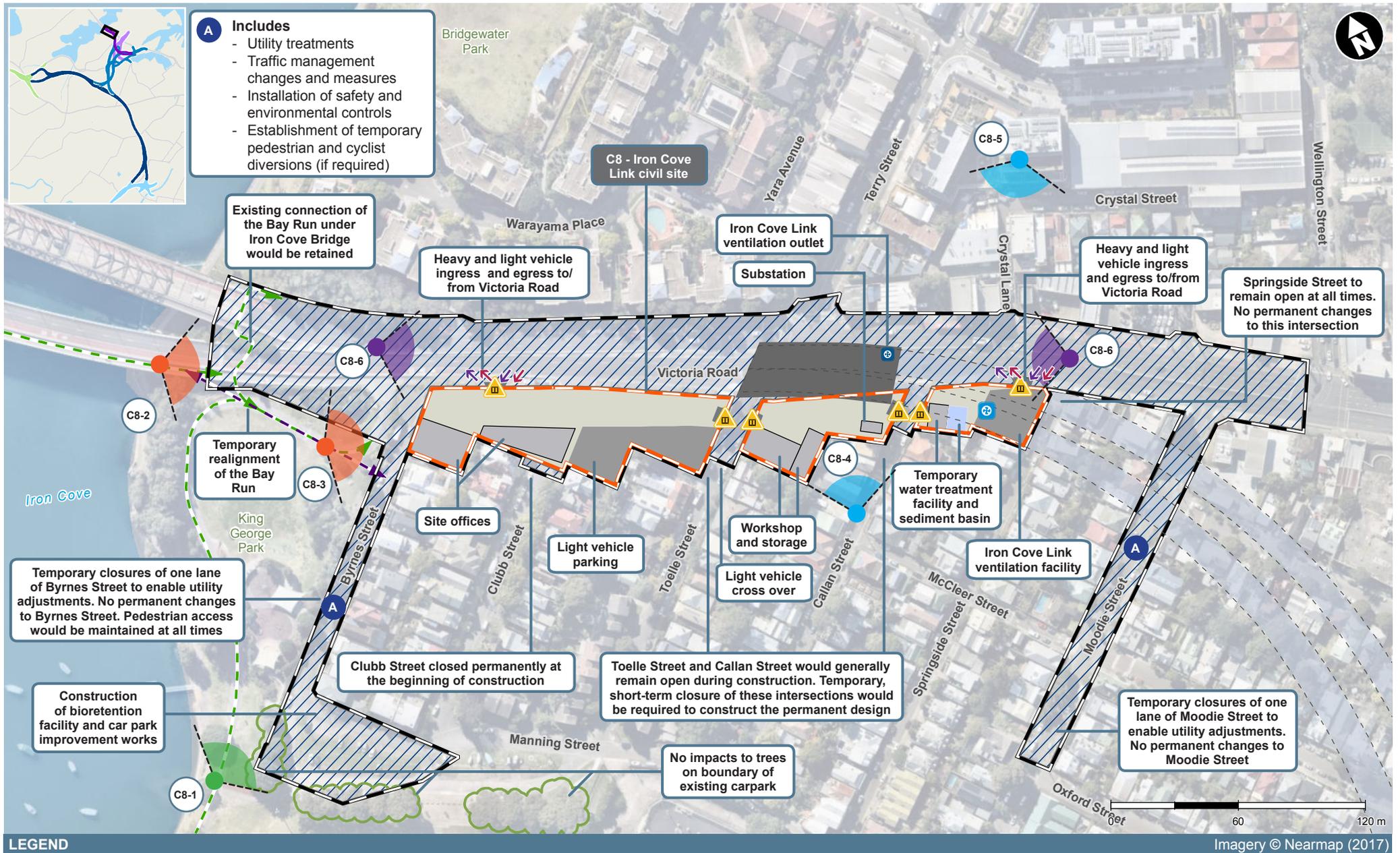


Figure 13-13 Victoria Road civil site (C7) representative receiver locations



LEGEND

M4-M5 Link

Boundaries

- Project footprint
- Ancillary facility
- Surface works

Surface construction

- Access road
- Cut and cover

Underground construction

- Iron Cove Link tunnel

Access and egress

- Site gate

Vehicle movements

- Light vehicle
- Heavy vehicle

The Bay Run

- Temporary diversion
- Existing shared path

Project features

- Ventilation outlet
- Ventilation facility

Receiver location

- Motorists
- Pedestrians
- Recreation
- Residents

Figure 13-14 Iron Cove Link civil site (C8) representative receiver locations

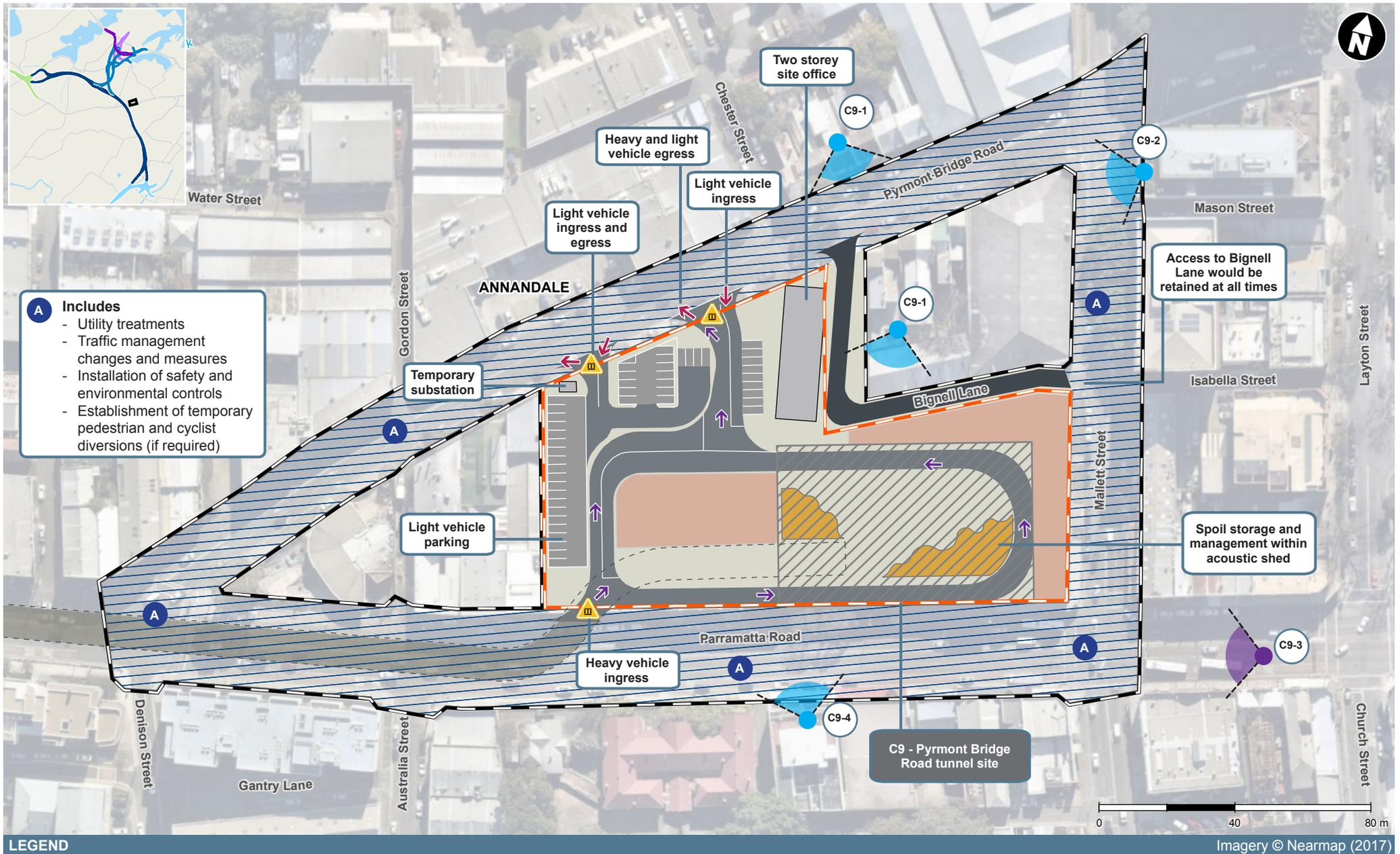
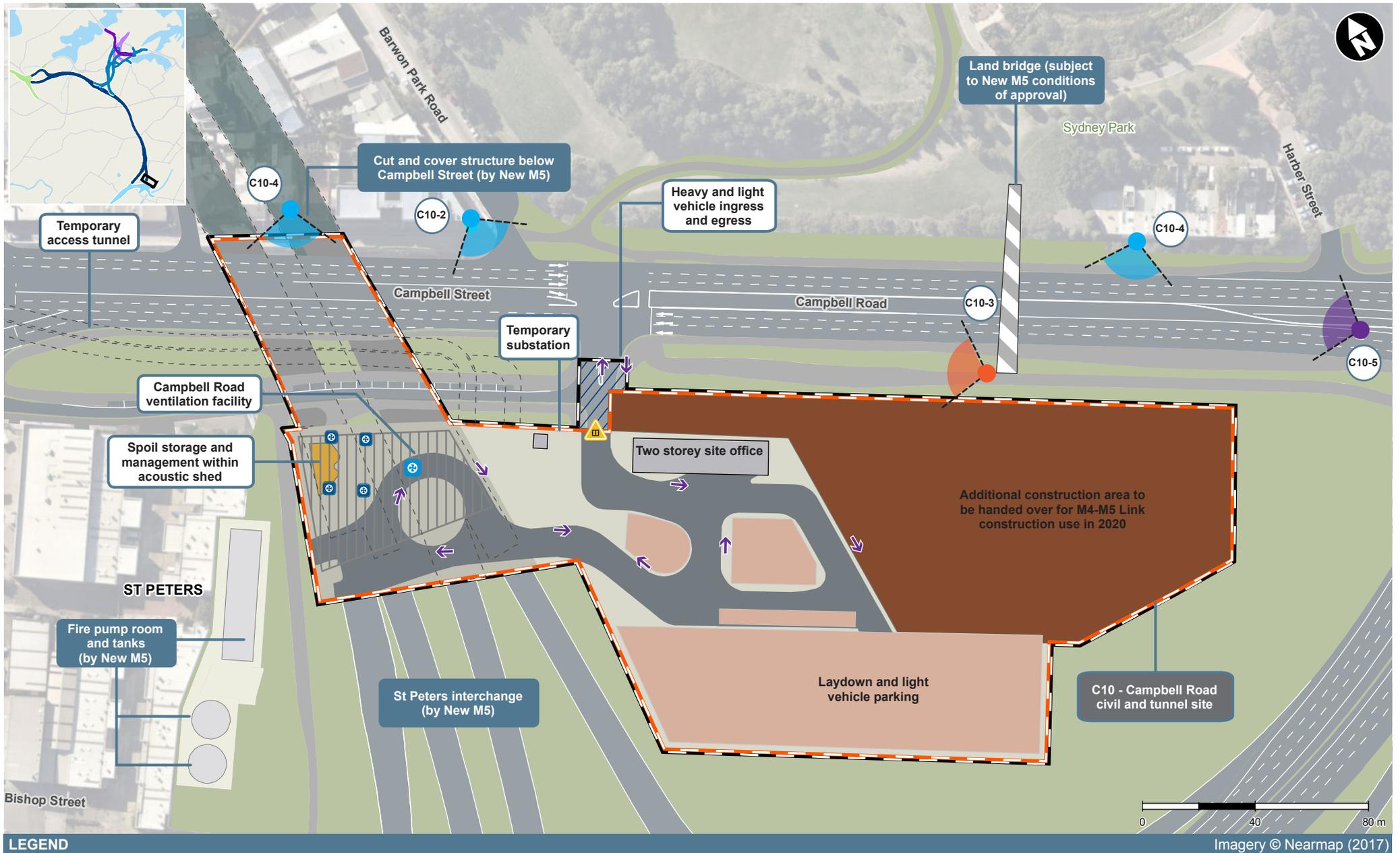


Figure 13-15 Pyrmont Bridge Road tunnel site (C9) representative receiver locations



LEGEND		New M5		M4-M5 Link		Surface construction		Underground construction		Access and egress		Vehicle movements		Project features		Receiver location		
Surface road	Cut and cover	Landscaping	Project footprint	Ancillary facility	Surface works	Access road	Laydown area	Acoustic shed	Mainline tunnel	Temporary access tunnel	Site gate	Light vehicle	Heavy vehicle	Ventilation outlet	Ventilation facility	Motorists	Pedestrians	Residents

Figure 13-16 Campbell Road civil and tunnel site (C10) representative receiver locations

13.5 Assessment of operational impacts

The operational landscape character and visual impacts (including impacts on views, landscape character and night lighting) and urban design aspects of the project have been assessed at the following areas where built form operational infrastructure would be visible:

- Wattle Street interchange
- Darley Road motorway operations complex (MOC1) at Leichhardt
- The Rozelle interchange, including the Rozelle Rail Yards and adjacent areas along City West Link, The Crescent and Victoria Road (including the Rozelle West motorway operations complex (MOC2) and Rozelle East motorway operations complex (MOC3))
- The Iron Cove Link, predominantly along the Victoria Road corridor and on land that would be acquired for the project along the southern side of Victoria Road between Byrnes Street and Springside Street at Rozelle (including the Iron Cove Link portals and the Iron Cove Link motorway operations complex (MOC4))
- Campbell Road motorway operations complex (MOC5) at the St Peters interchange.

A selection of artists impressions are provided in the sections below for project operational infrastructure. The bulk, mass and scale of motorway operational infrastructure such as the motorway operations complexes shown in the artists impressions based on the concept design developed for the project. Detailed depictions of these built form elements associated with the project would be prepared during detailed design, in consultation with relevant stakeholders and the community. These would be included in the UDLPs that would be prepared for the project.

The urban design principles and objectives described in **section 13.2.2** form the basis for the development of detailed plans that would identify the form and typology of landscaping that would be carried out as part of the project. These include creating a sustainable and enduring design, and integrating the motorway in its context. The project has committed to delivering new open space at the Rozelle Rail Yards, which are currently disused and inaccessible (refer to **section 13.5.3**). Explicit measures to integrate and/ or shield operational elements of the project through landscaping would be developed in consultation with relevant stakeholders (including UrbanGrowth NSW as appropriate) and the community, and in consideration of broader strategic planning objectives, and would be documented in the UDLPs that would be prepared for the project.

Ratings for landscape character impact, visual impact and night lighting impacts during construction are included in the summary tables for area of operational infrastructure assessed in this section. A detailed explanation of these impact ratings is provided **Appendix O** (Technical working paper: Landscape and visual impact).

The total potential visibility of built form operational infrastructure has also been identified through visual envelope mapping which is provided in full in **Appendix O** (Technical working paper: Landscape and visual impact). along with a full suite of visualisations of existing viewpoints and artist impressions of these viewpoints at 12 to 18 months and 10 years after operation.

13.5.1 Wattle Street interchange

The design of the Wattle Street interchange has been developed and assessed as part of the M4 East EIS. The approach is detailed in the Draft M4 East Urban Design and Landscape Plan which was publicly exhibited and made available for community feedback between 19 September and 17 October 2016. Community submissions were reviewed following exhibition and would be addressed in the next revision of the plan.

Once construction of both projects is completed, remaining project land not required for operational infrastructure or subject to landscape works as part of the M4 East project would be rehabilitated and would be subject to the M4 East project's Residual Land Management Plan, UDLPs and/or the M4 East Legacy Project. These plans are currently being prepared by the M4 East project team and would be subject to the consultation requirements and timeframes set out in the M4 East project conditions of approval. The project would not impact on the implementation of these plans, but may impact the timing in which in the plans are carried out.

13.5.2 Darley Road

Operational infrastructure at the Darley Road would be located south of City West Link and the Inner West light rail line, on part of the land occupied during construction by the Darley Road civil and tunnel site (C4) (the western portion of the site). Key visual features of the project include:

- The Darley Road motorway operations complex (MOC1) which would be about two storeys in height and would include:
 - Water treatment plant
 - Substation (the need for a substation is being investigated and would be confirmed during detailed design)
 - Car parking
 - Workshop/offices and storage facilities.

The indicative siting of operational project infrastructure (as shown in **Chapter 5** (Project description)) has been developed in consideration of maximising areas of land that would be available for potential future development (remaining project land). This has primarily been achieved by optimising the design to co-locate facilities, therefore reducing land-take. The siting of the operational project infrastructure at the western end of the site also allows for the remaining project land component to be located nearest to the Leichhardt North light rail stop.

The landscape works and architectural design of operational infrastructure at Darley Road would be undertaken in accordance with a project UDLP and the urban design principles developed for the project (see **section 13.2.2**).

The remainder of the Darley Road site would become remaining project land and rehabilitated for future development, in accordance with the Residual Land Management Plan. See **section 13.5.7** and **Chapter 12** (Land use and property) for further discussion regarding the future use of remaining project land for the project.

Landscape character impacts

The visual impact assessment did not identify the potential for ‘high’ landscape character impacts for any LCZs at Darley Road. A summary of the outcomes of the landscape impact assessment are provided in **Table 13-7**.

Table 13-7 Visual impact assessment summary – Darley Road landscape character

Landscape character zone	Sensitivity to change	Magnitude of change	Overall rating
LCZ 1 – Darley Road residential precinct	Low	Low	Low
LCZ 2 – Darley Road commercial precinct	Moderate	Moderate	Moderate
LCZ 3 – Leichhardt light rail precinct	Low	Low	Low

Visual impacts

Key viewpoints to the Darley Road motorway operations complex (MOC1) were identified and are shown in **Figure 13-17**. A selection existing views and associated artist impressions from these key viewpoints during 12 to 18 months of the operation of the project are provided in **Figure 13-18** and **Figure 13-19**. Views to the north of the site the Darley Road motorway operations complex (MOC1) would be highly obscured by existing noise walls, intervening vegetation and differences in relative level and were therefore not considered further in the assessment (see **Appendix O** (Technical working paper: Landscape and visual impact) for detail regarding visual envelope mapping).

The operational visual impact assessment did not identify the potential for ‘high’ visual impacts on views for any key viewpoints at Darley Road. A summary of the outcomes of the visual impact assessment are provided in **Table 13-8**.

Table 13-8 Visual impact assessment summary – Darley Road viewpoints

Receiver location	Receiver type	Sensitivity	Magnitude	Overall rating
View looking east from Darley Road near corner of Charles Street (D1)	Residents	Low	Moderate	Moderate–Low
	Pedestrians	Low	Low	Low
View looking west from Darley Road at entry to lane between James Street and Francis Street (D2)	Residents	Low	Low	Low
	Pedestrians	Low	Low	Low

Night lighting impacts

The visual impact assessment did not identify the potential for 'high' night lighting impacts for any receiver locations at Darley Road. A summary of the outcomes of the visual impact assessment are provided in **Table 13-9**.

Table 13-9 Visual impact assessment summary – Darley Road night lighting

Receiver location	Receiver type	Sensitivity	Magnitude	Overall rating
View looking east from Darley Road near corner of Charles Street (D1)	Residents	Low	Low	Low
	Pedestrians	Low	Low	Low
View looking west from Darley Road at entry to lane between James Street and Francis Street (D2)	Residents	Low	Negligible	Negligible
	Pedestrians	Negligible	Low	Negligible



LEGEND

- - - Light rail	Mainline tunnel	Operational facilities	Land subject to UDLP	Motorway operations complex
Light rail stop	Remaining project land	Receiver locations	Water treatment facility	

Figure 13-17 Key viewpoints at the Darley Road motorway operations complex (MOC1)



Figure 13-18 Existing view looking east along Darley Road near the corner of Charles Street (D1)



Figure 13-19 Artist's impression at 12-18 months of project operation of view looking east along Darley Road near the corner of Charles Street (D1) (subject to detailed design as part of an UDLP)

13.5.3 Rozelle interchange

Operational infrastructure associated with the Rozelle interchange would generally be located within the Rozelle Rail Yards, with some infrastructure components extending to The Crescent, along City West Link, and along Victoria Road including the approaches to and from Anzac Bridge.

Key visual features of the project around the Rozelle interchange include:

- Cut-and-cover tunnels and tunnel portal structures
- The Rozelle West motorway operations complex (MOC2) at Rozelle – located at the western end of the Rozelle Rail Yards, including:
 - Ventilation supply facility
 - Substation
 - Fire suppression pump station
- The Rozelle East motorway operations complex (MOC3) at Rozelle - located at the central/eastern end of the Rozelle Rail Yards, including:
 - Ventilation exhaust facility including three ventilation outlets which would have a height of up to 35 metres above existing ground level (note that one outlet is being constructed for the proposed future Western Harbour Tunnel project)
 - Substation
 - Water treatment plant
- Realignment and upgrade of City West Link and The Crescent between around 300 metres east of Catherine Street at Lilyfield, and The Crescent/Victoria Road intersection
- Widening and improvement works to the channel and bank of Whites Creek at Annandale, between around the light rail bridge and Rozelle Bay. These works would be carried out to manage flooding and drainage for the surface road network
- Two new pedestrian and cyclist bridges over City West Link to connect Lilyfield Road and Victoria Road with The Crescent and Annandale, and a new pedestrian and cyclist underpass below Victoria Road to connect Lilyfield Road with Anzac Bridge
- Integration of the salvaged rail infrastructure including the rail gantries and lighting tower into the open space (subject to interpretation)
- Urban design and landscape works including a constructed wetland and active transport routes (discussed further in the sections below).

The proposed built form for the Rozelle Rail Yards is provided in **Figure 13-20**. The landscape works and architectural design of operational infrastructure at the Rozelle interchange would be undertaken in accordance with a project UDLP and the urban design principles developed for the project (see **section 13.2.2**).

Key viewpoints to the Rozelle Rail Yards were identified and are shown in **Figure 13-21**. A selection of existing viewpoints and artist impressions of these viewpoints at 12 to 18 months of project operation are provided in **Figure 13-22** to **Figure 13-29**.

Urban design and landscape works

The project would include the provision of new open space within the Rozelle Rail Yards. The works that would be carried out at the Rozelle interchange would include (but not be limited to):

- Detailed review and finalisation of the architectural treatment of the motorway operational infrastructure
- Reshaping of the landform at the site around the motorway operational infrastructure
- Provision of pedestrian and cyclist paths and bridges
- Provision of new open space within the Rozelle Rail Yards, including landscape works

- Revegetation and planting, including tree planting, at key locations including:
 - Around motorway operational infrastructure such as the ventilation facility
 - Around the constructed wetland, bioretention swale and the drainage channels
 - Adjacent to pedestrian and cyclist paths
 - Around the perimeter of the Rozelle Rail Yards.

A concept design for these works has been prepared, included in **Appendix L** (Technical working paper: Urban design). The concept design would be refined during the development of UDLPs, which would be prepared based on the detailed design and in accordance with relevant commitments in this EIS. The UDLPs would be prepared in consultation with relevant councils, stakeholders and the community.

Connectivity

An active transport strategy has been developed for the project and is provided in full at **Appendix N** (Technical working paper: Active transport strategy). The active transport strategy was developed in consultation with stakeholders and through analysis of current and proposed active transport routes and relevant active transport policies and guidelines (see **Appendix N** (Technical working paper: Active transport strategy) for further information regarding the development of the active transport strategy).

At the Rozelle interchange, new pedestrian and cyclist infrastructure would be provided that would connect with existing and proposed active transport networks. Delivery of active transport links around the Rozelle interchange would significantly improve pedestrian and cyclist connectivity in the area. Four active transport links would be developed for the project within and around this area including the Rozelle Rail Yards Link, Whites Creek Link (including bridge crossing over City West Link), Rozelle land bridge and Victoria Road to City West Link connection.

A summary of the proposed connectivity around the Rozelle interchange that would be delivered by the M4-M5 Link and delivered by other separate projects subject to separate environmental assessment is provided in **Table 13-10**. Proposed open space and connectivity at the Rozelle interchange is shown in **Figure 13-30**. Wayfinding measures to facilitate connectivity would be developed as part of the UDLPs for the project as outlined in **section 13.6**.

Key north–south connectivity would be established via the two new bridges over City West Link. These links would greatly improve accessibility between Glebe/Annandale and Rozelle/Lilyfield. They would also provide connectivity between the Rozelle Bay and Iron Cove, through key green spaces of Bicentennial Park, open space at the Rozelle Rail Yards, Easton Park and Callan Park.

East–west connectivity would be provided through the site connecting to the Lilyfield Road cycleway adjacent to the Central Business District (CBD) and South East Light Rail (CSELR) Rozelle maintenance depot. A path would be provided that connects to the existing Anzac Bridge shared path by travelling underneath the Victoria Road/City West Link intersection. This connection would provide future possibilities for connections into The Bays Precinct.

The concept plans for the Rozelle Rail Yards and the Iron Cove Link (included in **Appendix L** (Technical working paper: Urban design) have been developed in consideration of ensuring the existing and proposed active transport networks are separated from, or can traverse efficiently, tunnel portals and entry and exit ramps. In the Rozelle Rail Yards, tunnel portals are proposed to be incorporated into the design of the open space, with active transport paths traversing over the top of these structures. In addition, the elevated grades provided by these structures simplify the design of the new north-south active transport connections over City West Link by minimising the amount of ramping needed to ensure sufficient clearance over the road network can be provided. At the Iron Cove Link portals, the portals have been located west of the Toelle Street – Terry Street connection, enabling upgrades to this existing signalised pedestrian crossing to provide a strong north-south connection. This would include providing for north-south traverse above the tunnel portals.

Connectivity that would be provided by the project at the Rozelle Rail Yards would contribute to the enhancement of healthy, cohesive and inclusive communities. The community benefits that would be associated increased connectivity are discussed in **Chapter 14** (Social and economic).

Table 13-10 Summary of proposed connectivity around the Rozelle interchange

Route	Rationale	Type	Length (indicative)	Delivery
Rozelle Rail Yards Link	Link the Anzac Bridge through The Bays Precinct to Lilyfield Road at the western end of the Rozelle Rail Yards	Separated cycle path	250 metres	M4–M5 Link (the link to The Bays Precinct is part of future works in coordination with UrbanGrowth NSW)
	Provide the junction connecting Rozelle Rail Yards and Victoria Road to The Bays Precinct	Underpass	150 metres	M4–M5 Link
	Provide the link between Victoria Road and the CSELR Rozelle Maintenance Depot	Separated cycle path	1,000 metres	M4–M5 Link
	Connect the CSELR Rozelle Maintenance Depot to Charles Street and Canal Road linking onto the Bay Run	Separated cycle path	1,800 metres	Inner West Council/Roads and Maritime/Transport for NSW
	Connect the eastern side of the Rozelle Rail Yards along Victoria Road to the intersection of Robert Street	Separated cycle path	250 metres	M4–M5 Link
	Connect Victoria Road to The Crescent over the Rozelle Rail Yards	Bridge	200 metres	M4–M5 Link
	Connect Victoria Road to The Crescent	Shared path	400 metres	M4–M5 Link
	Connect The Crescent to James Craig Road existing active transport network	Shared path	500 metres	M4–M5 Link
Johnston Street link	Connect Parramatta Road to The Crescent	Separated cycle path	1,800 metres	Inner West Council & Roads and Maritime
Whites Creek Link	Link the intersection of Brenan Street and Railway Parade over or under City West Link connecting to the Rozelle Rail Yards link	Bridge	200 metres	M4–M5 Link
	Link Railway Parade through Cohen Park, Whites Creek Valley Park and connects onto Whites Creek Lane	Shared path	750 metres	Inner West Council
	Link Whites Creek Valley Park to Macquarie Street and further onto Parramatta Road	Laneway	1,000 metres	Inner West Council
Johnstons Creek Valley Link	Connect Easton Park to The Crescent through the Rozelle Rail Yards	Bridge / shared path	300 metres	M4–M5 Link
	Provide a suitable cycling space for the connection along The Crescent, into Jubilee Park and linking to the existing Glebe Foreshore	Shared path	500 metres	M4–M5 Link
	Link the Glebe Foreshore to the north end of Taylor Street alongside Johnstons Creek using the existing pedestrian infrastructure to link	Existing shared path	500 metres	Inner West Council
	Provide a connection from the north end of Taylor Street, under the Wigram Road bridge, under the Booth Street bridge and linking onto the Douglas Grant Memorial Park	Bridge over canal	500 metres	Sydney Water and Inner West Council

Route	Rationale	Type	Length (indicative)	Delivery
	Provide the connection through Douglas Grant Memorial Park	Existing shared path	100 metres	Sydney Water and Inner West Council
	Connect Douglas Grant Memorial Park to the laneway to the east of Susan Street, following the creek line	Bridge over canal	50 – 100 metres	Sydney Water and Inner West Council
	Connect the north end of the laneway to Cahill Lane and Parramatta Road	Shared path	200 metres	Inner West Council

Notes:
Shading denotes active transport infrastructure that would be provided by the M4-M5 Link project

Future opportunities

The urban design principles and objectives outlined in **section 13.2.2** form the basis for the development of detailed plans that would identify the types of locations of community and social infrastructure that would be provided by the project, or enabled for future provision by others. These would be determined in consultation with relevant stakeholders (including UrbanGrowth NSW) and the community, and in consideration of broader strategic planning objectives, and would be documented in an UDLP that would be prepared for the project.

As part of an UDLP, an urban design master plan for the Rozelle interchange would identify opportunities to deliver outcomes that support and connect existing neighbourhoods, complement and stimulate local economies and provide opportunities for growth across existing and future local industries along and around Victoria Road at Rozelle. This could include provision of community and social infrastructure such as sporting fields and other active recreational facilities.

The ultimate decision as to the types of facilities that would be provided by the project would be determined in consultation with relevant stakeholders, the community, and in consideration of council and state planning documents, including recreational needs analysis and strategic policy such as The Bays Precinct Transformation Plan.

Further information regarding future opportunities is provided in **Appendix L** (Technical working paper: Urban design).

Landscape character impacts

The visual impact assessment did not identify the potential for 'high' landscape character impacts for any LCZs around the Rozelle interchange. A summary of the outcomes of the visual impact assessment are provided in **Table 13-11**.

Table 13-11 Visual impact assessment summary – Rozelle interchange landscape character

Landscape character zone	Sensitivity to change	Magnitude of change	Overall rating
LCZ 4 – Glebe Foreshore Parklands precinct	Moderate	Moderate	Moderate
LCZ 5 – Johnston Street precinct	High	Negligible	Negligible
LCZ 6 – Annandale Street and Young Street precinct	Moderate	Low	Moderate–Low
LCZ 7 – Whites Creek Valley precinct	High	Low	Moderate
LCZ 8 – Catherine Street precinct	Moderate	Negligible	Negligible
LCZ 9 – Catherine Street neighbourhood centre precinct	Low	Low	Low
LCZ 10 – Balmain Road precinct	Low	Negligible	Negligible
LCZ 11 – Nanny Goat Hill residential precinct	Low	Low	Low
LCZ 12 – Halloran Street commercial precinct	Low	Negligible	Negligible
LCZ 13 – Easton Park residential precinct	High	Moderate	High–Moderate
LCZ 14 – Victoria Road south precinct	Low	Moderate	Moderate–Low
LCZ 15 – White Bay Power Station precinct	High	Moderate	High-Moderate
LCZ 16 – Rozelle Bay wharves precinct	Low	Moderate	Moderate–Low
LCZ 17 – City West Link precinct	Low	Moderate	Moderate–Low
LCZ 18 – Rozelle light rail corridor and Whites Creek canal precinct	Moderate	Moderate	Moderate
LCZ 19 – Rozelle Rail Yards precinct	Low	Moderate	Moderate–Low

Visual impacts

A summary of the outcomes of impacts on views from key viewpoints around the Rozelle interchange are provided in **Table 13-12**. The visual impact assessment identified the potential for 'high' visual impacts for the view looking south from Easton Park (R5) to the project for residents (see **Figure 13-26** and **Figure 13-27**).

For residents, the ventilation facility (primarily the ventilation outlets as part of the facility), from this view would be in a high to moderate level of contrast with that of the existing view, notwithstanding that much of this would comprise open space. While the architecture and design of the ventilation facility would be well considered for the surrounding area, the structure may nonetheless be perceived as a low quality element given its purpose, bulk and scale in an open area and subsequent visual prominence.

For receiver locations around the Rozelle interchange, the ventilation outlets as part of the ventilation facility would be viewed within the context of other proximate, large infrastructure elements in the skyline, such as the White Bay Power Station chimney stacks, the Glebe Island grain silos, and Anzac Bridge.

The visual impact assessment also identified 'high' visual impacts for pedestrians for the view looking north from the Rozelle Bay light rail stop (R7) (see **Figure 13-28** and **Figure 13-29**).

For pedestrians, views along Annandale Street and Pritchard Lane would be aligned with the ventilation facility, potentially providing framed views of this contrasting element. Given the quality of the existing streetscape view is high, as is the importance of these views being located within the Annandale Heritage Conservation Area, it was determined that pedestrians would experience a 'high' visual impact for this view.

Table 13-12 Visual impact assessment summary – Rozelle interchange viewpoints

Receiver location	Receiver type	Sensitivity	Magnitude	Overall rating
View looking east from Catherine Street entry to Lilyfield light rail stop (R1)	Light rail users	Moderate	Low	Moderate–Low
	Residents	Low	Moderate	Moderate–Low
View looking west along City West Link to M5 portals tunnel portals (R2)	Motorists	Low	Moderate	Moderate–Low
View looking west from City West Link to the Crescent (R3)	Pedestrians/cyclists	Low	Moderate	Moderate–Low
	Motorists	Low	Moderate	Moderate–Low
View looking east along Lilyfield Road at corner of Foucart Street (R4)	Residents	Moderate	Moderate	Moderate
	Motorists	Negligible	Low	Negligible
View looking south from Easton Park to the Rozelle Rail Yards (R5)	Residents	High	High	High
	Active recreational users	Low	Moderate	Moderate–Low
	Passive recreational users	Moderate	High	High–Moderate
View looking north from Glebe Foreshore Parklands to the Rozelle Rail Yards (R6)	Active recreational users	Low	Moderate	Moderate–Low
	Passive recreational users	High	Moderate	High–Moderate
View looking north from Rozelle Bay light rail stop to the Rozelle Rail Yards (R7)	Light rail users	Moderate	High	High–Moderate
	Residents	High	Moderate	High–Moderate
	Pedestrians	High	High	High

Night lighting impacts

A summary of the outcomes of the visual impact assessment for night lighting are provided in **Table 13-13**. The visual impact assessment identified the potential for 'high' night lighting impacts for the view looking north from Rozelle Bay light rail stop (R7) for pedestrians and residents.

For residents, a moderate and potentially high number of residential receptors would have direct visibility of what would be anticipated to be a significant increase in road lighting levels associated with the project, particularly at the intersection of the Iron Cove Link interchange, City West Link, and The Crescent. The quality of the night-time city views over Rozelle Bay from this view was considered to be very high. The extent of increased night lighting visible to residential receptors could be high, resulting in moderate to high levels of night-time contrast with the existing views.

For pedestrians, sensitivity to the introduction of a potentially high or even moderate point source of high light levels could be expected to be high, especially where seen from multiple locations. A point source of light in this view would be in strong contrast to the generally well screened, low light suburban environment of Annandale. The magnitude of change would be high due to the introduction of a bright point source of light within an intrinsically low light suburban, heritage landscape setting.

Table 13-13 Visual impact assessment summary – Rozelle interchange night lighting

Receiver location	Receiver type	Sensitivity	Magnitude	Overall rating
View looking east from Catherine Street entry to Lilyfield light rail stop (R1)	Light rail users	Low	Low	Low
	Residents	Low	Low	Low
View looking west along City West Link to M5 portals (R2)	Motorists	Low	Moderate	Moderate–Low
View looking west along City West Link to The Crescent (R3)	Pedestrians /cyclists	Low	Moderate	Moderate–Low
	Motorists	Low	Moderate	Moderate–Low
View looking east along Lilyfield Road at corner of Foucart Street (R4)	Residents	Negligible	Low	Negligible
	Motorists	Low	Low	Low
View looking south from Easton Park to the project (R5)	N/A ¹	N/A	N/A	N/A
View looking north from Glebe Foreshore Parklands to the project (R6)	Passive recreational users	Low	Moderate	Moderate–Low
	Active recreational users	Negligible	Moderate	Low
View looking north from Rozelle Bay light rail stop (R7)	Light rail users	Low	High	Moderate
	Residents	High	High	High
	Pedestrians	Moderate	High	High–Moderate

Note 1: Additional lighting seen from this location would comprise that to share pathways and potentially nodal lighting at activity locations such as a skate park within the vicinity of the ventilation facility.

View loss

A summary of the assessment of impacts on view loss the local community at the Rozelle interchange is provided in **Table 13-14**. The assessment identified the potential for 'high' view loss impacts for the free-standing dwellings located on Foucart Street near the corner of Lilyfield Road and for the residences within the vicinity of Hutcheson Street and Denison Street near Lilyfield Road.

Table 13-14 View loss assessment summary – Rozelle interchange viewpoints

Receiver location	Sensitivity	Magnitude	Overall rating
Free-standing dwellings located on Foucart Street near the corner of Lilyfield Road	High	High	High
Residences within the vicinity of Hutcheson Street and Denison Street near Lilyfield Road	High	High	High

The sensitivity to change for these two views was considered to be 'high' considering the context of the elevated residential settings and quality of the skyline view of the CBD. The magnitude of the potential change was considered to be 'high' given the scale, form and mass of the ventilation exhaust facility as part of the Rozelle East motorway operations complex (MOC3) that would be visible in these views and the potential for a moderate portion of the views being lost in addition to the interruption of the broader view.

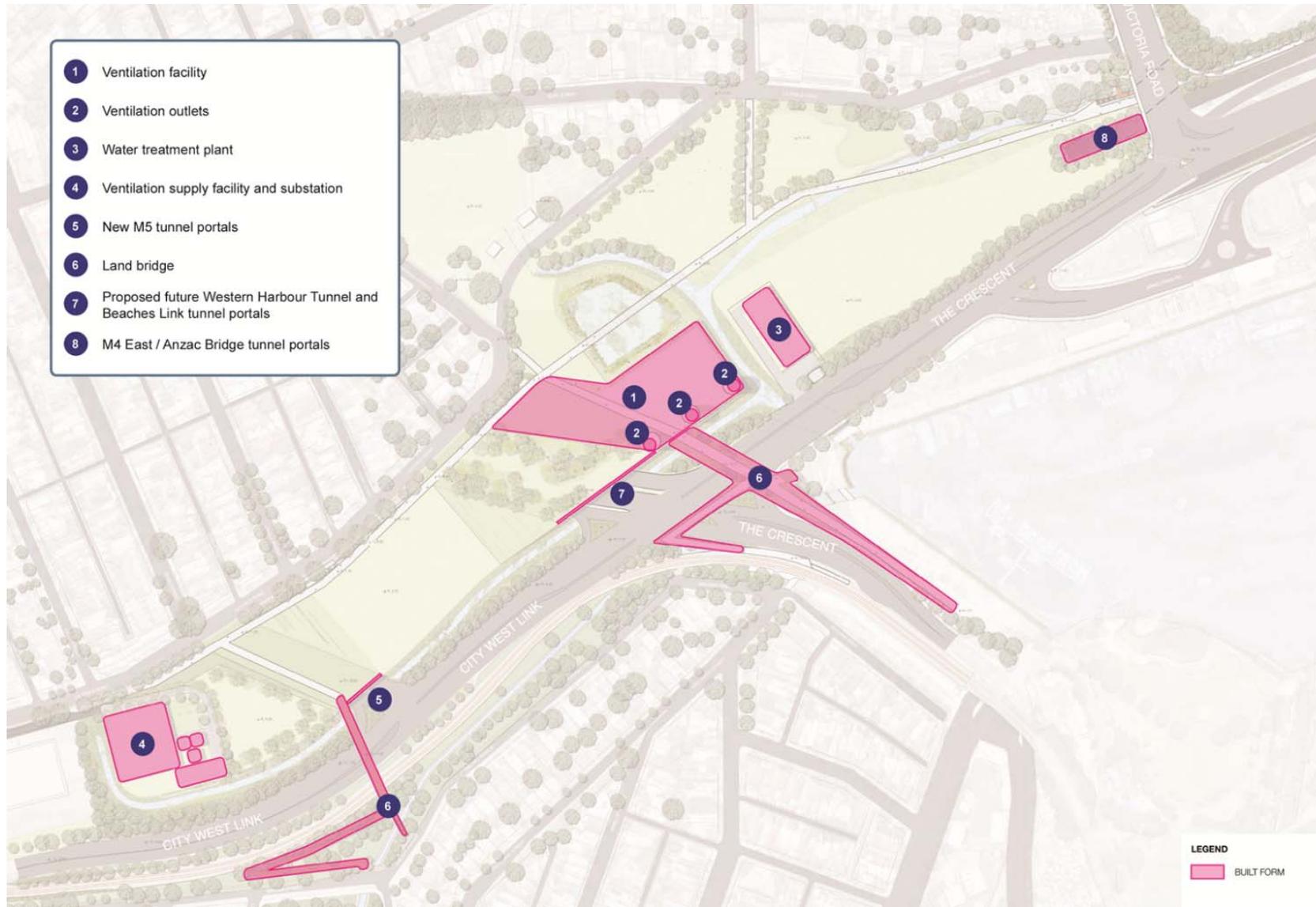


Figure 13-20 Rozelle Rail Yards built form and landscape

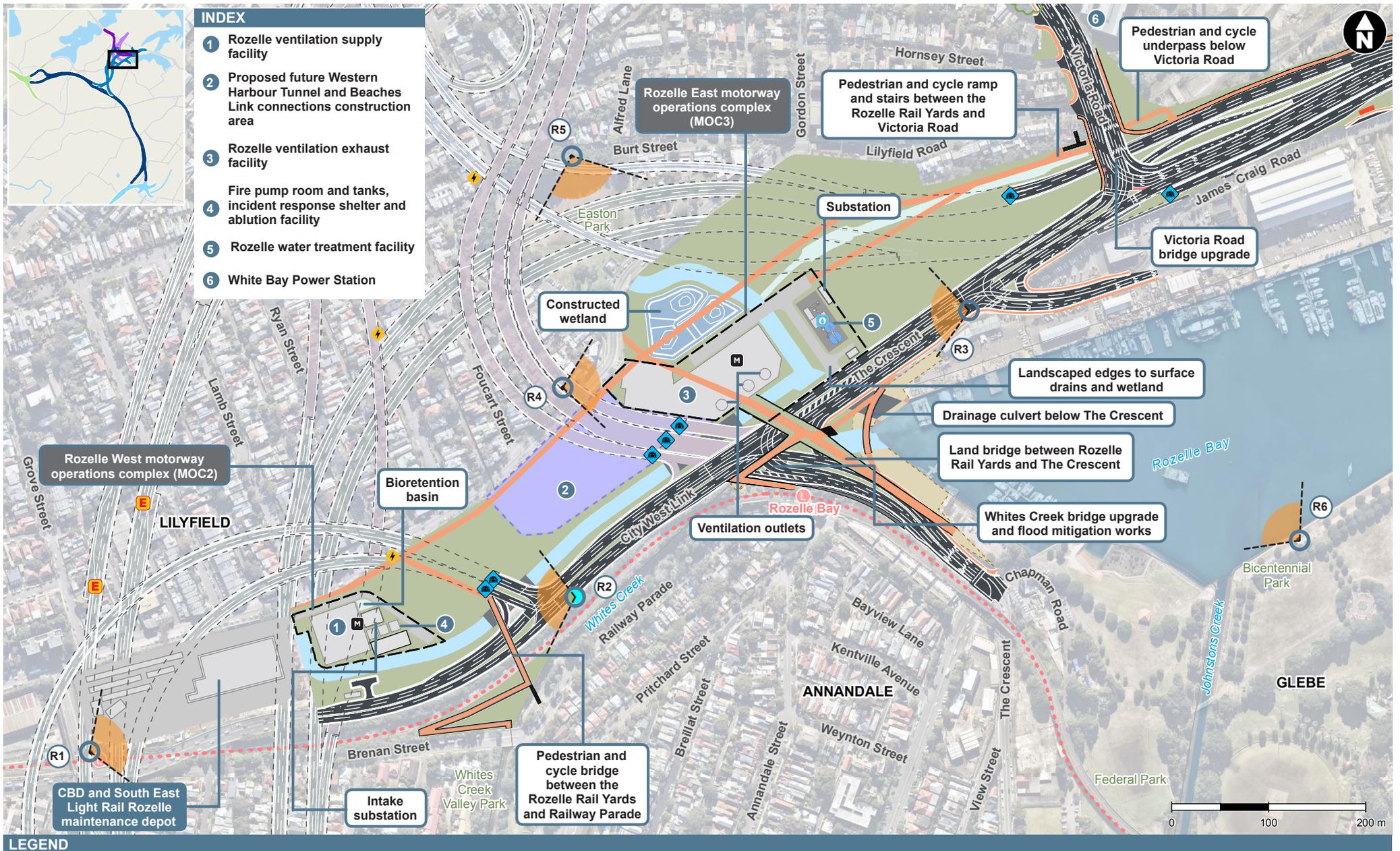


Figure 13-21 Key viewpoints at the Rozelle interchange



Figure 13-22 Existing view looking west along City West Link to New M5 portals (R2)



Figure 13-23 Artist's impression at 12-18 months of project operation of view looking west along City West Link to New M5 portals (R2) (subject to detailed design as part of an UDLP)



Figure 13-24 Existing view from City West Link to The Crescent (R3)



Figure 13-25 Artist's impression at 12-18 months of project operation of view from City West Link to The Crescent (R3) (subject to detailed design as part of an UDLP)



Figure 13-26 Existing view looking south from Easton Park to the Rozelle Rail Yards (R5)



Figure 13-27 Artist's impression at 12-18 months of project operation of view looking south from Easton Park to the Rozelle Rail Yards (R5) (subject to detailed design as part of an UDLP)



Figure 13-28 Existing view looking north from Rozelle Bay light rail stop to the Rozelle Rail Yards (R7)



Figure 13-29 Artist's impression at 12-18 months of project operation of view looking north from Rozelle Bay light rail stop to the Rozelle Rail Yards (R7) (subject to detailed design as part of an UDLP)

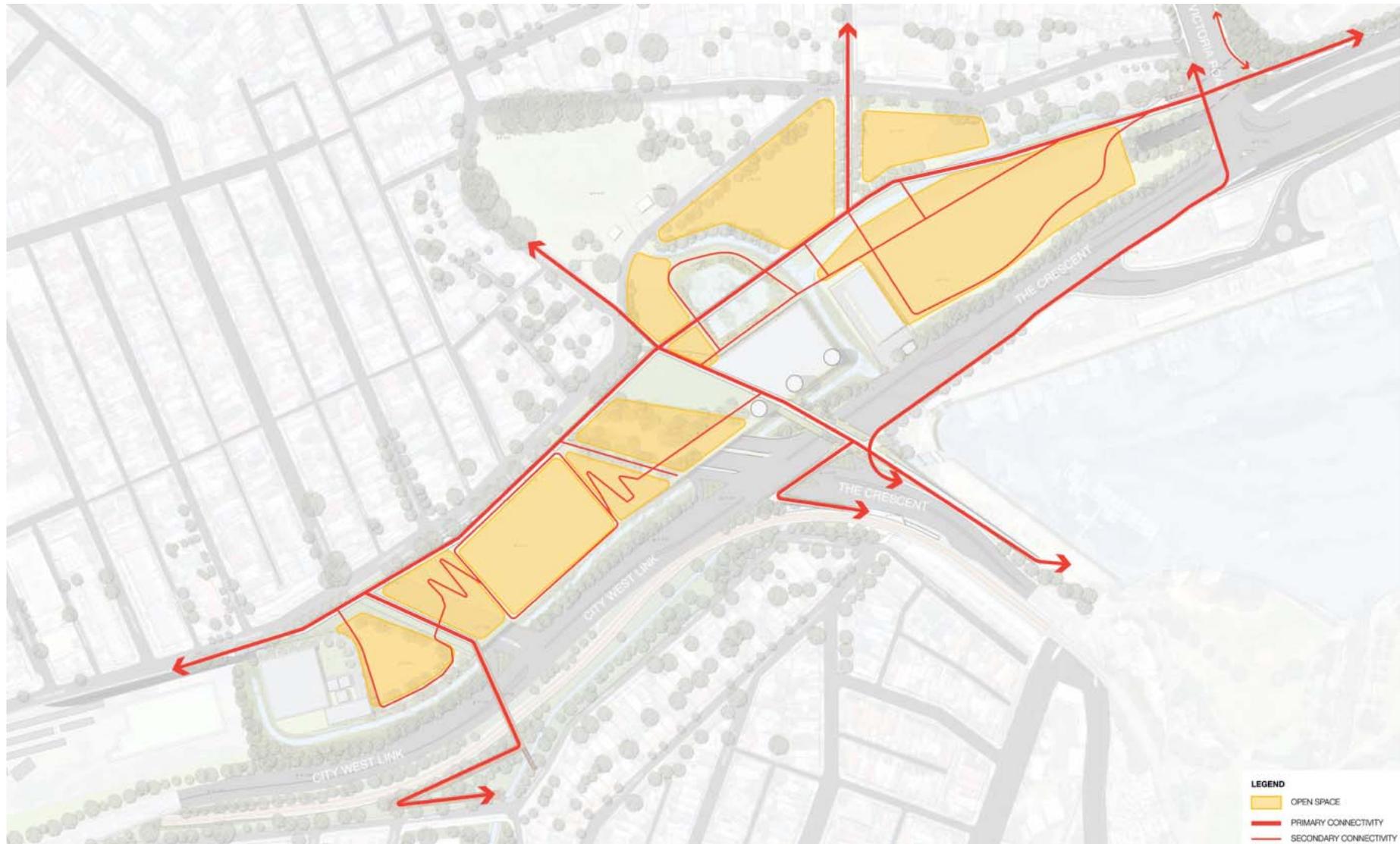


Figure 13-30 Rozelle Rail Yards open space and connectivity

13.5.4 Iron Cove Link

Operational infrastructure associated with the Iron Cove Link would generally be located within the Victoria Road corridor and on land that would be acquired for the project along the southern side of Victoria Road between Byrnes Street and Springside Street at Rozelle.

Key visual features of the project around the Iron Cove Link include:

- Realignment and modifications to the surface carriageways of Victoria Road, between around Springside Street and the eastern abutment of Iron Cove Bridge
- Construction of west-facing tunnel portals, dive structures and cut-and-cover structures between the eastbound and westbound surface lanes of Victoria Road, to connect Victoria Road with the Iron Cove Link
- The Iron Cove Link motorway operations complex (MOC4) at Rozelle – located south of the realigned Victoria Road carriageway between Callan Street and Springside Street at Rozelle, on land occupied during construction by the Iron Cove Link civil site (C8) including:
 - A tunnel ventilation facility within the widened Victoria Road carriageway between Toelle Street and Springside Street at Rozelle including a ventilation exhaust facility and ventilation outlet (which would have a height of about 20 metres above existing ground level) in the middle of the widened Victoria Road carriageway, and ventilation tunnel connections and other ancillary infrastructure on the south side of the widened Victoria Road corridor
 - Substation
- Realignment and improvements to the shared pedestrian and cyclist path that runs along the southern side of the westbound carriageway of Victoria Road, including reinstatement of the Bay Run connection to Iron Cove Bridge
- A new stormwater bioretention facility and upgrades to the existing car park within King George Park (adjacent to Manning Street) at Rozelle, to treat stormwater runoff generated by the surface road works associated with the Iron Cove Link. Around 30 car parking spaces would be formalised as part of these works.

The proposed built form for the Iron Cove Link is provided in **Figure 13-38**. The landscape works and architectural design of operational infrastructure at the Iron Cove Link would be undertaken in accordance with a project UDLP and the urban design principles developed for the project (see **section 13.2.2**).

Key viewpoints to the Iron Cove Link (including the Iron Cove Link motorway operations complex (MOC4)) were identified and are shown in **Figure 13-31**. A selection of existing viewpoints and artist impressions of these viewpoints at 12 to 18 months of project operation are provided in **Figure 13-32** to **Figure 13-37**.

Urban design and landscape works

As part of the project, urban design and landscape works would be carried out adjacent to disturbed areas associated with the Iron Cove Link surface works. The urban design and landscape works that would be conducted as part of the Iron Cove Link surface works would include (but not be limited to):

- Detailed review and finalisation of the architectural treatment of the motorway operational infrastructure
- Reshaping of the landform at the site around the motorway operational infrastructure
- Reinstatement of an improved pedestrian and cyclist path along the southern side of Victoria Road, that would connect to the Bay Run and Iron Cove Bridge and local streets
- Provision of new open space, including landscape works

- Revegetation, including tree planting, at key locations including:
 - Around permanent operational infrastructure such as the ventilation facility
 - Adjacent to pedestrian and cyclist paths
 - Along the southern boundary.

A concept design for these urban design and landscape works has been prepared having regard to the urban design objectives and principles. The concept design is included in **Appendix L** (Technical working paper: Urban design) and includes identification of potential future uses of land around the Iron Cove Link surface works that could be delivered as part of the urban design and landscape works, including the provision of social and community facilities.

The concept design would be refined during the development UDLPs for the project, which would be prepared, based on the detailed design and in accordance with relevant commitments in this EIS, and in consultation with relevant councils, stakeholders and the community.

Connectivity

In addition to urban design and landscape works, new pedestrian and cyclist infrastructure would be provided that would connect with existing and proposed active transport networks. Connectivity that would be provided by the project at the Iron Cove Link would contribute to the enhancement of healthy, cohesive and inclusive communities. The community benefits that would be associated increased connectivity are discussed in **Chapter 14** (Social and economic).

Delivery of an active transport link at Iron Cove would improve pedestrian and cyclist connectivity in the area. The Iron Cove active transport link would be developed for the project and would be a key connector that would:

- Connect the northern suburbs of Drummoyne (and Russel Lea and Five Dock via the Bay Run) to The Bays Precinct and the CBD
- Connect the existing retail centres on Darling Street and Victoria Road as well as local schools and other community services
- Provide a direct route, notwithstanding significant gradient changes, from Iron Cove towards Darling Street
- Connect to active transport routes on local routes
- Link significant open space from the Bay Run, Callan Park and the future open space at Rozelle Rail Yards and foreshore along The Bays Precinct.

The increased width of the Victoria Road carriageway for the project has the potential to exacerbate the existing separation between the communities of Rozelle and Balmain that exists because of the poor north–south links associated with Victoria Road. The design of the portals in this location would address this by providing improved pedestrian and cyclist accessibility between Toelle Street and Terry Street. The portals have been located to allow a direct link between these streets that would provide a crossing over Victoria Road, with a pedestrian refuge in the centre of the road above the portals.

A new pedestrian footpath and separated cycleway would be provided between Springside Street connecting to the Bay Run at Byrnes Street on the southern side of Victoria Road. It is anticipated that sufficient space would be provided for a two-way cycleway as well as a separate footpath that meets required standards.

A summary of the proposed connectivity around the Iron Cove Link that would be delivered by the M4-M5 Link and delivered by other separate projects subject to separate environmental assessment is provided in **Table 13-15**.

Table 13-15 Summary of proposed connectivity around the Iron Cove Link

Route	Rationale	Type	Length (indicative)	Delivery
	Connect the intersection of Robert Street up and over Victoria Road to the intersection of Springside Street	Separated cycle path	900 metres	Inner West Council
	Link the intersection of Springside Street to the Iron Cove Bridge and the Bay Run	Separated cycle path	450 metres	M4–M5 Link

Notes:

Shading denotes active transport infrastructure that would be provided by the M4-M5 Link project

The proposed streetscape and connectivity at the Iron Cove Link is shown in **Figure 13-39**. The active transport strategy for the project is provided in full at **Appendix N** (Technical working paper: Active transport strategy). Wayfinding measures to facilitate connectivity would be developed as part of the UDLPs for the project as outlined in **section 13.6**.

Future opportunities

The project would potentially facilitate urban regeneration along Victoria Road, due to forecast traffic reductions from the operation of the Iron Cove Link. Targeted development control and land use planning could potentially maximise the potential of redevelopment sites along the Victoria Road. A revitalised Victoria Road could present new opportunities for businesses, locals and visitors, while providing strong local pedestrian and cyclist connections between Lilyfield and Rozelle. Revitalisation of sections of Victoria Road outside the project footprint does not form part of the project and would be subject to separate environmental assessment.

Further information regarding future opportunities is provided in **Appendix L** (Technical working paper: Urban design).

Landscape character impacts

The visual impact assessment did not identify the potential for ‘high’ landscape character impacts for any LCZs at the Iron Cove Link. A summary of the outcomes of the visual impact assessment are provided in **Table 13-16**.

Table 13-16 Visual impact assessment summary – Iron Cove Link landscape character

Landscape character zone	Sensitivity to change	Magnitude of change	Overall rating
LCZ 20 – Victoria Road north precinct	Low	Moderate	Moderate–Low
LCZ 21 – Victoria Road light industrial precinct	Moderate	Negligible	Negligible
LCZ 22 – Iron Cove residential precinct	Low	Moderate	Moderate–Low
LCZ 23 – King George Park precinct	Moderate	Moderate	Moderate
LCZ 24 – Callan Park residential precinct	High	Moderate	High–Moderate
LCZ 25 – Sydney College of the Arts precinct	High	Negligible	Negligible
LCZ 26 – Darling Street precinct	Low	Negligible	Negligible

Visual impacts

A summary of the outcomes of impacts on views from key viewpoints at the Iron Cove Link are provided in **Table 13-17**. The visual impact assessment identified the potential for ‘high’ visual impacts for residents on the west side of Terry Street for the view looking south along Terry Street towards project (IC4) (see **Figure 13-34** and **Figure 13-35**). The sensitivity of the residents of the three storey apartments on the west side of Terry Street was considered to be high as the apartments look out onto a well-considered, almost entirely residential streetscape of substantial visual quality.

The magnitude of the change for residents on the west side of Terry Street was also considered to be high given that the view of the ventilation outlet (as part of the Iron Cove Link motorway operations complex (MOC4)) would comprise a substantial, highly contrasting element within the context of a well-articulated and substantially detailed residential development within this part of the street, and the revealed, small scale, period housing profiles on the opposite side of Victoria Road.

However, the removal of residential and commercial development fronting onto Victoria Road, and replacement with well setback, lower scale existing period housing profiles and streetscape improvements, in addition to centre median planting with substantial tree cover, is considered to comprise an improvement in the visual character of this central part of the view. 'High' visual impacts are not anticipated for the other viewpoints identified around the Iron Cove Link.

Table 13-17 Visual impact assessment summary – Iron Cove Link viewpoints

Receiver location	Receiver type	Sensitivity	Magnitude	Overall rating
View looking east along Victoria Road near Iron Cove Bridge (IC1)	Residents	Moderate	Moderate	Moderate
	Pedestrians	Low	Moderate	Moderate–Low
	Recreation	Moderate	Moderate	Moderate
	Motorists/public transport/cyclists	Low	Moderate	Moderate–Low
View looking west from Manning Street towards bioretention facility (IC2)	Residents	Moderate	Low	Moderate–Low
	Recreational users	Moderate	Low	Moderate–Low
	Pedestrians	Moderate	Low	Moderate–Low
View looking east along Victoria Road near Terry Street (IC3)	Pedestrians	Low	Moderate	Moderate–Low
	Motorists/public transport/cyclists	Low	Moderate	Moderate–Low
View looking south along Terry Street towards Victoria Road (IC4)	Residents – Balmain Shores corner of Terry Street	Low	Moderate	Moderate–Low
	Residents – Nagurra Place: north side	Low	Low	Low
	Residents – Nagurra Place: south side	Moderate	High	High–Moderate
	Residents – Terry Street: west side	High	High	High
	Residents – Terry Street: east side	Moderate	Low	Moderate–Low
	Pedestrians	Low	Low	Low
	Motorists/cyclists	Low	Low	Low
View looking north along Springside Street towards Victoria Road (IC5)	Residents	Moderate	Moderate	Moderate
	Pedestrians	Moderate	Moderate	Moderate
View looking east along Victoria Road at corner of Crystal Street (IC6)	Pedestrians	Low	Moderate	Moderate–Low
	Motorists/public transport/cyclists	Low	Moderate	Moderate–Low

Night lighting impacts

The visual impact assessment did not identify the potential for 'high' night lighting impacts for any receiver locations at the Iron Cove Link. A summary of the outcomes of the visual impact assessment are provided in **Table 13-18**.

Table 13-18 Visual impact assessment summary – Iron Cove Link night lighting

Receiver location	Receiver type	Sensitivity	Magnitude	Overall rating
View looking east along Victoria Road near Iron Cove Bridge (IC1)	Residents	Moderate	Moderate	Moderate
	Pedestrians	Low	Moderate	Moderate–Low
	Recreation	Low	Moderate	Moderate–Low
	Motorists/public transport/cyclists	Low	Moderate	Moderate–Low
View looking west from Manning Street towards bioretention facility (IC2)	N/A ¹	N/A	N/A	N/A
View looking east along Victoria Road near Terry Street (IC3)	Pedestrians	Low	Low	Low
	Motorists/public transport/cyclists	Low	Low	Low
View looking south along Terry Street towards Victoria Road (IC4)	Residents	Low	Low	Low
	Pedestrians	Low	Low	Low
	Motorists/cyclists	Low	Low	Low
View looking north along Springside Street towards Victoria Road (IC5)	Residents	Low	Low	Low
	Pedestrians	Low	Low	Low
View looking east along Victoria Road at corner of Crystal Street (IC6)	Pedestrians	Low	Moderate	Moderate–Low
	Motorists/public transport/cyclists	Low	Low	Low

Note 1: There would be no additional lighting proposed for this part of the project, subject to detail design.

View loss

A summary of the assessment of impacts on view loss the local community at the Iron Cove Link is provided in **Table 13-19**. The assessment did not identify the potential for ‘high’ view loss impacts on the community at the Iron Cove Link.

Table 13-19 View loss assessment summary – Iron Cove Link

Receiver location	Sensitivity	Magnitude	Overall rating
Medium rise residential apartments (‘Union Balmain’), Nagurra Place	Moderate	Low	Moderate–Low
Low rise residential apartments ‘Balmain Shores’	Moderate	Low	Moderate–Low
Low rise residential apartments ‘43 Terry Street’	Moderate	Moderate	Moderate

Urban design and landscaping

Land on the southern side of Victoria Road would provide a buffer between the Victoria Road carriageway and the existing residential houses as shown in **Figure 13-31**. This land would be subject to UDLP and provides opportunities for future uses, in consultation with local council and the community. See **section 13.5.7** and **Chapter 12** (Land use and property) for further discussion regarding the future use of remaining project land for the project.



LEGEND		Project features		Ancillary facility	
The Bay Run	M4-M5 Link tunnels	Surface road	Bus lane	Receiver locations	Motorway operations complex
Existing shared path	Iron Cove Link tunnel	Shared path	Tunnel portal		
Operational facilities	Land subject to UDLP				

Figure 13-31 Key viewpoints at the Iron Cove Link



Figure 13-32 Existing view from Victoria Road near Iron Cove Bridge looking east (IC1)



Figure 13-33 Artist's impression at 12-18 months of project operation of view from Victoria Road near Iron Cove Bridge looking east (IC1) (subject to detailed design as part of an UDLP)



Figure 13-34 Existing view looking south along Terry Street towards Victoria Road (IC4)



Figure 13-35 Artist's impression at 12–18 months of project operation of view looking south along Terry Street towards Victoria Road (IC4) (subject to detailed design as part of an UDLP)



Figure 13-36 Existing view looking east along Victoria Road at corner of Crystal Street (IC6)



Figure 13-37 Artist's impression at 12–18 months of project operation for the view looking east along Victoria Road at corner of Crystal Street (IC6) (subject to detailed design as part of an UDLP)



Figure 13-38 Iron Cove Link built form

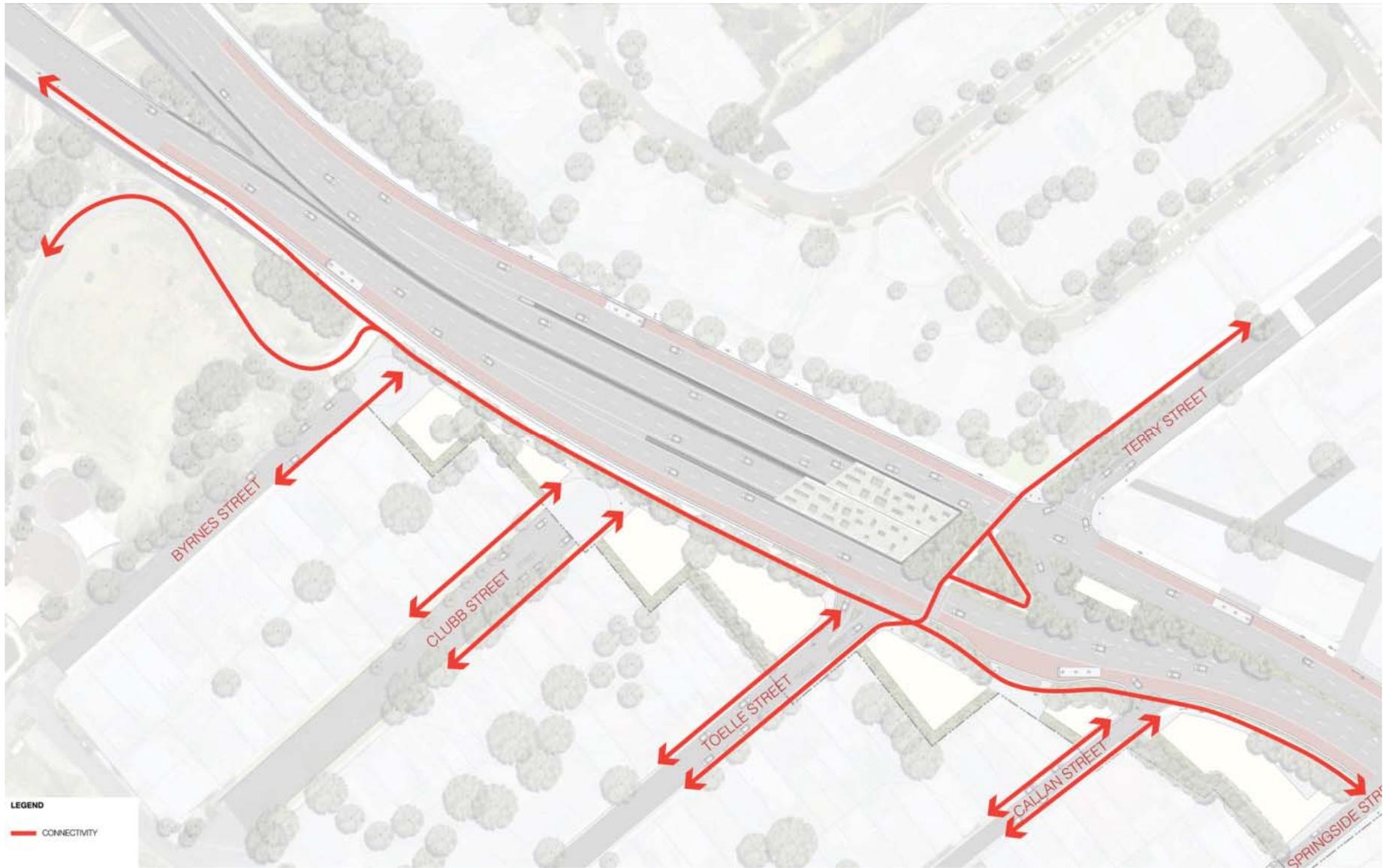


Figure 13-39 Iron Cove Link streetscape and connectivity

13.5.5 St Peters interchange

Operational infrastructure at the St Peters interchange would be located south of Campbell Road at St Peters, on land occupied during construction by the Campbell Road civil and tunnel site (C10). A description of built form operational infrastructure potentially visible from the receivers at the St Peters interchange is provided below:

- The Campbell Road motorway operations complex (MOC5) including:
 - A ventilation exhaust facility which would consist of one building, with four outlets (the ventilation outlets would have a height of around 22 metres above existing ground level)
 - Workshop/offices
 - Storage facilities
 - Car parking
 - Substation.

Operational infrastructure would be located above the St Peters interchange portals in the northwest corner of the site. The ventilation facility has been designed to minimise land-take from the St Peters interchange open space areas. The landscape works and architectural design of operational infrastructure at the St Peters interchange would be undertaken in accordance with a project UDLP and the urban design principles developed for the project (see **section 13.2.2**).

Once construction of both projects is completed, remaining project land would be subject to the New M5 project’s UDLP, Residual Land Management Plan and other applicable conditions of approval. These plans are currently being prepared by the New M5 project team and would be subject to the consultation requirements and timeframes set out in the New M5 project conditions of approval.

Key viewpoints to the Campbell Road motorway operations complex (MOC5) were identified and are shown in **Figure 13-40**. A selection of existing viewpoints and artist impressions of these viewpoints at 12 to 18 months are provided in **Figure 13-41** to **Figure 13-42**.

Landscape character impacts

The visual impact assessment did not identify the potential for ‘high’ landscape character impacts for any LCZs at the St Peters interchange. Operational infrastructure at this location would be appreciated within the context of the landscape created by the St Peters interchange and ventilation facility to be constructed as part of the New M5 project and would comprise an element of low to moderate contrast with this infrastructure. A summary of the outcomes of the visual impact assessment are provided in **Table 13-20**.

Table 13-20 Visual impact assessment summary – Campbell Road landscape character

Landscape character zone	Sensitivity to change	Magnitude of change	Overall rating
LCZ 27 – Sydney Park precinct	High	Low	Moderate
LCZ 28 – Sydney Park residential precinct	Moderate	Moderate	Moderate
LCZ 29 – Alexandra Canal industrial precinct	Low	Negligible	Negligible
LCZ 30 – Barwon Park precinct	High	Moderate	High–Moderate
LCZ 31 – Princes Highway precinct	Low	Low	Low
LCZ 32 – St Peters triangle precinct	Moderate	Negligible	Negligible
LCZ 33 – St Peters interchange precinct	Negligible	Low	Negligible

Visual impacts

The visual impact assessment did not identify the potential for ‘high’ visual impacts for any receiver locations at the St Peters interchange. A summary of the outcomes of the visual impact assessment are provided in **Table 13-21**.

Table 13-21 Visual impact assessment summary – Campbell Road viewpoints

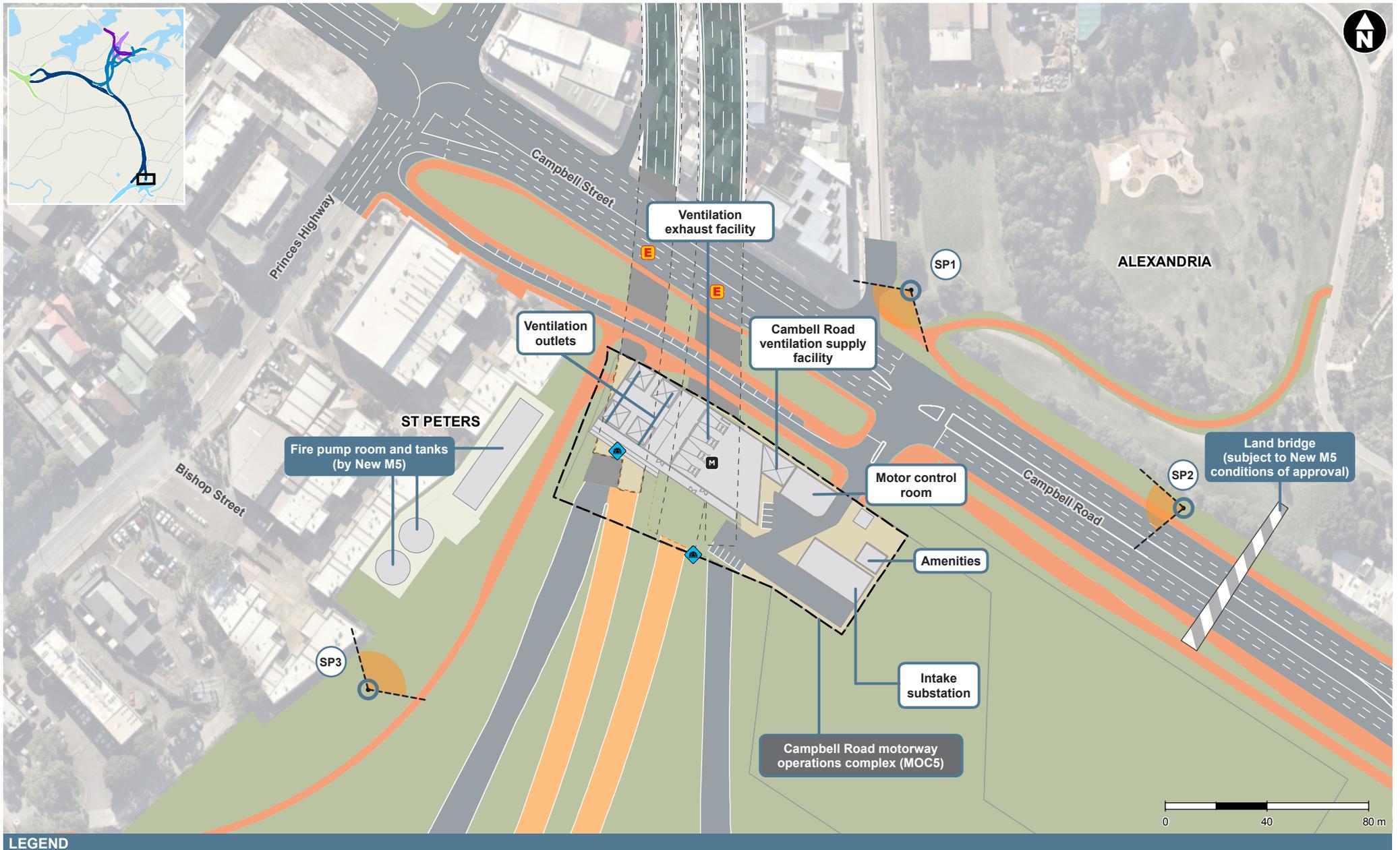
Receiver location	Receiver type	Sensitivity	Magnitude	Overall rating
View looking south from corner of Barwon Park Road and Campbell Road (SP1)	Residents	Moderate	Moderate	Moderate
	Pedestrians	Moderate	Moderate	Moderate
	Motorists/cyclists	Low	Moderate	Moderate–Low
View from Campbell Road verge looking west (SP2)	Pedestrians	Low	Moderate	Moderate–Low
	Motorists/public transport/cyclists	Low	Moderate	Moderate–Low
View looking north from St Peters interchange shared pathway (SP3)	Pedestrians/recreational cyclists	Low	Moderate	Moderate–Low

Night lighting impacts

The visual impact assessment did not identify the potential for ‘high’ night lighting impacts for any receiver locations at the St Peters interchange. A summary of the outcomes of the visual impact assessment are provided in **Table 13-22**.

Table 13-22 Visual impact assessment summary – Campbell Road night lighting

Receiver location	Receiver type	Sensitivity	Magnitude	Overall rating
View looking south from corner of Barwon Park Road and Campbell Road (SP1)	Residents	Low	Low	Low
	Pedestrians	Low	Low	Low
	Motorists/cyclists	Negligible	Negligible	Negligible
View from Campbell Road verge looking west (SP2)	Pedestrians	Low	Low	Low
	Motorists/cyclists/public transport	Negligible	Negligible	Negligible
View looking north from St Peters interchange share pathway (SP3)	Pedestrians/recreational cyclists	Low	Low	Low



LEGEND		M4-M5 Link tunnels	M4-M5 Link surface works	Project features	Ancillary facility
Surface road	Building	Mainline tunnel	Operational facilities	Indicative toll location	Motorway operations complex
Proposed future Sydney Gateway connections (non-operational as part of M4-M5 Link)	Shared path			Receiver locations	
	Land subject to New M5 UDLP			Tunnel portal	

Figure 13-40 Key viewpoints at the Campbell Road motorway operations complex (MOC5)



Figure 13-41 Existing view looking south from corner of Barwon Park Road and Campbell Road (SP1)



Figure 13-42 Artist's impression at 12–18 months of project operation of view looking south from corner of Barwon Park Road and Campbell Road (SP1) (subject to detailed design as part of an UDLP)

13.5.6 Mainline tunnels

A concept for in-tunnel experience would be prepared as part of the UDLPs for the project (refer to **section 13.5.9**). The in-tunnel experience for the M4–M5 Link would be developed to be consistent with and to complement the adjoining M4 East and New M5 tunnels, and in accordance with the following principles:

- Creation of landmark or site specific/unique experiences
- Use of optimal lighting / adaptable luminance
- Creation of subtle variations to keep drivers alert
- Measures to break up long continuous travel distances
- Shifting gradients and alignments to avoid monotony
- Providing clear speed and distance references
- Legible wayfinding.

13.5.7 Remaining project land

Subject to future detailed design and the requirements of the project, parts of the project footprint not required for operational infrastructure and/or landscaping may be contemplated for separate future redevelopment. In some instances, areas of land may also be retained by Roads and Maritime for future (separate) road infrastructure projects. Where this is the case, the land would be rehabilitated and stabilised in preparation for the potential future use. This land is identified as remaining project land.

Remaining project land would be subject to the provisions of a Residual Land Management Plan that would be prepared in consultation with the relevant council and would identify (and consider), but not be limited to:

- Identification and illustration of all remaining project land, including the location, land use characteristics, size and adjacent land uses
- Identification of feasible uses for remaining project land including justification for the selected use
- Timeframes for implementation of the actions in relation to the identified feasible uses.

Future development would be subject to separate development assessment and approval. The project would not rezone or consolidate remaining project land and therefore there would be no changes to land use zoning for future development.

In addition, remaining project land around the Wattle Street interchange at Haberfield and the St Peters interchange at St Peters would be managed to be consistent with the M4 East and New M5 projects' respective Residual Land Management Plans and UDLPs, including the M4 East Legacy Project (as required by the conditions of approval for the M4 East and New M5 projects). The project would not impact on the implementation of these plans, but may impact the timing in which in the plans are carried out.

Further discussion regarding remaining project land is provided in **Chapter 12** (Land use and property).

13.5.8 Crime Prevention Through Environmental Design

Principles of CPTED would be considered and incorporated into the urban design through the preparation of the UDLPs for the project. Key CPTED principles to reduce opportunities for crime are outlined below:

- Surveillance: the public realm and buildings should be designed and managed to maximise the potential for passive surveillance
- Legibility: the public domain should be designed, detailed and managed to make them easy to navigate and understand for users, especially pedestrians and cyclists, without losing the capacity for variety and interest
- Territoriality: security should be supported by designing and managing spaces and buildings to define clearly legitimate boundaries between private, semi-private, community group and public space
- Ownership of the outcomes: a feeling of individual and community ownership of the public realm and associated built environments must be promoted to encourage a level of shared responsibility for their security
- Management: the public realm should be designed and detailed to minimise damage and the need for undue maintenance, without undermining the aesthetic and functional qualities that make the places attractive to the community. Systems of both regular and reactive maintenance and repair should be implemented to maintain the quality of the places. A regular auditing system of CPTED issues in the public domain should be implemented
- Vulnerability:
 - The public domain should be designed and managed to reduce or limit risk from assault by providing well-lit, active and overlooked places and pedestrian and cyclist systems and routes to important places
 - The design and management of places should avoid creating or maintaining hidden spaces close to pedestrian/cyclist travel routes in the public realm, in ways that remain consistent with the purpose of the place
 - The design and management of the public domain should provide a variety of routes and other ways to avoid potential or actual problems
 - The pursuit of safety should be delivered in ways consistent with the purpose of the place.

During detailed design, specific design measures at surface operational infrastructure would be identified to prevent crime.

13.5.9 Urban design and landscape assessment

The urban design and landscape works that would be carried out by the project would be documented in UDLPs. UDLPs would be prepared in consultation with stakeholders and the community prior to the commencement of permanent built surface works and/or landscape works and would present an integrated urban design for the project.

The concepts and principles outlined in the UDLPs would be developed into a detailed design for operational project infrastructure. The detailed design would be consistent with the project urban design principles (see **section 13.2.2**) and would include:

- Final land use for UDLP land
- Final design and material composition for built form structures
- Final landscape design
- Final heritage interpretation plan
- CPTED review of design (see **section 13.5.8**).

A detailed review and finalisation of architectural treatment of the project operational infrastructure, including ventilation facilities, would be undertaken during detailed design. The architectural treatment of these facilities would be guided by ventilation facility performance requirements, the outcomes of community consultation and the urban design principles identified in **section 13.2.2**.

Landscaping works would be carried out adjacent to disturbed areas, around operational infrastructure (such as ventilation facilities), and in areas of new open space that would be provided at the Rozelle Rail Yards and adjacent to Victoria Road at Rozelle.

Areas where permanent operational infrastructure is proposed have been reviewed against the urban design principles developed for the project, which are outlined in **Table 13-2**. The outcome of this assessment is provided in **Table 13-23**.

The review has been carried out using the concept design, including preliminary designs for the built form elements of the project. It is difficult at this early stage of the design resolution to be conclusive with regard to all of the required urban design elements. The structures and facilities that would be provided for the project such as ventilation facilities, tunnel portals and water treatment plans would be detailed in the UDLPs that would be prepared for the project. The built form structures and facilities would be designed to complement the surrounding context, with a materials palette that draws on the materials and textures of the surrounding areas to be developed during detailed design.

The nature of the design process is iterative and will continue to evolve as various elements become realised in detail and better coordinated as part of the whole project. With this in mind, a number of project design commitments are provided to guide the continued development of the project in line with the mitigation measures provided in **section 13.6**.

Urban design elements proposed for the areas where substantial surface infrastructure is planned (around the Rozelle interchange and the Iron Cove Link) is discussed in more detail in **Appendix L** (Technical working paper: Urban design).

Table 13-23 Review against urban design principles

Principle	Darley Road (MOC1)	Rozelle Rail Yards	Iron Cove Link	Campbell Road (MOC5)
<p>Integrated and collective approach</p> <p>Create holistic and integrated design solutions generated by collaboration across disciplines, the community, stakeholders and government bodies.</p>	<p>The design has been developed in consideration of maximising areas of land that would be available for potential future development (remaining project land).</p>	<p>The design offers the opportunity for an open space destination that presents the opportunity to connect communities by providing a range of social infrastructure at a central, easily accessible location.</p>	<p>The design aims to bring local residents back to Victoria Road through the investigation of opportunities for the activation of remaining project land (see section 13.5.4)</p>	<p>The project has been designed to be consistent with implementation of the urban design and landscape plan for the New M5 project.</p>
<p>Environmental vision</p> <p>Create a sustainable and enduring design response which enhances and connects local ecologies and green spaces.</p>	<p>The project would provide the opportunity for remaining project land to be developed as open space, subject to separate environmental assessment.</p>	<p>The concept connects isolated land through new green spaces and active transport links. These strategically connect a series of disconnected green spaces. The design utilises Water Sensitive Urban Design to filter surrounding catchment runoff before it enters the harbour at Rozelle Bay.</p>	<p>The design connects green spaces and canopy along Victoria Road and recreational spaces with King George Park and Callan Park. The design utilises the topography along Victoria Road to harvest and polish water runoff from the road and pavements.</p>	<p>The ventilation facility has been designed to minimise land-take from the St Peters interchange open space areas.</p>
<p>Cross scale connection of spaces</p> <p>Prioritise both locally and regionally significant connections that respond to the broader issues of the local neighbourhoods and city.</p>	<p>The design would maintain existing active transport links along Darley Road.</p>	<p>The project would provide a new active transport corridor that would work directly with existing and future connections, providing a connection between previously disconnected communities, the Bay Run and the city.</p>	<p>The design would integrate the Iron Cove active transport network along the southern edge of Victoria Road, linking Rozelle in the east, Drummoyne and the Bay Run in the north and the wider network beyond.</p>	<p>The project would not inhibit the delivery of the land bridge or the active recreation to be delivered by the New M5 project.</p>

Principle	Darley Road (MOC1)	Rozelle Rail Yards	Iron Cove Link	Campbell Road (MOC5)
<p>A motorway integrated within its context</p> <p>Understand the existing landscape and respond in a respectful manner that seeks to enhance and or contribute back to its context.</p>	<p>The proposed built form would be consistent with the existing character of the local area and would maintain existing active transport links along Darley Road.</p>	<p>The design would utilise the open space landform to disguise the motorway and maximise useable open space. A new connection would be provided between the Rozelle Rail Yards and the Rozelle Bay light rail stop.</p>	<p>The design would terminate the portals to the west of the Terry Street and Toelle Street alignment enabling pedestrian and cyclist through connection across Victoria Road. Ventilation outlets would be located between the Victoria Road carriageways to improve the separation distance from residential and commercial receivers.</p>	<p>The design has located operational infrastructure primarily within the footprint of motorway infrastructure for the St Peters interchange to be delivered by the New M5 project.</p>
<p>Place sensitive design</p> <p>Celebrate and work with the character of each place and destination, responding to their unique histories, materiality, architecture, built fabric, cultural context, landform and topography.</p>	<p>The proposed built form would be consistent with the existing character of the local area at Darley Road.</p>	<p>The design would maintain the unique heritage, industrial character and typography of the Rozelle Rail Yards.</p>	<p>The proposed built form would be consistent with the existing character of the local area at Victoria Road.</p>	<p>The proposed built form would be consistent with the existing character of the local area at the St Peters interchange.</p>
<p>Multidimensional user force</p> <p>Consider holistically how a diversity of users experience space including all ages, abilities and transport modes for a truly inclusive, universally accessible and safe outcome.</p>	<p>Operational project infrastructure would be located at the western end of the site to allow for the remaining project land component to be located nearest to the Leichhardt North light rail stop. This would facilitate a safe and accessible journey to the light rail stop.</p>	<p>New public spaces, and universally accessible links would be provided to establish new 'public streets' and enhance the surrounding neighbourhood.</p>	<p>The design would improve connections of local streets such as Terry Street and Toelle Street at Rozelle with Victoria Road for pedestrians and cyclists.</p>	<p>The project would not inhibit the safety or accessibility of the land bridge or the active recreation to be delivered by the New M5 project.</p>

Principle	Darley Road (MOC1)	Rozelle Rail Yards	Iron Cove Link	Campbell Road (MOC5)
<p>Revitalisation, opportunity and economics</p> <p>Establish opportunities for development that supports and connects existing neighbourhoods, complements and stimulates local economies and provides opportunity for growth across existing and future local industries.</p>	<p>The design would maintain existing active transport links along Darley Road and provide the opportunity for remaining project land to be developed as open space, subject to separate environmental assessment.</p>	<p>With the intended future growth of the area, the design provides open space and social infrastructure that works for both for existing and future communities.</p>	<p>Opportunities would be investigated for UDLP land and remaining project land (refer section 13.5.4 and Chapter 12 (Land use and property)).</p>	<p>Opportunities would be investigated in the UDLP to integrate with the New M5 UDLP to support connectivity and support future uses for residential and recreational spaces.</p>

13.6 Environmental management measures

The detailed design and construction of the M4-M5 Link project would be managed to ensure the identified landscape and visual impacts are minimised by implementation of a range of general and specific measures which are outlined in **Table 13-24**.

The environmental management measures provided in **Table 13-24** have been developed in order to:

- Avoid, reduce and manage identified potential landscape and visual impacts during construction and operation
- Provide substantial mature and semi-mature street-tree planting for screening and shade, and mixed sizing of planting where stratification of the canopy is desired
- Provide high quality finishes to buildings and vent facilities to facilitate long term durability of the design for effect with minimal maintenance, eg use of hard rock rather than concrete with a pigment which may fade over time
- Improve open space to offset additional infrastructure, eg provision of street trees to adjoining local streets affected by the project
- Improve active transport links to reduce reliance on motorway and local roads for short journeys.

Table 13-24 Environmental management measures - landscape and visual

Impact	No.	Environmental management measure	Timing
Urban design of project infrastructure	UD1	Prepare UDLPs for operational project infrastructure including final landscape works and architectural design in consultation with relevant councils, stakeholders and the community.	Construction
Potential for crime at or near construction ancillary facilities	UD2	Specific design measures at construction ancillary facilities will be identified and implemented to prevent crime, based on principles of CPTED.	Construction
Potential for crime at or near operational infrastructure CPTED	UD3	Specific design measures at surface operational infrastructure will be identified and implemented to prevent crime, based on principles of CPTED.	Construction
Disorientation while navigating project operational infrastructure	UD4	As part of the project UDLPs, wayfinding for the project will be developed and installed in accordance with relevant guidelines endorsed by Roads and Maritime.	Construction
General impacts to landscape and visual amenity	LV1	Ancillary facilities, including the locations of visible structures and plant and perimeter fencing and treatments, will be developed to minimise visual impacts for adjacent receivers where feasible and reasonable.	Construction
	LV2	Site lighting will be designed to minimise glare issues and light spillage in adjoining properties and would be generally consistent with the requirements of Australian Standard 4282-1997 Control of the obtrusive effects of outdoor lighting.	Construction
	LV3	Regular maintenance of site hoarding and perimeter site areas should be undertaken, including the prompt removal of graffiti.	Construction

Impact	No.	Environmental management measure	Timing
	LV4	Construction worksites and construction ancillary facilities will be established to minimise the need to remove screening vegetation wherever practicable.	Construction
	LV5	Hoardings and temporary noise walls will be erected as early as possible within the site establishment phase to provide visual screening.	Construction
	LV6	Acoustic sheds will be designed to be visually recessive and minimise potential overshadowing impacts where possible.	Construction
	LV7	Where necessary, construction lighting will comply with the requirements of the Civil Aviation Safety Authority and Sydney Airport at all times.	Construction
	LV8	Visible elements of operational facilities will be designed to satisfy functional requirements and adopt the design principles detailed in the M4-M5 Link Urban Design Report. The proposed designs will be documented in the UDLP for the project.	Construction
	LV9	The slopes of vegetated batters that form part of the final urban design and landscaping solution will be limited to no more than 1:4 where possible in order to maximise the impact of vegetation on these batters and minimise maintenance.	Construction
	LV10	Where construction ancillary facilities are located in close proximity to sensitive residential receivers such as residents and users of recreational space, high quality fencing suitable for parks and public spaces should be considered.	Construction
Impacts to visual amenity as a result of the Darley Road motorway operations complex	LV11	Investigate options for planting of vegetation to screen residents on the southern side of Darley Road from the Darley Road motorway operations complex. Include feasible and reasonable measures in the relevant UDLP.	Construction
	LV12	Architectural design and detailing of the water treatment facility, substation and front fencing should achieve articulation, visual interest, and integrate with the streetscape.	Construction
Impacts to visual amenity at the Rozelle interchange	LV13	Integrate the new open space at Rozelle with the Lilyfield Road streetscape through considered street tree planting and associated landscape works.	Construction
	LV14	Implement urban design and landscape measures that allow permeable views between the City West Link carriageway and the new open space to provide a sense of openness and connection with the open space for motorists and the community.	Construction
	LV15	Investigate measures to minimise view impacts of the project to sensitive residential receptors in the vicinity of the Rozelle Rail Yards as described in this assessment and include in the UDLP where reasonable and feasible.	Construction

Impact	No.	Environmental management measure	Timing
	LV16	Develop a design that aims to incorporate the ventilation outlets at the Rozelle Rail Yards as an integral component of the larger open space composition, with reference and consideration to the Ventilation Facility Design Review (Annexure 2 of Appendix L (Technical working paper: Urban design)).	Construction
	LV17	Consult with UrbanGrowth NSW regarding the interface between the project footprint and the White Bay Power Station precinct. Design the interface to ensure compatibility between the two areas from a landscaping, visual, heritage and active transport connectivity perspective.	Construction
	LV18	Investigate measures to retain the mature trees of high retention value adjacent to the light rail corridor at the corner of The Crescent and City West Link, or provide screen planting alongside the retaining wall edge of the light rail corridor, to minimise landscape and visual impacts.	Construction
Impacts to visual amenity at Iron Cove Link	LV19	Investigate vegetative and other screening measures along Victoria Road to improve the visual amenity of the streetscape and reduce impacts associated with the ventilation outlet and increased glare from the portals to residential dwellings to the north of Victoria Road.	Construction
	LV20	Provide a well-articulated, integrated car parking and landscape design for the bioretention facility in Manning Street that is place sensitive, and enhances the interface between the project and both King George Park and adjacent residences.	Construction
Impacts to visual amenity at St Peters interchange	LV21	The UDLP for the area adjoining Campbell Road motorway operations complex is to be consistent with the New M5 UDLP at St Peters.	Construction
Visual amenity impacts associated with design of ventilation outlets at Rozelle, Iron Cove Link and St Peters	LV22	Investigate measures during detailed design to reduce the height, bulk, scale and enhance the landscape setting of the ventilation outlets, subject to achieving desired ventilation outcomes, and in accordance with the design principles detailed in the M4-M5 Link Urban Design Report.	Construction