Appendix G

LANDSCAPE CHARACTER AND VISUAL IMPACT ASSESSMENT

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TransGrid

Potts Hill to Alexandria transmission cable project

Landscape character and visual impact assessment

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Landscape character and visual impact assessment

Client: TransGrid

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Glossary, acronyms and abbreviations

Glossary

Term	Definition
Amenity	The quality of a place, its appearance, feel and sound, and the way its community experiences the place. Amenity contributes to a community's identity and its sense of place.
Active recreation	Active outdoor recreational leisure activities that occur outside formalised sports, for example ball games or bike riding.
Cable bridges	A purpose built bridge made typically of reinforced concrete structures, through which the transmission cables are integrated for support and protection.
Cable circuit	A series of three phase alternating current transmission cables which make up an electrical circuit to carry an electrical current. A single circuit transmission cable typically comprises a minimum of three cables per circuit.
Catchment	The land area draining through the main stream, as well as tributary streams, to a particular site. 'Visual Catchment' refers to the land seen from a certain point contained by landform or landscape elements (including built form).
Conduit	A protective tube or pipe system for individual electric cables. Sometimes referred to as a 'duct'.
Construction	Includes all physical work required to construct the project and also includes construction planning such as the development of construction management plans.
Construction laydown areas	Areas required for temporarily storing materials, plant and equipment and providing space for other ancillary facilities, such as project offices, during construction. Some construction laydown areas would be used for stockpiling.
Community	A group of people living in a specific geographical area or with mutual interests that could be affected by the project.
Cumulative impacts	Impacts that, when considered together, have different and/or more substantial impacts than a single impact assessed on its own.
Detailed design	The stage of the project following concept design where the design is refined, and plans, specifications and estimates are produced, suitable for construction.
Earthworks	All operations involved in loosening, excavating, placing, shaping and compacting soil or rock.
Easement	A 'right of way' around infrastructure that allows access to authorised personnel for inspections, repairs and maintenance. The establishment of an easement also restricts certain activities on the land that could endanger members of the public or impact on the safe operation of the infrastructure.
Embankment	An artificially raised structure (usually an earthen or gravel wall) used specially to hold back water (to prevent flooding) or to carry a roadway/rail line (across low-lying or wet areas).
Flood	Relatively high stream flow which overtops the natural or artificial banks in any part of a stream, river, estuary, lake or dam, and/or local overland flooding associated with major drainage before entering a watercourse, and/or coastal inundation resulting from super-elevated sea levels and/or waves overtopping coastline defences excluding tsunami.

Term	Definition
Flood prone land	Land susceptible to flooding by the probable maximum flood. Also known as flood liable land.
Greater Sydney region	The area generally from Penrith in the west to the east coast and from Hornsby in the north to Campbelltown in the south.
Impact	Influence or effect exerted by a project or other activity on the natural, built and community environment.
Inner Sydney	Includes the Sydney Central Business District (CBD) and eastern suburbs
Insulation (electrical)	Material designed to prevent the flow of electric current.
Joint bay	An enlarged section of excavated trench in which cables are joined together.
Landscape character	Landscape character is the distinct, recognisable and consistent pattern of elements in the landscape. It is these patterns that give each area its 'sense of place', making one landscape different from another.
Landscape character impact (rating)	The landscape character impact rating defines the effects of a project on a Landscape Character Zones. It is measured as a combination of sensitivity of landscape and the magnitude of change due to the project.
Landscape Character Zone (LCZ)	Landscape Character Zones (LCZs) are identified as sharing broadly the same characteristics or spatial qualities. These may include planning designations, topographical qualities, natural drainage qualities, ecological characteristics/land cover, parks and open space, cultural and recreational characteristics, architecture and built form, spatial qualities, or infrastructure.
Magnitude	The magnitude of change of landscape character or to views seen by receptors due to the project. The magnitude rating depends on factors such as the extent of loss, change or addition of any feature or element, change to the landscape itself or one nearby that affects its character, or the quality and extent of the concept design and potential mitigation measures, if adopted.
Observer Location (OL)	A series of representative locations (viewpoints) from which changes to views due to the project are assessed.
Passive recreation	Leisure recreation activities that require minimal equipment and have little environmental impact, for example hiking, nature observation, picnicking.
Project area	The project area comprises the overall potential area of direct disturbance by the project, which may be temporary (for construction) or permanent (for operational infrastructure) and extend below the ground surface. The project area includes the location of operational infrastructure and construction work sites for: • the transmission cable route (including the entire road reserve of roads traversed); • special crossings of infrastructure or watercourses; • substation sites requiring upgrades (noting that all works would be contained within the existing site boundaries); and • construction laydown areas.
Roadway	Any one part of the width of a road devoted particular to the use of vehicles, inclusive of shoulders and auxiliary lanes.
Road reserve	The area comprising roads, footpaths and public transport infrastructure.

Term	Definition
Secretary's Environmental Assessment Requirements (SEARs)	Requirements and specifications for an environmental assessment prepared by the Secretary of the NSW Department of the Planning and Environment under section 5.16 of the NSW Environmental Planning and Assessment Act 1979.
Sensitivity	The sensitivity of a landscape or receptors are based upon the extent to which they can accept change of a particular type and scale without adverse impacts.
Switchbay	Part of a substation within which the switch and control equipment relating to a given circuit are contained.
Transmission cable	An insulated wire that conducts an electrical current at voltages greater than 132 kV.
Underboring	This is a trenchless method for installing cables involving passing the conduits under infrastructure (such as a road or railway corridor) or a watercourse. Underboring could be via thrust boring (also known as micro tunnelling) or horizontal directional drilling.
View	A sight or prospect from a particular location.
Visual impact (rating)	The visual impact rating defines the day to day visual effects of a project on receptors. It is measured as a combination of sensitivity of receptors and the magnitude of change to the view.
Work site	A specific section of the project area for carrying out project construction activities such as trenching and excavation, establishment of a joint bay, underboring or installing a cable bridge. The work site would be fenced off from public access and may include associated activities such as traffic management measures.

Abbreviations

Abbreviation	Definition
3D	3 Dimensional
DCPs	Development Control Plans
DECC	Department of Environment and Climate Change NSW
DPE	Department of Planning and Environment
EIS	Environmental Impact Statement
EP&A Act	Environmental Planning and Assessment Act 1979
FoV	Field of View
HCAs	Heritage Conservation Areas
kV	kilovolt
LCZ	Landscape Character Zone
LEPs	Local Environment Plans
LGA	Local government area
OL	Observer Location
SEARs	Secretary's Environmental Assessment Requirements

Executive summary

Introduction

TransGrid is the manager and operator of the major high-voltage electricity transmission network in New South Wales (NSW) and the Australian Capital Territory (ACT). TransGrid is seeking approval under Division 5.2 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) for the construction and operation of a new 330 kilovolt (kV) underground transmission cable circuit between the existing Rookwood Road substation in Potts Hill and the Beaconsfield West substation in Alexandria (the project).

The project has been identified as a solution to address existing issues in the electricity supply network for inner Sydney, which is characterised by ageing and deteriorating electricity infrastructure and forecast increases in consumer demand.

As the project is state significant infrastructure under section 5.12 of the EP&A Act, an Environmental Impact Statement (EIS) has been prepared to assess the impacts of the project. This technical report has been developed in support of the EIS and assesses the project impacts with regards to potential landscape and visual impacts during construction and at operation.

This landscape character and visual impact assessment has been undertaken using methodology informed by the *RMS Environmental Impact Assessment Practice Note – Guideline for Landscape Character and Visual Impact Assessment* (Reference number EIA-N04, 2013), which is a method widely accepted by NSW government authorities. As this guideline document was developed from the *Guidelines for Landscape and Visual Impact Assessment, Third Edition (2013)*, developed by the Landscape Institute and Institute for Environmental Management (United Kingdom), this parent document has been used in reference to further detail required in this assessment.

The impact of the project on landscape character and views (visual impact) comprises an analysis of sensitivity of either the landscape itself or the receptor seeing the view subject to change, and an assessment of the magnitude of change on that zone or view. The resulting sensitivity and magnitude ratings are then combined to generate an overall impact rating using the impact grading matrix (refer to **Table 3-1**).

The assessment rating generated by the impact grading matrix does not contain a value judgement regarding the nature of the change (i.e. if the change is a positive or negative impact on the landscape character or on the views seen by receptors).

Landscape character impact assessment

Landscape character impact assessment helps to determine the potential impact of a project on an area's overall character, including built, natural and cultural aspects of that landscape. This assessment has considered the impact of the project on the landscape character within the study area rather than the project area only, as the project has the potential to impact an area greater than the project area.

Five existing LCZs, each of which share broadly the same characteristics or spatial qualities, were identified within the study area (refer to **Section 3.3.3.1** and **Figure 5-1** to **Figure 5-5**):

- LCZ 1: Recreational Open Space;
- LCZ 2: Infrastructure Corridor;
- LCZ 3: Mixed Residential Development;
- LCZ 4: Industrial Development; and
- LCZ 5: Commercial Development.

Overall, the landscape surrounding the project area predominantly comprises Mixed Residential Development (LCZ 3), being mostly low density residential lots with detached dwellings. A few large areas of Industrial Development (LCZ 4) are located at Bankstown/Chullora, Greenacre,

Marrickville/Sydenham and St Peters. Recreational open space areas comprise linear parks and reserves along creek corridors and isolated parks. The largest linear area of Recreational Open Space (LCZ 1) is associated with the Cooks River (Precincts 2 and 3), and the largest isolated park is Sydney Park (Precinct 5), while the Canterbury Racecourse and Canterbury Park are also large recreational areas, although the racecourse is privately owned land. Other isolated parks of different sizes (although typically smaller in size) are scattered throughout Mixed Residential Development (LCZ 3). Infrastructure Corridors (LCZ 2) are predominantly made up of road and rail, but with a large area in Precinct 1 associated with Sydney Water infrastructure. Commercial Development (LCZ 5) is generally clustered along major roads.

The project would have the greatest impact on landscape character during the construction period, as much of the construction activity is uncharacteristic of the LCZs in the study area. This is particularly true within the most sensitive LCZ (Recreational Open Space (LCZ 1)), where there is a high scenic quality to the landscape and where construction work (including night lighting) would be atypical within the LCZ. However, the construction period is short-term (up to two years at construction laydown areas) and in most cases the impact on landscape character is reduced during operation. The work sites make up only a very small proportion of the overall LCZs within the study area, and although in some instances they may change the character of the immediate area surrounding the project, the impact on the overall character of the LCZs are limited.

The greatest potential impact of the project on landscape character during operation would be due to the potential removal of street trees during construction, which in some areas would alter the character of the LCZ to varying degrees, depending on the size and character of the individual LCZs and the number, area and type of trees to be removed. Where possible, suitable replacement trees would be planted, which would assist in reducing the potential impacts of the project. Cable bridges are also a source of permanent change within the landscape, however, as there are only up to three proposed, and they would be adjacent to existing bridges, the cable bridges would not change the landscape character of the LCZs.

Visual impact assessment

For the purpose of this assessment, the project has been split into two parts for discussion:

- the transmission cable route, which describes the permanent linear position of the transmission cable circuit and the associated joint bays, underboring and cable bridges; and
- the construction laydown areas, which are discrete locations used during the construction period, for up to two years.

The proposed transmission cable route is located predominantly within road reserves, with up to three potential cable bridges required.

Built form within the project area predominantly comprises low density residential housing (both attached and detached) with some industrial complexes to the west and some higher residential apartment blocks scattered along the route

Within the road reserve, the visibility of the construction activity would be fairly contained, with views to the works limited to within the built form on either side of the road, and along the road itself. The roads within the study area are predominantly flat to gently undulating. There are no areas where significant views to the surrounding landscape (or views back from the surrounding landscape) are seen from a vantage point.

There are few areas where views to the project area are not contained by the built form on either side of the road reserve. This typically occurs where the transmission cable route passes directly next to green open space, such as Allum Park in Greenacre, Gough Reserve and Yeo Park in Hurlstone Park, Enmore Park in Enmore, Camdenville Park and Sydney Park in Alexandria. Views to the project from within these parks is limited by vegetation and landform.

Visibility of the proposed cable bridges, which would be located adjacent to existing pedestrian and vehicular bridges and would cross rail corridors or watercourses, would vary at each location. Views to bridges are sometimes limited by the visual containment of the crossing point. For example, where a road bridge crosses a rail corridor, the bridge deck is visible to traffic passing over it, but views to the

bridge from below (i.e. from within the rail corridor) are limited by the difference in grade between the rail corridor and the surrounding landscape, and by fringing vegetation along the rail corridor which screens views into the corridor. Views to the crossing structures would be most accessible where public open spaces are associated with the bridges, for example at the crossing point of the Cooks River and at Camdenville Park, St Peters.

The transmission cable route is positioned outside the road reserve in a few locations, where it crosses Lees Park, Camdenville Park and at Sydney Park. At Lees Park the project would be seen from within the park itself and from the surrounding road reserve, with Hay and Harmony streets fringed with residential development. Camdenville Park experiences a similar situation, with the project visible from within the park itself and from the surrounding road reserve (i.e. May and Council streets, fringed with residential development). Within Sydney Park, the project would be viewed from within the park by park users and from surroundings (including residential receptors). Both receptor groups would be sensitive considering the high scenic quality of these settings.

The construction laydown areas are visible from the surrounding landscape to varying degrees. The Rookwood Road and Beaconsfield West substations are also visible from the surrounding landscape to varying degrees but the proposed changes (both during construction and at operation) to the substations would occur within the substation boundaries, limiting the changes to visual amenity from surrounding areas.

Overall, the most sensitive OLs are those that are associated with public open space, i.e. public parks and reserves. The magnitude of change to views within and from these areas would be most affected when a construction laydown area is positioned within a park, as the character, land use and change in view to and within the park would be significantly different. However, as per the assessment of landscape character, the changes during the construction phase of the project are short-term, and in most cases the visual impact rating is reduced during operation, in many cases to Low.

The greatest potential operational impacts on views are due to the possible removal of street trees during construction and the installation of cable bridges. Where tree removal is required, this would affect views in almost all streets the transmission cable route passes, with the character of the streetscape of some streets with mature street trees or within heritage conservation zones more significantly affected than others. Opportunities to retain trees would be investigated during detailed design and construction. Tree replacement and augmentation planting within affected road reserve (where feasible) may, over time, reduce the visual impact of tree removal, although the speed at which the view would be improved depends on the growth rate of the tree species and the maturity (pot size) of the street trees replanted.

Mitigation measures

Several mitigation measures have been developed to reduce the potential impacts of the project on the landscape character of the project area and existing views to the project area.

During construction, screening and fencing around laydown areas should be thoughtfully designed giving consideration to the character of the local landscape.

Detailed design of bridge structures should further consider handrail, safety fencing and material to integrate the structures into their immediate surrounds. Landscaping to bridge abutment areas should be considered, to enable appropriate and targeted planting to replace removed vegetation and assist in mitigating the visual impact at these areas.

Conclusion

Overall, the project would have the greatest potential impact on landscape character and visual amenity during the construction period, as much of the construction activity is not consistent with the character of many of the LCZs and with views from many of the OLs. However, the impacts during the construction phase of the project are short-term.

The greatest potential impacts on views would arise from the potential removal of street trees and the introduction of cable bridges.

The proposed works at the substations are unlikely to result in adverse visual impacts.

1.0 Introduction

TransGrid is the manager and operator of the major high-voltage electricity transmission network in New South Wales (NSW) and the Australian Capital Territory (ACT). TransGrid is seeking approval under Division 5.2 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) for the construction and operation of a new 330 kilovolt (kV) underground transmission cable circuit between the existing Rookwood Road substation in Potts Hill and the Beaconsfield West substation in Alexandria (the project).

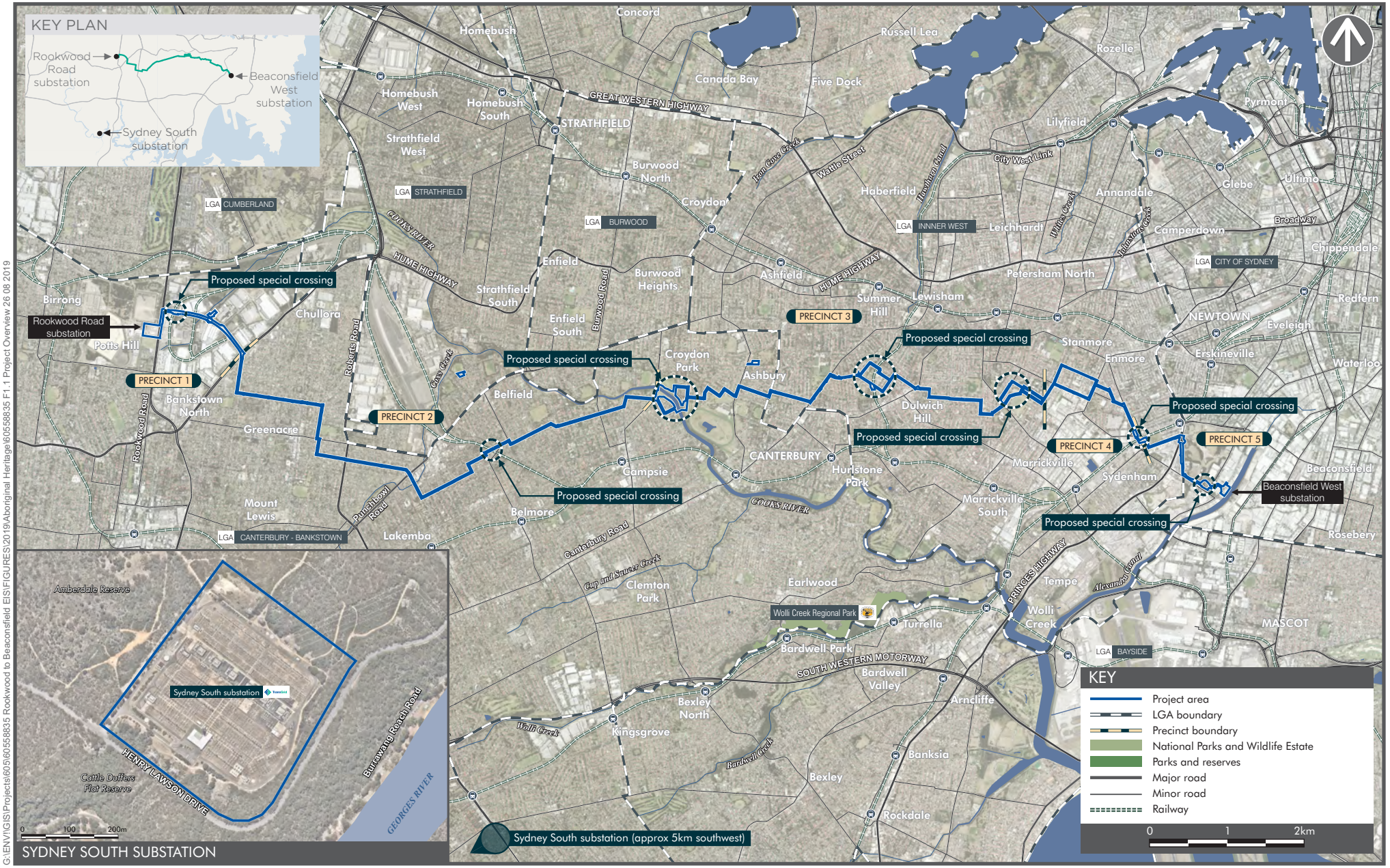
The project has been identified as a solution to address existing issues in the electricity supply network for inner Sydney, which is characterised by ageing and deteriorating electricity infrastructure and forecast increases in consumer demand.

As the project is State Significant Infrastructure under section 5.12 of the EP&A Act, an Environmental Impact Statement (EIS) has been prepared to assess the impacts of the project. This technical report has been developed in support of the EIS.

1.1 Project overview

The transmission cable route would be about 20 kilometres long and would generally be located within existing road reserves, at existing electrical infrastructure sites, within public open space and on previously disturbed areas as shown in **Figure 1-1**. The project would comprise the following key components:

- cable works connecting Rookwood Road substation with the Beaconsfield West substation;
- special crossings of infrastructure or watercourses;
- upgrade works at the Rookwood Road and Beaconsfield West substations;
- conversion works at the Beaconsfield West and Sydney South substations; and
- temporary construction laydown areas to facilitate construction of the project.



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PROJECT OVERVIEW

Powering Sydney's Future

Potts Hill to Alexandria Transmission Cable Project

Note: The project area is confined to the roadway reserve with the exception of parks and existing substations
Source: Department of Finance, Services and Innovation - Spatial Services (2018), Nearmap (2018)

FIGURE 1-1

1.2 Purpose of this technical report

This technical report has been prepared in accordance with the revised Secretary's Environmental Assessment Requirements (SEARs) issued for the project on 20 August 2019 by the Planning Secretary of the NSW Department of Planning, Industry and Environment (DPIE).

The SEARs relevant to this technical assessment are presented in **Table 1-1**.

Table 1-1 SEARs

SEARs		Section addressed
Visual amenity	• evaluate the visual impacts and urban design aspects of the proposal and its components focusing on above ground structures, including the built structures at Rookwood Road substation and Beaconsfield West substation and any bridging structures;	**Sections 5.0** and **6.0**
	• an assessment of the likely visual impacts of the project on residences in the vicinity of the project, key vantage points in the public domain, streetscapes, public open space, key sites and buildings, heritage conservation areas, State and local heritage items, and the local community; and an assessment of the likely impacts on street trees and public open space; and	**Section 6.0**
	• measures to be implemented to replace and enhance the visual and public amenity impacts.	**Section 8.2**

2.0 Description of the project

2.1 Project components

Key components of the project are listed below. A detailed description of the project is provided in **Chapter 4 Project description** of the EIS:

- cable works connecting Rookwood Road substation with the Beaconsfield West substation comprising:
  - a 330 kV underground transmission cable circuit comprising three cables installed in three conduits;
  - another set of three conduits for a possible future 330 kV transmission cable circuit if it is required;
  - four smaller conduits for carrying optical fibres;
  - around 26-30 joint bays, per circuit, where sections of cable would be joined together, located approximately every 600-800 metres along the transmission cable route;
  - link boxes and sensor boxes associated with each joint bay to allow cable testing and maintenance;
  - optical fibre cable pits for optical fibre cable maintenance;
- seven special crossings of infrastructure or watercourses including two rail lines (at Chullora and St Peters), one freight line (Enfield Intermodal, Belfield), one light rail line (at Dulwich Hill), the Cooks River and its associated cycleway (at Campsie/Croydon Park), a playground (at Marrickville) and the southern wetland at Sydney Park (at Alexandria);
- upgrade works at the Rookwood Road and Beaconsfield West substations to facilitate the new 330 kV transmission cable circuit;
- conversion works at the Beaconsfield West and Sydney South substations to transition the existing Cable 41 from a 330 kV connection to a 132 kV connection; and
- five temporary construction laydown areas to facilitate construction of the project.

Associated works required to facilitate the construction of the project, such as potential utility relocations, have been considered. No major relocations are anticipated and where smaller services may need to be moved to accommodate the transmission cable circuit, this relocation would be restricted to within the project area assessed in this EIS.

The project does not include the cable pulling and jointing works for the possible future second transmission cable circuit. This activity, should it be required, would be subject to separate assessment and approval as per the requirements of the EP&A Act.

Several route options and alternative construction methods are being considered as part of the project. These are described further in **Section 2.4**.

2.2 Project location

The project would be located in the suburbs of Potts Hill, Yagoona, Chullora, Greenacre, Lakemba, Belmore, Belfield, Campsie, Croydon Park, Ashbury, Ashfield, Dulwich Hill, Marrickville, Newtown, St Peters, Alexandria and Picnic Point in the following local government areas (LGAs):

- City of Canterbury-Bankstown;
- Strathfield;
- Inner West; and
- City of Sydney.

The location of the project is shown in **Figure 1-1**.

The project would be located primarily within road reserves, at existing electrical infrastructure sites, within public open space and on previously disturbed areas. The project has been and would continue to be designed to avoid impacts on private property and open spaces where possible; however, there would be a need for both the use of public open space and easements over some private commercial properties due to significant existing constraints within the road reserve. Land uses adjacent to the road reserves in which the project would be located are mainly residential, with relatively short sections of commercial and mixed uses in the suburbs of Dulwich Hill and Petersham. The project would be located close to industrial areas at the western and eastern ends of the project around Potts Hill, Chullora, Greenacre, Marrickville, St Peters and Alexandria. The existing Sydney South substation at Picnic Point is surrounded by the Georges River National Park.

The location of the proposed special crossings is provided in **Table 2-1**.

Table 2-1 Location of proposed special crossings

Location	Crossing type	Infrastructure or watercourse crossed
Muir Road, Chullora	Cable bridge	Rail line
Enfield Intermodal, Belfield	Underbore	Freight rail line
Cooks River, Campsie/Croydon Park/Ashbury	Cable bridge or underbore (preferred)	Cooks River and cycleway
Arlington Light Rail Station, Dulwich Hill	Underbore	Dulwich Hill light rail line or station
Amy Street, Marrickville	Underbore	Playground near Henson Park
Bedwin Road, St Peters	Cable bridge	Rail line
Sydney Park, Alexandria	Underbore	Wetland

2.3 The project area

The project area comprises the overall potential area of direct disturbance by the project, which may be temporary (for construction) or permanent (for operational infrastructure) and extend below the ground surface. It includes all options under consideration for the project, as described in **Section 2.4**.

The project area includes the location of operational infrastructure and construction work sites for:

- the transmission cable route (including the entire road reserve[1] of roads traversed);
- special crossings of infrastructure or watercourses;
- substation sites requiring upgrades (noting that all works would be contained within the existing site boundaries); and
- construction laydown areas.

While the boundaries of the project area represent the physical extent of where project infrastructure may be located, or construction works undertaken, it does not mean that this entire area would be physically disturbed or that indirect impacts would not be experienced beyond this area. Should the project be approved, the detailed design would aim to refine the location of project infrastructure and work sites within the boundaries of the project area assessed in this EIS.

There is a possibility that to minimise impacts on other utilities or transport corridors (roads and rail), that deviations from the assessed project area may be required. In this event, specific impacts of this approach would be assessed further. Future changes to the project may require additional

[1] Road reserve is defined as the area comprising roads, footpaths, nature strips and public transport infrastructure (including indented bus bays, bus shelters and bus stop signage).

assessment and approval as described in more detail in **Chapter 5 Statutory planning and approval process** of the EIS.

The location of joint bays and the location of the transmission cable circuit within the road reserve (e.g. kerbside or non-kerbside) is yet to be determined and is subject to detailed design.

2.4 Options under consideration

The project includes route options and alternative construction methods in locations as outlined below and shown in Figure 4-6 in **Chapter 4 Project description** of the EIS. As the project design develops, a preferred option would be selected for each location. However, approval may be sought for some options where further design and engineering information is required before a preferred option can be selected.

The project options are discussed below by geographical area, from west to east.

2.4.1.1 Cooks River

There are three options for the transmission cable route in the vicinity of the Cooks River at Campsie/Croydon Park and two options for special crossing methods, including:

- Option 1: the transmission cable route travels in a southeasterly direction along Cowper Street from the intersection with Brighton Avenue, Campsie and then east on Lindsay Street. At the cul-de-sac at the end of Lindsay Street, there are two special crossing options of the Cooks River into Lees Park before the transmission cable route continues on to Harmony Street, Ashbury:
  - Option 1a: construct a cable bridge parallel to and to the north of the existing Lindsay Street pedestrian bridge; or
  - Option 1b: install the conduits under the Cooks River via underboring (this is the preferred option); or
- Option 2: the transmission cable route travels in a northeasterly direction from Byron Street at the intersection with Brighton Avenue, Campsie, through Mildura Reserve. From this parkland, the conduits would be underbored beneath the Cooks River, surfacing in Croydon Park near the cul-de-sac of Croydon Avenue in Croydon Park. The transmission cable route then travels north along Croydon Avenue, east along Dunstan Street, and south along Hay Street, before continuing east along Harmony Street; or
- Option 3: the transmission cable route travels in an easterly direction from Byron Street at the intersection with Brighton Avenue, Campsie, then in a southeasterly direction through Mildura Reserve, between residences and the Cooks River until the cul-de-sac at Lindsay Street. From here, there are two special crossing options of the Cooks River into Lees Park before the transmission cable route continues on to Harmony Street, Ashbury, which are the same for Option 1:
  - Option 3a: construct a cable bridge parallel to and to the north of the existing Lindsay Street pedestrian bridge; or
  - Option 3b: install the conduits under the Cooks River via underboring.

A description of the cable bridge and underboring methods is provided in **Section 2.5**, with further detail in **Chapter 4 Project description** of the EIS.

2.4.1.2 Dulwich Hill light rail corridor

There are two options for the transmission cable route crossing of the Dulwich Hill Light Rail corridor in the vicinity of the Arlington Light Rail station, Dulwich Hill. This includes:

- Option 4a: the transmission cable route travels northeast along Windsor Road from the intersection with Arlington Street, then east on Terry Road. At the Terry Road cul-de-sac, the conduits would be underbored beneath the rail corridor, surfacing at the Hill Street cul-de-sac. From here the transmission cable route continues along Hill Street to Denison Road; or
- Option 4b: the transmission cable route travels southeast along Constitution Road from the intersection with Arlington Street, before crossing into the southern end of Johnson Park. From

here, the conduits would be underbored beneath the rail corridor near the Arlington light rail station. The transmission cable route then continues along Constitution Road and then north on Denison Road.

2.4.1.3 Henson Park

There are two options for the transmission cable route crossing in the vicinity of Henson Park, Marrickville including:

- Option 5a: the transmission cable route continues northeast on Centennial Street to a car park. From here it travels in an easterly direction through a grassed verge between the tennis courts and Henson Park oval to near the Amy Street playground. The conduits would be underbored beneath the playground, surfacing at Amy Street. The transmission cable route then turns east on to Horton Street; or
- Option 5b: the transmission cable route travels north on Sydenham Road from Centennial Street, turning northeast on to Neville Street, then southeast on Surrey Street to Amy Street before continuing along Charles Street.

2.4.1.4 Marrickville

There are two options for the transmission cable route in the vicinity of Addison Road, Marrickville. Note that the project may include one or both options at this location including:

- Option 6a: the transmission cable route travels north along Agar Street from the intersection with Illawarra Road, then east on to Newington Road and south down Enmore Road to the intersection with Scouller Street; and/or
- Option 6b: splitting the two circuits as there is insufficient space along Addison Road to accommodate both circuits. One circuit would travel along Newington Road (as for Option 6a) and one circuit would travel east on Addison Road from the intersection with Illawarra Road, then north on Enmore Road to the intersection with Scouller Street.

2.5 Construction works

Construction activities would be limited to the identified project area and include the activities summarised in **Table 2-2**. A substantial portion of the transmission cables would be installed using pre-laid conduits. The conduits would only require the excavation of short sections of trench at a time (an average of 20 metres at any one location), with backfilling occurring as soon as each section of the conduits has been installed. Depending on the overall construction program and associated number of work crews required, it is expected that trenching and excavation would occur concurrently at multiple work sites along the transmission cable route.

The project would involve the construction of seven special crossings that would involve either the installation of a cable bridge or underboring (i.e. an underground crossing). Works for these crossings would be undertaken in coordination with the relevant asset owner (e.g. road or rail authorities).

The construction of the project would require a number of work sites along the transmission cable route and at special crossings. Each work site represents an area of disturbance required to undertake the construction activity (e.g. trenching, cable bridge installation, underboring) and would be located within the project area.

Table 2-2 Summary of construction activities

Construction activity	Description
Site preparation	• implementation of traffic management changes (such as safety barriers and road signage) to facilitate access and egress to/from the work sites; • installation of environmental control measures (such as sediment barriers); • vegetation clearing and tree removal, where required; • establishing construction laydown areas and ancillary facilities including temporary offices and worker amenities, site fencing and provision of power/services; and • delivery and storage of plant and equipment at construction laydown areas and work sites.
Trenching and excavation	• clearing of surface vegetation along excavation area if required; • saw cutting of the road surface/pavement and lifting this material using a backhoe/front end loader. If rock is encountered, a rock breaker may be used to loosen the material; • removal of material down to the base of the trench using an excavator and placement of spoil directly onto trucks to be transported to a licensed facility. The trench would typically be around 3 metres wide and 1.2 metres deep but could be deeper or shallower depending on the presence of utilities; and • installation of shoring as a precaution against slump or collapse where necessary, particularly where deeper sections of trench are required (i.e. deeper than 1.4 metres).
Relocation of minor utilities/services	• use of non-destructive digging methods to expose buried services to guide the excavator; and • minor relocations, if required, would occur within the road reserve and be subject to consultation with the relevant asset owner/operator.
Conduit installation and backfilling	• laying the transmission cable conduits on plastic spacers to provide the required clearance from the side walls and bottom of the trench; • placing the optic fibre communication cable conduits into position; • backfilling the trench with engineered backfill; • laying of polymeric covers and warning tape, marked with appropriate warnings in case of accidental excavation; and • installation of the road base and temporary restoration of the road surface to allow vehicles and other road users to travel across the area.
Excavation and establishment of joint bays	• excavation of joint bays via open trenching; • installation of erosion and stormwater flow controls and barriers; • erecting fencing or hard barriers as required; • provision for vehicle access, worker amenities and equipment storage; • temporary covering with steel plates to provide access to adjacent properties where required; and • excavation of nearby pits to facilitate the installation of link and sensor boxes.
Cable pulling and jointing	• installation of a tent or demountable building over the joint bay to provide a controlled work environment and dry work site; • pulling cables through the conduits which is fed from large drums holding 600-800 metres of cable; and • connecting sections of cables at the joint bay.

Construction activity	Description
Permanent road restoration	• removing the temporary road surface; • backfilling with road base up to surface level, where required; • reinstating pavement; and • reinstating the remaining areas that were excavated with spoil or other fill material to pre-construction levels and final finishing to match existing as appropriate (e.g. footpath and/or kerb and gutter) or as otherwise agreed with the relevant roads authority.
Cable markers	• once restoration activities have been completed, cable markers would be installed along the transmission cable route to give warning of the presence of the cables and the need to make enquiries before digging; • markers may include: - small signs attached to road kerbs; - concrete marker posts (between 800-900 millimetres tall) along the transmission cable route in vegetated areas where surface markers would be difficult to see; or - flush-markers constructed of concrete that are around 50-100 millimetres thick.
Cable bridges	• establishment of the work site and access including vegetation clearing (where required); • boring and earthworks for the bridge piers; • installation of the pre-cast cable bridge and steel cage (where required) by crane; • integration with the conduits in the road reserve; and • reinstatement of the work site.
Underboring	• underboring around 4 to 10 metres below the ground surface by either thrust boring or horizontal directional drilling (HDD); • thrust boring would require a launch pit (at least 4 m metres deep) and associated work site of up to around 800 square metres and a receive pit and work site of about 100 square metres; • HDD would require a work site at the drill launch area of up to around 800 square metres and a receive pit for the drill exit of around 1.5 metres deep; and • work sites would be restricted to the road reserve and public open space areas where feasible and reasonable to limit the need for vegetation removal.
Substation upgrades	• site establishment; • earthworks and excavations needed for cable entries and footings for new equipment; • installation of new infrastructure (such as switchbays and busbars); • removal of redundant infrastructure; • installation and connection of new cables; • commissioning of cables; and • demobilisation.

2.5.1 Staging and timing of construction activities

An indicative duration of construction activities is provided in **Table 2-3**. The timing is subject to detailed design and the final construction approach. For example, some works, such as trenching and excavation, would be undertaken by multiple work crews working along the transmission cable route. Staging of activities outside of certain hours would also influence the construction approach.

Should the project be approved, construction is planned to occur over 24 months, commencing in 2020. It is estimated that around 15 months would be required for civil construction works and conduit

installation and about nine months for cable pulling and jointing, testing and commissioning. The transmission cable circuit is expected to be completed and commissioned in 2022/23.

Table 2-3 Indicative timing of typical construction activities

Construction activity	Indicative duration
Excavation, conduit (pipe) installation and trench backfilling	Conduits for each 600-800 metre cable section would take up to eight weeks to install (with most properties exposed to around two weeks of trench excavation activity).
Joint bay construction	Each individual joint bay would take up to three weeks to establish (in addition to trenching works). Each joint bay contains one cable circuit.
Cable pulling	Cable pulling at each joint bay for each 600-800 metre cable section would typically take up to two weeks to complete.
Cable jointing	Cable jointing would typically take up to three weeks to complete at each joint bay.
Cable bridges	Each cable bridge crossing is expected to take around 10 weeks to complete in total, however works would be staged and not continuous over the 10 week period.
Underboring	Each underboring crossing is expected to take around eight to 10 weeks to complete in total, however works would be staged and not continuous over this period.
Substation works	Construction works at the Rookwood Road substation is expected to take around four to six months, while works at the Beaconsfield West and Sydney South substations are expected to take around six to nine months at each site.

2.5.1.1 Construction hours

Construction works would be undertaken during standard daytime construction hours as specified in the *Interim Construction Noise Guideline* (DECC, 2009) where reasonable and feasible to do so. However, it is expected that works outside standard construction hours would also be required, as described below.

Standard construction hours are:

- Monday to Friday 7am to 6pm;
- Saturday 8am to 1pm; and
- No work on Sundays and public holidays.

It is likely that construction works would be required at night time (after 10pm) due to the requirements of relevant road and rail authorities. These works could include, but are not limited to, works within major road reserves (i.e. on State and regional roads such as Rookwood Road and Old Canterbury Road), through signalised intersections, or at special crossings. Work outside standard construction hours may be required for safety reasons and/or to limit disruption to road traffic and rail services.

Cable jointing works at each joint bay would need to be undertaken continuously i.e. 24 hours. Some works at the substation sites may also need to be undertaken outside of standard construction hours due to outage constraints on the existing infrastructure (i.e. the need to maintain power supply to customers).

Cable bridges and underboring at rail corridors would be timed with other rail works to limit disruption to freight and/or passenger rail services. These works could be undertaken outside of standard construction hours including at night time or over weekends, subject to approval of the relevant rail authority.

Scheduled construction activities, work hours and duration would be further refined through consultation with relevant government agencies and would be outlined in the CEMP for the project.

2.5.2 Construction precincts

The transmission cable route has been divided into five construction precincts to aid the characterisation of the existing environment and assessment of project impacts. These precincts broadly align with similar land uses. A description of each precinct follows:

- **Precinct 1** includes the areas between the Rookwood Road substation and the Hume Highway, including the industrial area of Chullora along Muir Road;
- **Precinct 2** includes the areas between the Hume Highway and Brighton Avenue near the Cooks River including the residential areas of Greenacre, Lakemba, Belmore, Belfield and Campsie;
- **Precinct 3** includes the areas from the Cooks River to Illawarra Road including the residential areas of Croydon Park, Ashbury, Ashfield, Dulwich Hill and Marrickville;
- **Precinct 4** includes the area between Illawarra Road and the Bankstown rail line including the residential areas of Marrickville, Enmore and Newtown; and
- **Precinct 5** includes the areas between the Bankstown rail line and the Beaconsfield West substation including the residential areas of St Peters and the recreational area of Sydney Park in Alexandria.

2.5.3 Construction laydown areas

As part of the construction of the project, temporary construction laydown areas would be required to store materials, equipment, excavated spoil and provide space for other ancillary facilities such as site offices. Five locations have been investigated as potential construction laydown areas. The final number and location is subject to ongoing consultation with the relevant landowners and would be determined during detailed design.

Stockpiling of excavated spoil at the construction laydown areas would be ongoing for the duration of the civil works (around 15 months). Stockpiling would be managed by erosion and sediment controls in accordance with *Managing Urban Stormwater: Soils and Construction* (Landcom, 2004) (The Blue Book).

While it is expected that construction would require the use of transportable roadside facilities for individual work sites, provision for temporary site offices would be located within construction laydown areas for the duration of construction (up to two years).

Construction laydown areas would be fenced and would have lighting for security and to facilitate night works.

Driveways may need to be created from gravel or similar material to enable heavy vehicles to enter/exit the site. At construction laydown areas at Cooke Park and Peace Park, extended driveways would be required to access the laydown area. The construction of these driveways would require ground disturbance and potentially tree removal.

Temporary infrastructure at the construction laydown areas, including noise mitigation controls (such as hoardings), driveways and stockpile areas, would involve minimal subsurface ground disturbance (i.e. excavation) and would be removed once construction is complete.

For works at the Rookwood Road and Sydney South substation sites, sufficient space exists at each location to store materials and equipment; therefore, no additional laydown areas would be required.

The proposed locations and area required for the five potential construction laydown areas are listed in **Table 2-4**.

Table 2-4 Potential construction laydown areas

Potential construction laydown area	LGA	Potential area (hectares)
12 Muir Road, Chullora	City of Canterbury-Bankstown	0.48
Cooke Park, Belfield	Strathfield	0.37
Peace Park, Ashbury	Inner West Council	0.45

Potential construction laydown area	LGA	Potential area (hectares)
Camdenville Park, St Peters	Inner West Council	0.18
Beaconsfield West substation, Alexandria	City of Sydney	0.85

2.6 Cable operation and maintenance

Once the transmission cables have been installed, generally only visual inspections would be required. This would involve regularly driving along the transmission cable route to check for hazards or activities (such as excavation works in the vicinity) that could impact the underground cables or cable bridges. Ongoing physical access to the transmission cables is not required however ongoing monitoring of the cable for damage (missing/worn cable markers) and outages would occur. This would be through access to the link boxes and sensor boxes located near the joint bays. Optical fibre cables installed alongside the transmission cables would be monitored at the optical fibre cable pits.

Pits for link and sensor boxes and optical fibre cables would generally be located in the footpath/road verge but in some cases where there is insufficient space, they may be required in the roadway. Roadway access would be managed with standard traffic controls.

Regular checks of the pits would ensure they are accessible and that the pit does not contain water or tree roots. Cable bridge structures would be inspected to ensure structural integrity and aesthetics are being maintained.

2.7 Other relevant technical information

2.7.1 Site access and traffic movements

Access for heavy vehicles would be required throughout the project area. The standard of access along the transmission cable route would be sufficient to permit passage of excavators, spoil haulage trucks, concrete trucks, low loaders and mobile cranes. The estimated vehicle movements required for construction is outlined in **Table 2-5**. The vehicle numbers estimated do not include private vehicles used by the workforce to arrive at the work site, or traffic management vehicles. The vehicle numbers for the 'transmission cable circuit' assume four work crews operating concurrently at multiple locations within the project area. The final number of work crews, materials and vehicle movements would be determined during detailed design and construction planning.

Table 2-5 Anticipated vehicle movements

Location	Activity	Number of vehicle movements per day
Construction laydown areas	Delivery/pickup of plant and materials, spoil transfer	Vehicle movements per construction laydown area, per day: • Light: 3-4 • Heavy: 12
Transmission cable circuit – trenching and joint bay excavation	Delivery of plant and materials, removal of spoil, general construction	Vehicle movements for four work sites, per day: • Light: 16 • Heavy: 96
Special crossings	Delivery of plant and materials, removal of spoil, general construction	• Light: 10-12 • Heavy: 8-10
Substation upgrade – Rookwood Road	Delivery of plant and materials, removal of spoil	• Light: 3-4 • Heavy: 4
Substation upgrade – Beaconsfield West	Delivery of plant and materials, removal of spoil	• Light: 3-4 • Heavy: 4
Substation upgrade – Sydney South	Delivery of plant and materials, removal of spoil	• Light: 5-6 • Heavy: 6

Equipment and materials would be held in storage at the laydown areas until needed and delivered to the relevant work sites. Larger plant and cable materials may be delivered at night to avoid disrupting daytime traffic. Materials such as the cable drums may be temporarily stored near the trench and would be securely stored and barricaded.

Where the trench intersects another road or access to properties is required to enable construction works, vehicle and pedestrian passage would be restored as soon as possible after excavation has passed the intersection or access point.

2.7.2 Night lighting

Along the transmission cable route, construction work undertaken outside of standard construction hours would include works within road reserves, in the vicinity of signalised intersections, where activities need to proceed continuously (such as with cable jointing), or where there is a need to conduct work outside of standard construction hours for safety and traffic management reasons.

Some works at the substation sites may also need to be undertaken outside of standard construction hours due to outage constraints on the existing infrastructure (i.e. the need to maintain power supply to customers).

Some construction laydown areas would also need to be operational at night to facilitate works outside of standard construction hours or accept deliveries (where truck movements are required to be made during hours were traffic is at a minimum).

All night works would require night lighting at select locations along the transmission cable route, at construction laydown areas and at the substations.

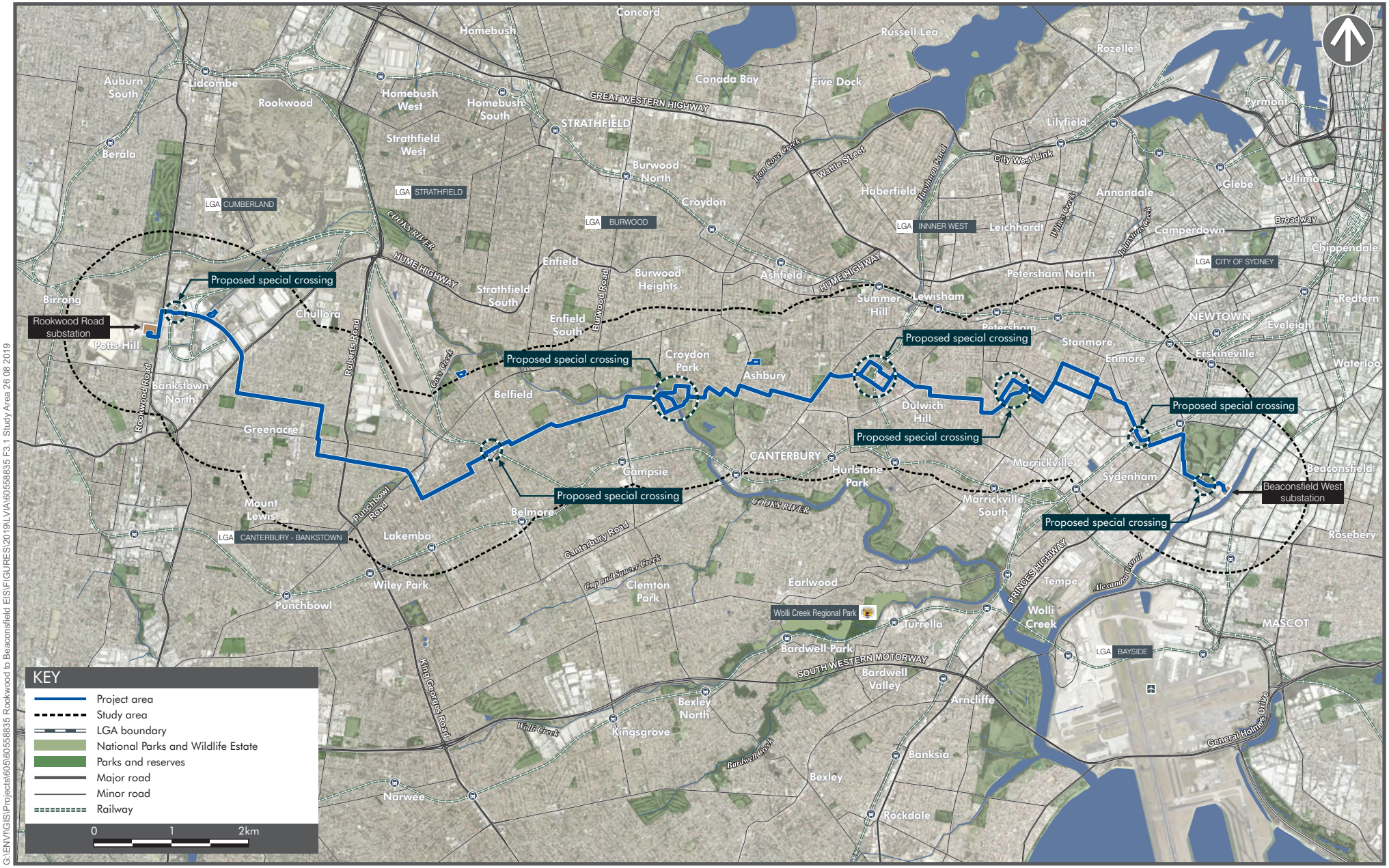
3.0 Assessment methodology

3.1 Study area

As described in **Section 2.3**, the project area includes the transmission cable route (including special crossings), the substation upgrades and the construction laydown areas.

The visibility of the proposed transmission cable circuit is typically limited to within a narrow corridor around 200 metres either side of the transmission cable route along the road reserve and for short distances along some of the intercepting roads. The construction laydown areas are visible from the surrounding landscape to varying degrees. The three substation sites are also visible from the surrounding landscape to varying degrees, although the changes to the Sydney South substation would not be visible due to the lack of public walking tracks close to the substation within the Georges River National Park.

The study area is a two kilometre wide corridor offset one kilometre from either side of the transmission cable route (refer to **Figure 3-1**). This encapsulates the project area and enough of the surrounding landscape to capture both landscape and visual impacts of the project. Construction laydown areas that fall outside this two kilometre wide corridor have also been included in the assessment. Sydney South substation has been excluded from the assessment as the changes to visual amenity at this location are considered to be negligible as the site would not be visible from public walking tracks.



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STUDY AREA

Powering Sydney's Future

Potts Hill to Alexandria Transmission Cable Project

Note: The project area is confined to the roadway reserve with the exception of parks and existing substations

Source: Department of Finance, Services and Innovation - Spatial Services (2018), Nearmap (2018)

FIGURE 3-1

3.2 Statutory context, policy and guidelines

This section provides an overview of the statutory planning context for the project, including relevant objectives and priorities of the NSW government, and planning controls which shape the existing, and future environment.

3.2.1 Local planning instruments

The project area covers four Local Government Areas (LGAs), which are:

- Canterbury-Bankstown;
- Strathfield;
- Inner West; and
- City of Sydney.

The relevant Local Environment Plans (LEPs) which apply to the project are:

- Bankstown LEP 2015;
- Canterbury LEP 2012;
- Strathfield LEP 2012;
- Ashfield LEP 2013;
- Marrickville LEP 2011; and
- Sydney LEP 2012.

The project area covers several zones including residential, industrial, business, public open space and infrastructure. The LEPs also identify heritage items and Heritage Conservation Areas (HCAs), and include development controls to protect their values and significance.

The LEPs do not provide specific controls regarding the consideration of landscape and visual impact assessment, although aims in most of the LEPs include the protection of environmental qualities.

The Development Control Plans (DCPs), which provide more detailed design guidance for each of the LEPs, generally require consideration of the existing and proposed landscape quality associated with proposed development, in particular, protection of significant landscape elements and trees (including street trees). The Burwood DCP includes specific provisions for the consideration of views and vistas as well.

More detailed information about the planning controls applicable to this project is provided in **Chapter 5 Statutory planning and approval process** of the EIS.

3.3 Approach and methodology

This landscape character and visual impact assessment has been developed in accordance the *RMS Environmental Impact Assessment Practice Note – Guideline for Landscape Character and Visual Impact Assessment* (Reference number EIA-N04, 2013), which is a method widely accepted by NSW Government authorities. During the preparation of the assessment, the RMS Landscape and Visual Impact Assessment Guideline was updated (EIA-N04, Dec 2018), however this assessment is predominantly based on the 2013 guideline. Further, the *Guidelines for Landscape and Visual Impact Assessment, Third Edition (2013)*, developed by the Landscape Institute and Institute for Environmental Management (United Kingdom), has also been referred to for further detailed guidance in some instances, given this is a key reference document used in the RMS guideline.

Landscape character impact assessment helps to determine the impact of a project on an area's overall character, including built, natural and cultural aspects of that landscape while visual impact assessment helps to determine the impact of a project on the views experienced to the project from surrounding viewpoints or Observer Locations (OLs).

The landscape character and visual impact of the project has been assessed using the following general methodology:

- Desktop analysis to identify the existing environmental conditions, draft Landscape Character Zones (LCZs) and OLs;
- definition of a range of criteria against which the relative importance of each LCZ and OLs can be assessed;
- visual inspection of the project area to verify findings of the desktop assessment and obtain photographs from OLs identified for the project, photography for the production of any visual simulations are taken at this point, refer to **Section 6.3**;
- description of the existing site context, including:
  - overall landscape character;
  - unique landscape character within the site boundary;
  - any site-specific elements (for example HCAs and heritage items, local landmarks, areas of environmental importance);
- description of the visibility of the project within the defined project area (refer to **Section 3.3.4.1**);
- production of visual simulations to assist in assessment of identified areas (refer to **Section 3.3.2**);
- assessment of the landscape character and visual impacts of the project using an impact grading matrix that combines sensitivity and magnitude ratings to determine the extent of the impact (refer to **Sections 3.3.3.2** and **3.3.4.2**); and
- recommendation of mitigation measures where landscape character or visual impacts have been identified in the higher range, and/or impacts could be mitigated in some way through landscape design, planting, or minor project design modification.

The impact of the project on landscape character and views (visual impact) comprises an analysis of sensitivity of either the landscape itself or the receptor seeing the view is subject to change and an assessment of the magnitude of change on that zone or view. The resulting sensitivity and magnitude ratings are then combined to generate an overall impact rating using the impact grading matrix in **Table 3-1**. Refer to **Section 3.3.1** for a description of the method to assess impact to landscape character and **Section 3.3.4** for a description of the assessment method for visual impact.

The assessment rating generated by the impact grading matrix does not contain a value judgement regarding the nature of the change (i.e. if the change is a positive or negative impact on the landscape character or on the views seen by receptors).

Table 3-1 Landscape character and visual impact grading matrix

		Magnitude			
		High	**Moderate**	**Low**	**Negligible**
Sensitivity	**High**	High	High - Moderate	Moderate	Negligible
	Moderate	High - Moderate	Moderate	Moderate - Low	Negligible
	Low	Moderate	Moderate - Low	Low	Negligible
	Negligible	Negligible	Negligible	Negligible	Negligible

3.3.1 Assessment assumptions

The following 'worst case scenario' assumptions regarding the requirement for night lighting have been listed below for the purposes of this landscape character and visual assessment. These assumptions are theoretical only and would not be the case in many situations along the transmission cable route or at every construction laydown area:

- all road reserves situated along the transmission cable route would at some point require night lighting during the construction period;
- night lighting in road reserves would comprise low, temporary flood lighting to illuminate areas of construction activity;
- all construction laydown areas would be lit at night at least during part of the construction period, but as a worst case during the entire construction period (up to two years);
- lighting of the construction laydown areas would comprise high flood lighting positioned around the perimeter of the construction laydown areas, and pointing into the compound; and
- fencing around construction laydown areas would comprise temporary mesh fencing covered with shade cloth, or painted timber hoarding where required, or similar.

Regarding tree removal, this assessment has assumed that along the transmission cable route, street trees along roadways would be removed down one verge, to accommodate the transmission cable within the road reserve.

Tree removal and replacement (including species choice) would be dependent on the position of the transmission cable circuit within the road reserve. Where the transmission cable circuit passes within the middle of the road pavement (i.e. avoiding the road verges), trees would be less affected by the project, and where trees are required to be removed, their replacement would be more likely. Opportunities to retain trees would be investigated during detailed design and construction. Trees may also be replaced in other suitable locations, where feasible, in consultation with the local council and other relevant stakeholders.

3.3.2 Photos and visual simulations

Photographs, panoramas (a series of photographs stitched together to show a view) and visual simulations have been used to assist in the analysis of the proposed changes to the surrounding landscape as a result of the project.

Visual simulations are a type of photomontage which provide the most accurate representation of relative position and size of the project from several given OLs where visible infrastructure would remain during operation. These simulations were therefore limited to locations where cable bridges would be installed and remain during operation of the project (i.e. permanent above ground infrastructure). Other infrastructure would be either installed below ground (for example cables), removed at the end of construction (construction laydown areas), or not be visible from publicly accessible places (for example changes to substations), and would not result in long term visual impacts.

A panorama of the view to the project area from each visual simulation location was created using spatial panoramic photography equipment that allows the creation of an image that approximates the primary human Field of View (FoV) i.e. 124 degrees horizontal x 55 degrees vertical. This is almost impossible to recreate with an individual camera frame due to the nature of human binocular vision. Typically, camera lenses will begin to distort the image once they go beyond 90 degrees. It is therefore required that multiple images are taken and stitched together to achieve the required FoV.

Using a 28 millimetre lens with FoV of 66 degrees x 46 degrees, three images in portrait orientation were taken and stitched together to get the required FoV. The panoramic equipment allows the rotation of the camera around the lens 'nodal point', resulting in an image with no distortion or parallax. Professional stitching software was then used to combine them, using multiple control points across the images to enable accuracy to within less than one pixel. The software also ensures that no rectilinear distortion or other artefacts are introduced into the image.

A 3D model of the project was created using the design drawings produced in AutoCAD which was inserted into the visualisation software along with the background image with a virtual camera. Virtual

cameras do not suffer the same distortion as real lenses because they are based on the scientific principles of a perfect lens. The virtual camera is set to the required FoV with no need for correction. Once the virtual and real cameras have been aligned, the image was rendered using a 3D model and photo editing software to combine the two into a seamless simulation.

3.3.3 Landscape character impact assessment method

Landscape character impact assessment helps to determine the impact of a project on an area's overall character, including built, natural and cultural aspects of that landscape. This assessment considers the impact of the project on landscape character within the study area rather than the project area only, as the project has the potential to impact an area wider than the project area.

3.3.3.1 Definition of landscape character zones

Landscape character assessment determines the overall impact of a project on the area's character. Existing LCZs were identified as sharing broadly the same characteristics or spatial qualities. These may include:

- planning designations;
- topographical qualities;
- natural drainage qualities;
- ecological characteristics/land cover;
- parks and open space;
- cultural and recreational characteristics;
- architecture and built form;
- spatial qualities; and
- infrastructure.

3.3.3.2 Sensitivity and magnitude

The sensitivity of a landscape is based on the extent to which it can accept change of a type and scale without adverse impacts upon its character or value. Sensitivity is based on:

- inherent landscape value, for example its condition, perceptual qualities and cultural importance; and
- likely congruency of the proposed change, i.e. the extent to which the project may 'fit' or be 'absorbed' into the landscape, for example in relation to line, colour, texture, form and scale.

The magnitude of change of landscape character depends on factors such as the extent of:

- loss, change or addition of any feature or element;
- change to the landscape itself or one nearby that affects its character; and
- the quality and extent of the concept design and potential mitigation measures, if adopted.

3.3.3.3 Impact assessment

The impact of the project on each LCZ was assessed using the impact grading matrix (refer to **Table 3-1**) by examining sensitivity and magnitude to give an impact rating between negligible and high. Professional judgement and experience are applied on a case by case basis to identify the quality of the change within each LCZ, that is, if the change to landscape character is a positive or negative impact, regardless of overall rating.

The impact of the project on each whole LCZ within the study area is considered rather than the impact at any one location, for example if the impact on recreational open space was being considered (which would be one LCZ unit), the impact on the overall character of the open space within the whole study area would be assessed, rather than the impact of the project on one park within that LCZ.

3.3.4 Visual impact assessment method

3.3.4.1 Identification of views/observer locations

Visual impact assessment defines the day to day visual effects of a project on receptors.

OLs were chosen to capture visual changes due to the project. These locations were chosen as they either:

- represented views from a typical location/situation affected by the project, for example a typical residential street along the transmission cable route; or
- represented views seen from an unusual location/situation affected by the project, for example where the project is positioned adjacent to a school or within a park or place with heritage significance.

Only publicly accessible OLs were selected, although the views from nearby private properties were approximated and discussed where relevant. At each OL, receptors were identified, and their potential views described. Within each OL, visual catchments (views) were often bounded by landform or landmarks, including intersections, cross streets, adjoining and nearby buildings, and bends in the road. They were defined using a combination of desktop analysis and on-site survey of the landscape.

Within these OLs the impact on views seen by receptors was assessed for both construction and operation (where relevant).

3.3.4.2 Sensitivity and magnitude

The sensitivity of visual receptors and views would be dependent on:

- location and context of the OL;
- expectations and activity of the receptor;
- type and number of receptors;
- importance of the view; and
- typical duration of viewing.

The most sensitive receptors may include:

- users of outdoor recreational facilities;
- communities where the project has the potential to result in changes in the landscape setting or valued views enjoyed by the community; and
- landowners and occupiers of residences with views affected by the project.

The magnitude of change on a view would depend on factors such as:

- the extent of visibility of the change;
- the scale, size and character of the project elements;
- the degree of obstruction of existing features;
- the degree of contrast with the existing view;
- the quality of the concept design and any mitigation measures recommended, if adopted;
- angle of existing view;
- the potential and typical duration of view; and
- distance from the project.

The magnitude of change can therefore range from a total view loss or significant change in the view (High), to no change (Negligible).

3.3.4.3 Impact assessment

The visual impact for each OL was assessed using the impact grading matrix (refer to **Table 3-1**), which examined the sensitivity of receptors against the magnitude of the change to give a combined impact rating between negligible and high. A higher impact rating indicates the likelihood of a visual change being detectable. Professional judgement and experience is applied on a case by case basis to identify qualitative levels of significance of the change in views for receptors.

3.4 Assessment of cumulative impacts

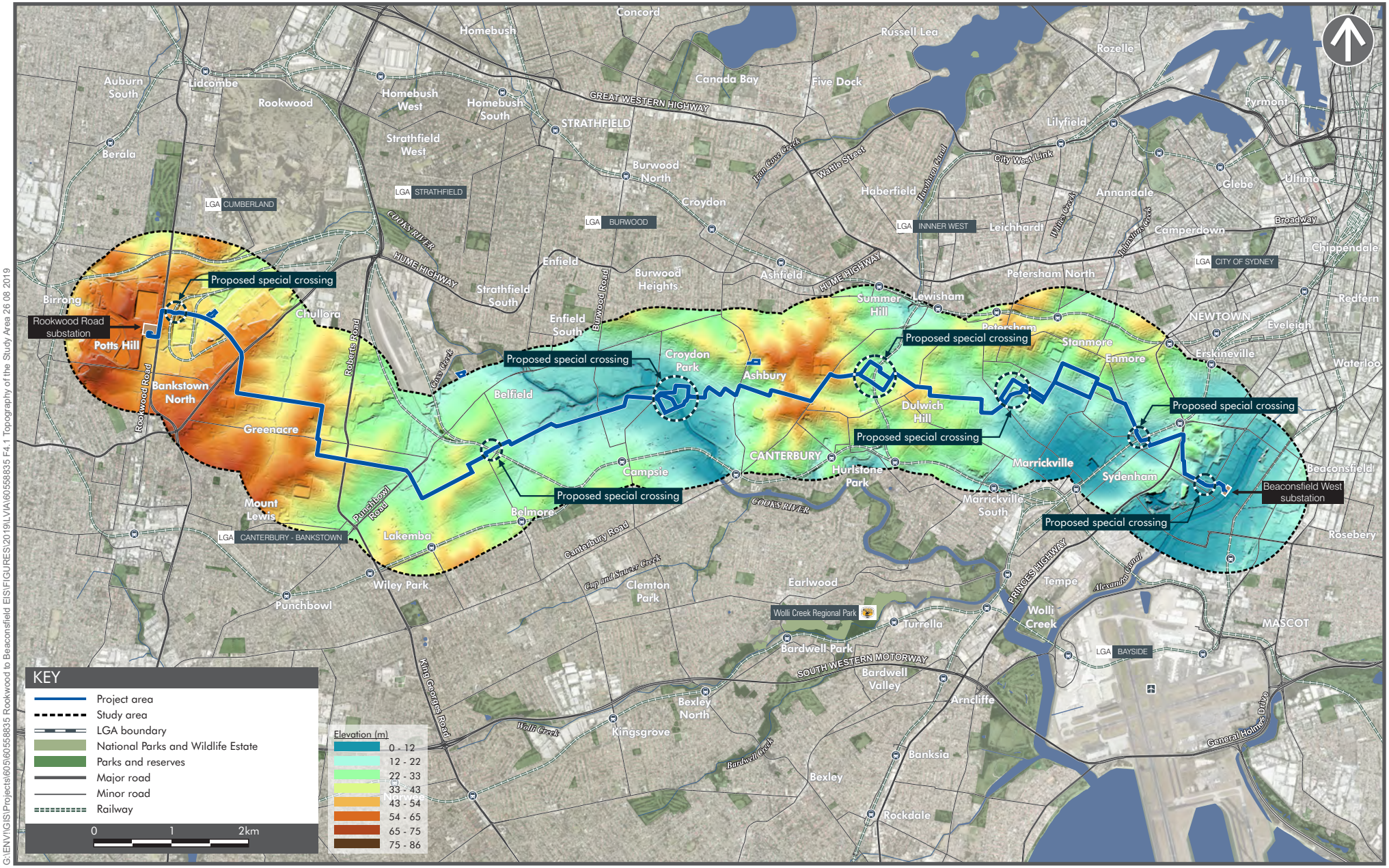
Infrastructure and urban transformation proposals planned within the study area (including their location in relation to the project area) during construction and operation of the project were considered to determine the likely cumulative impacts of these projects and the proposed project on the surrounding environment.

4.0 Description of the existing environment

4.1 Topography and hydrology

The topography of the surrounding landscape is reasonably flat to gently undulating, with more dominant landforms associated with creek lines and ridges within the study area (refer to **Figure 4-1** and **Figure 4-5**). The most notable of these are:

- the Hume Highway in Bankstown (at the western end of the transmission cable route between Precinct 1 and 2), which follows a ridgeline;
- the Cooks River at Croydon Park (in Precinct 3);
- a localised high point at Ashbury near Hanks Street (Precinct 3); and
- the Alexandra Canal (Precinct 5).



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TOPOGRAPHY OF THE STUDY AREA

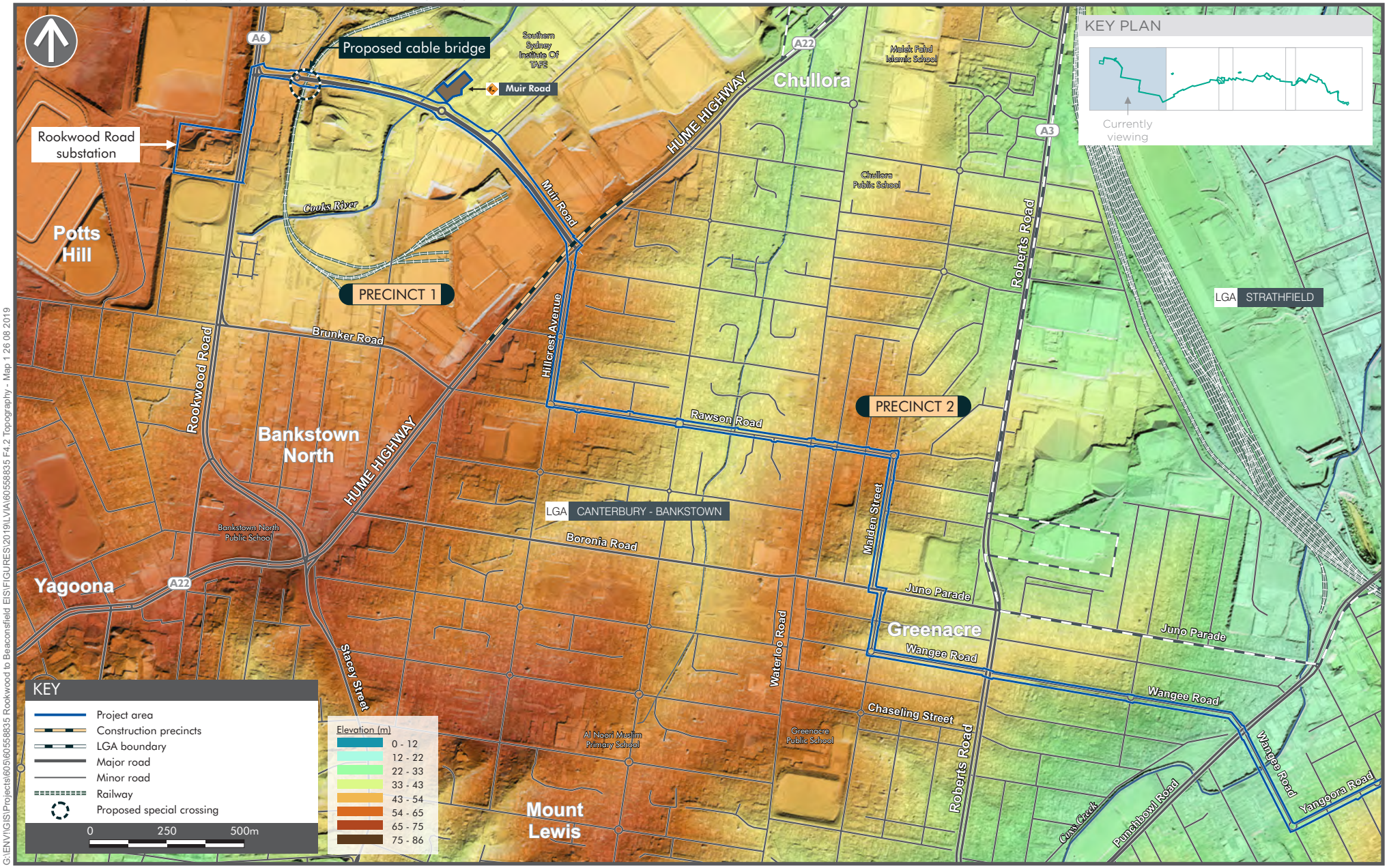
Powering Sydney's Future

Potts Hill to Alexandria Transmission Cable Project

Note: The project area is confined to the roadway reserve with the exception of parks and existing substations

Source: Department of Finance, Services and Innovation - Spatial Services (2018), Nearmap (2018)

FIGURE 4-1



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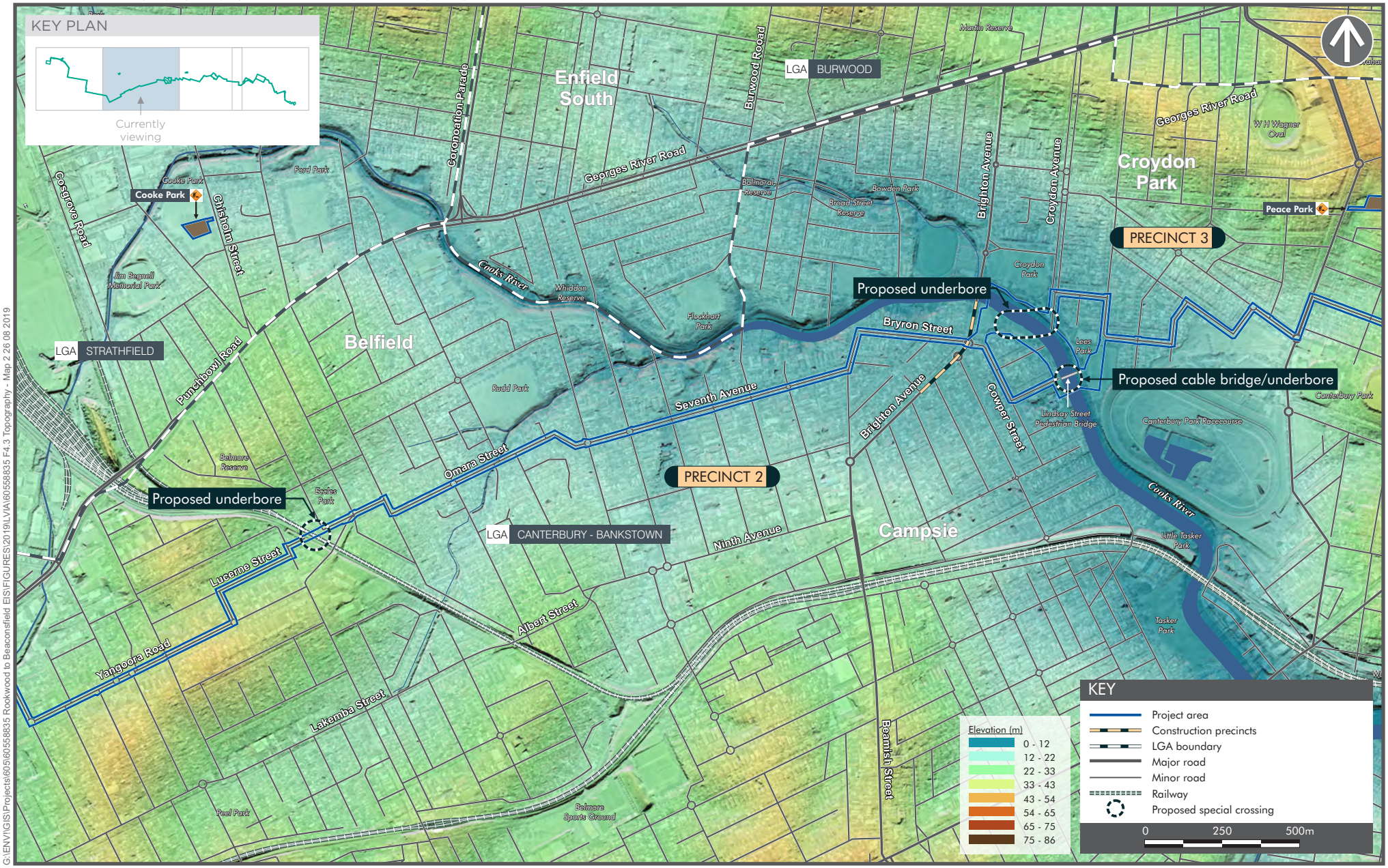
TOPOGRAPHY - MAP 1

Powering Sydney's Future
Potts Hill to Alexandria Transmission Cable Project

Note: The project area is confined to the roadway reserve with the exception of parks and existing substations
Source: Department of Finance, Services and Innovation - Spatial Services (2018), Nearmap (2018)

FIGURE 4-2



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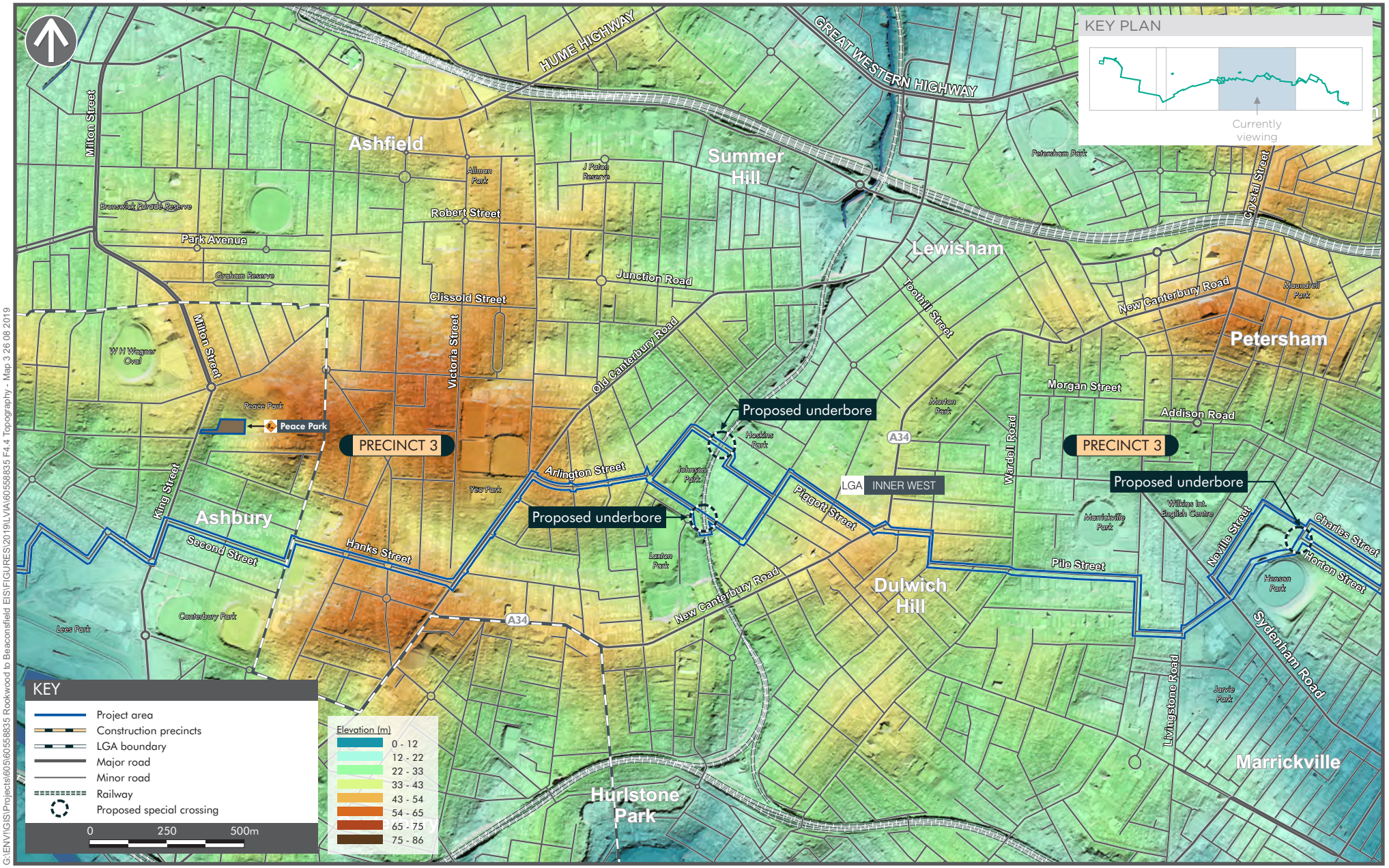
TOPOGRAPHY - MAP 2

Powering Sydney's Future
Potts Hill to Alexandria Transmission Cable Project

Note: The project area is confined to the roadway reserve with the exception of parks and existing substations
Source: Department of Finance, Services and Innovation - Spatial Services (2018), Nearmap (2018)

FIGURE 4-3



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TOPOGRAPHY - MAP 3

Powering Sydney's Future
Potts Hill to Alexandria Transmission Cable Project

Note: The project area is confined to the roadway reserve with the exception of parks and existing substations
Source: Department of Finance, Services and Innovation - Spatial Services (2018), Nearmap (2018)

FIGURE 4-4

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TOPOGRAPHY - MAP 4

Powering Sydney's Future
Potts Hill to Alexandria Transmission Cable Project

Note: The project area is confined to the roadway reserve with the exception of parks and existing substations
Source: Department of Finance, Services and Innovation - Spatial Services (2018), Nearmap (2018)

FIGURE 4-5

The majority of the project area drains to the Cooks River and Coxs Creek (refer to **Figure 4-3**). The upper reaches of Coxs Creek occur at the western end of the transmission cable route, crossing the transmission cable route at Lakemba (refer to **Figure 4-6**). The Cooks River within the study area is a wide concrete channel fringed by a substantial tract of open space and a thick band of mangrove vegetation. Further downstream, the Cooks River has been naturalised in places, and the Cooks River cycleway is situated in the associated parkland.

The transmission cable route crosses several smaller creeks which are less visible within the landscape. In most areas these creeks are piped underground, where they have been daylighted they are typically channelised, bordered by back and side fences of residential properties (refer to **Figure 4-6**) or travel through parks and open space, fenced off from public access (and **Figure 4-7**).

To the east of the transmission cable route, the land drains to the Alexandra Canal, which lies adjacent to the Beaconsfield West substation at Alexandria (refer to **Figure 4-5**).

Figure 4-6 View north along channelised watercourse crossing Wangee Road in Lakemba

Figure 4-7 Channelised tributary to the Cooks River passing through Rudd Park, Belfield

4.2 Built form and land use

The transmission cable route is divided into five construction precincts, and the key land use and built form character of development adjoining the transmission cable route within each of these precincts is discussed in this section.

The following sections note heritage values in the relevant construction precincts; however, refer to the Historical Heritage Impact Assessment in **Appendix J** of the EIS for a list of heritage items and conservation areas within and in proximity to the project area.

4.2.1 Precinct 1

Rookwood Road substation and Chullora Industrial Estate to Hume Highway

This precinct has an industrial land use and built form character, consistent with its industrial zoning. This precinct comprises the existing substation facility on Rookwood Road and industrial properties on the eastern side of Rookwood Road. The transmission cable route runs along Muir Road within the Chullora Industrial Estate, which features large floor plate warehousing/light industrial premises with extensive hard surface areas and at-grade parking areas, with street tree plantings along the median of Muir Road, mainly comprising Hills Figs.

There are no HCAs in this precinct adjoining the transmission cable route. The Potts Hill Reservoirs 1 and 2, which adjoins the transmission cable route on the western side of Rookwood Road, is an item of State and local significance listed under both the State Heritage Register and in the Bankstown LEP.

4.2.2 Precinct 2

Hume Highway to Cooks River Crossing (Brighton Avenue)

This precinct has a low density residential land use and built form character with a small area of light industrial along Punchbowl Road, consistent with the zoning pattern. The predominant built form is detached housing, one and two storeys in height, on lots with an area around 500 square metres. Dwellings generally date from around the 1970s onwards and are built from a range of materials including fibreboard and rendered brick.

The low density residential development is interspersed with pockets of other land uses which are complementary to the residential character. This includes a sports field (Allum Park) in Maiden Street and a small mixed use local centre at the intersection of Hillcrest Avenue and Rawson Road which features a row of one and two storey shop top premises. There are small groups of local shops throughout the precinct. Along Seventh Avenue and Byron Street, dwelling densities increase, with two to three storey walk-up apartments and attached dwellings, although detached housing is still the most common building type.

Street tree planting contributes to the overall character of the residential areas within this precinct, particularly to the west of Punchbowl Road.

The street trees on Fifth Avenue are locally listed heritage items titled as ‘Inter war street trees’. The transmission cable route crosses Fifth Avenue at the intersection with Seventh Avenue. No other HCAs or heritage items are within proximity of the transmission cable route in this precinct.

4.2.3 Precinct 3

Brighton Avenue (near Mildura Reserve) to Henson Park

This precinct has a low density residential land use and built form character with medium density pockets around the local and neighbourhood centres. The predominant building form is detached housing, one or two storeys in height. The character of this precinct is similar to that of Precinct 2.

The medium density dwellings throughout this precinct are typically located along larger roads and near transport hubs such as the Arlington Light Rail Station. The transmission cable route passes several sports fields and open spaces including Gough Reserve, Yeo Park, Arlington Recreation Reserve and Marrickville Park.

Streets in this precinct are typically wide with small street trees along the verges contributing to the character of the precinct.

The Ashbury Conservation Area encompasses the western most portion of the transmission cable route in this precinct. Other HCAs and heritage items adjoining the transmission cable route include:

- Canterbury Park Racecourse;
- Service Avenue Conservation Area;
- Yeo Park (public reserve);
- The Abergeldie Estate Conservation Area;
- The Boulevarde Conservation Area;
- Dulwich Hill Conservation Area; and
- Henson Park.

4.2.4 Precinct 4

Henson Park (Illawarra Road) to Camdenville Park

To the south of the transmission cable route, the precinct has commercial, light industrial and bulky goods retailing land use, with residential development less common. Buildings generally feature limited setbacks to the street, with heights of two to three storeys. There are some street trees but there is little other vegetation, and therefore this is not a significant contributor to the character of this part of the transmission cable route.

To the north of the transmission cable route, residential development predominates within this precinct, with a grid road network featuring many narrow streets lined with street trees (e.g. Newington Road). These areas comprise predominantly Victorian era attached and detached dwellings on small blocks with small setbacks to the street, with significant vegetation on private properties and mature street trees contributing significantly to the character. Other uses include schools, such as Newington College and St Pius Catholic Primary School, which comprise large educational institutions on extensive school grounds.

Enmore Park, which is within the vicinity of the transmission cable route in this part of the precinct, is a significant area of public open space, with mature trees and extensive green space. Opposite this park to the west and north, land use and built form character is predominantly Victorian terrace housing and cottages. Properties in Llewellyn Street and Scouller Street to the north of the park are within the Llewellyn Estate HCA. A mix of mature and young street trees add to the character of this area.

4.2.5 Precinct 5

Bedwin Road Rail Bridge to Beaconsfield West substation

Immediately east of the rail bridge, the land use and built form character is mixed, with a range of light industrial, commercial and residential properties along the proposed transmission cable route, with limited setbacks from the street and scattered street trees. Two parks are also located within the precinct, which include Camdenville Park and Sydney Park. Sydney Park provides extensive green space with mature tree planting.

Part of this precinct is in a transition phase due to the extent of land adjoining the proposed transmission cable route currently used for the construction of the WestConnex New M5 project.

The property on the western side of Bedwin Road adjoining the transmission cable route, immediately south of the bridge is a local heritage item known as the Waugh and Josephson industrial buildings. Camdenville Park is within the Goodsell Estate HCA, the heritage character of this part of the precinct is reinforced further by the group of terrace houses in May Street adjoining the park, which are local heritage items.

Sydney Park is a regionally significant area of public open space, and the largest area of public open space adjoining the length of the transmission cable route. It has a high quality landscape character

with extensive mature tree planting, and a heritage item in the northwest part of the park, known as the ‘former brickworks group’.

The last section of the proposed transmission cable route between Sydney Park and the Beaconsfield West substation has a light industrial built form and character. Large industrial buildings line the road with a consistent scale and setback, and intermittent native street trees line the road corridors.

5.0 Landscape character impact assessment

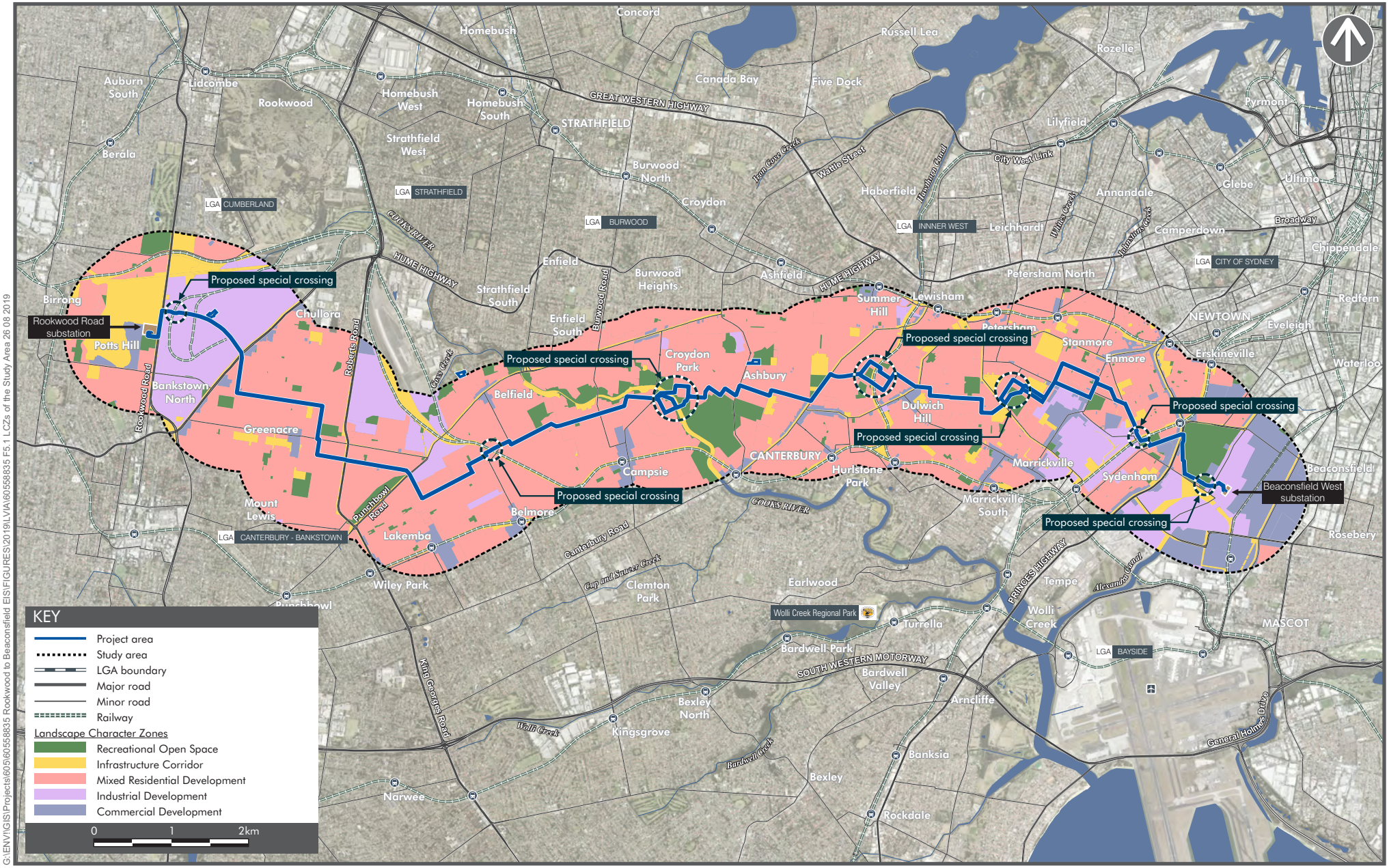
Landscape character impact assessment helps to determine the impact of a project on the overall character, including built, natural and cultural aspects of an area. This assessment considers the impact of the project on landscape character within the study area rather than the project area only, as the project has the potential to impact an area wider than the project area.

5.1 Landscape character zones

Existing LCZs, which share broadly the same characteristics or spatial qualities, were identified within the study area. Five LCZs have been identified in the areas surrounding the transmission cable route and construction laydown areas (refer to **Figure 5-1** to **Figure 5-5**):

- LCZ 1: Recreational Open Space;
- LCZ 2: Infrastructure Corridor;
- LCZ 3: Mixed Residential Development;
- LCZ 4: Industrial Development; and
- LCZ 5: Commercial Development.

Overall, the landscape surrounding the project area predominantly comprises Mixed Residential Development (LCZ 3), being mostly low density residential lots with detached dwellings. A few large areas of Industrial Development (LCZ 4) are located at Bankstown/Chullora, Greenacre, Marrickville/Sydenham and St Peters. Recreational open space areas comprise linear parks and reserves along creek corridors and isolated parks. The largest linear area of Recreational Open Space (LCZ 1) is associated with the Cooks River (Precincts 2 and 3), and the largest isolated park is Sydney Park (Precinct 5), while the Canterbury Racecourse and Canterbury Park are also large recreational areas, although the racecourse is privately owned land. Other isolated parks of different sizes (although typically smaller in size) are scattered throughout Mixed Residential Development (LCZ 3). Infrastructure Corridors (LCZ 2) are predominantly made up of road and rail, but with a large area in Precinct 1 associated with Sydney Water infrastructure. Commercial Development (LCZ 5) is generally clustered along major roads.



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LANDSCAPE CHARACTER ZONES OF THE STUDY AREA

Powering Sydney's Future
Potts Hill to Alexandria Transmission Cable Project

Note: The project area is confined to the roadway reserve with the exception of parks and existing substations
Source: Department of Finance, Services and Innovation - Spatial Services (2018), Nearmap (2018)

FIGURE 5-1

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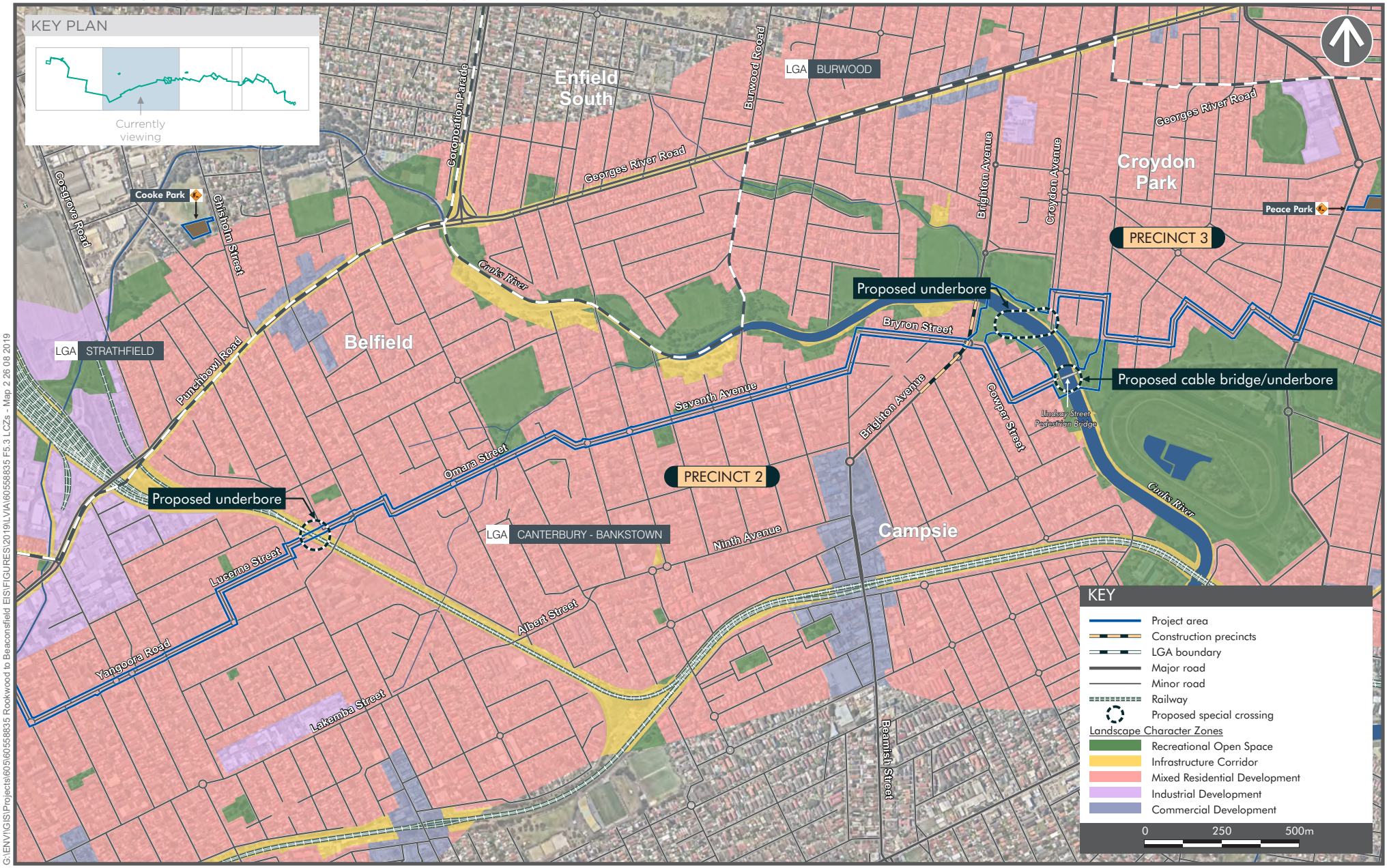
LANDSCAPE CHARACTER ZONES - MAP 1

Powering Sydney's Future
Potts Hill to Alexandria Transmission Cable Project

Note: The project area is confined to the roadway reserve with the exception of parks and existing substations
Source: Department of Finance, Services and Innovation - Spatial Services (2018), Nearmap (2018)

FIGURE 5-2



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LANDSCAPE CHARACTER ZONES - MAP 2

Powering Sydney's Future
Potts Hill to Alexandria Transmission Cable Project

Note: The project area is confined to the roadway reserve with the exception of parks and existing substations
Source: Department of Finance, Services and Innovation - Spatial Services (2018), Nearmap (2018)

FIGURE 5-3

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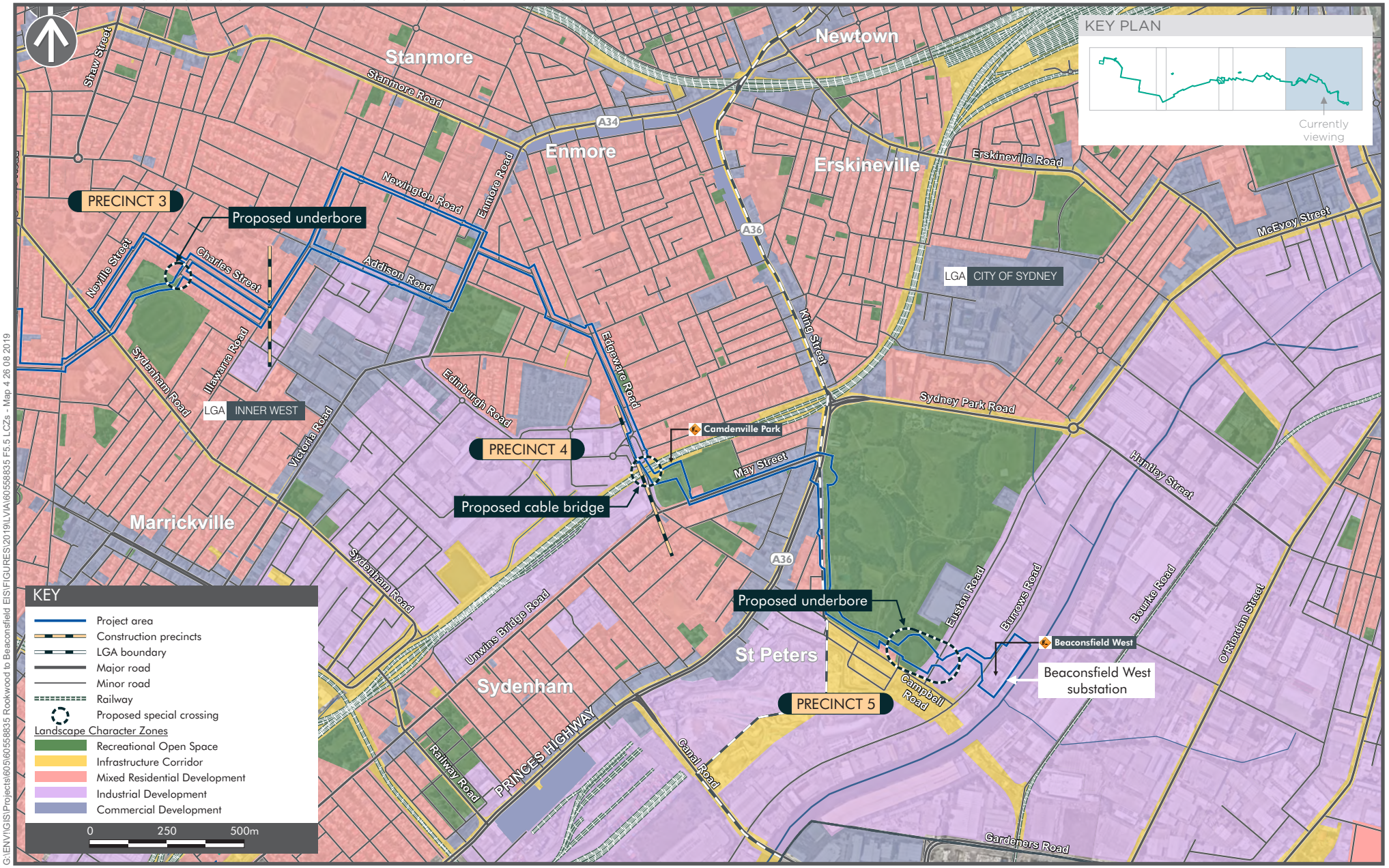
LANDSCAPE CHARACTER ZONES - MAP 3

Powering Sydney's Future
Potts Hill to Alexandria Transmission Cable Project

Note: The project area is confined to the roadway reserve with the exception of parks and existing substations
Source: Department of Finance, Services and Innovation - Spatial Services (2018), Nearmap (2018)

FIGURE 5-4



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LANDSCAPE CHARACTER ZONES - MAP 4

Powering Sydney's Future
Potts Hill to Alexandria Transmission Cable Project

Note: The project area is confined to the roadway reserve with the exception of parks and existing substations
Source: Department of Finance, Services and Innovation - Spatial Services (2018), Nearmap (2018)

FIGURE 5-5

5.1.1 LCZ 1: Recreational Open Space

5.1.1.1 Existing environment

There are three broad categories of recreational open space in the landscape surrounding the project within the study area:

- open space corridor associated with the Cooks River (or other creek/river systems) within Precincts 2 and 3, which include Canterbury Racecourse;
- isolated regional (large) parklands (for example Sydney Park); and
- isolated smaller parks and playing fields, which are scattered predominantly within the LCZ 3: Mixed Residential Development.

Due to their smaller size and integration within the surrounding residential development, the smaller isolated parks, many associated with playing fields, have been discussed as part of LCZ 3: Mixed Residential Development.

Larger tracts of recreational open space in the area (i.e. areas associated with drainage corridors or large regional parklands) are all zoned either RE1 Public Recreation or RE2 Private Recreation. The bands of open space associated with drainage lines (the largest being the Cooks River within Precincts 2 and 3) lie on lower, flood prone land, with undulating topography. These areas comprise a mix of dense, potentially remnant vegetation, and open, turfed areas (including playing fields). Playgrounds with play equipment are typically positioned on the higher ground within the drainage corridors.

The character of these open spaces is influenced by the drainage corridors within them. They often slope down the creek/channel and are made up of many park 'rooms' set within tall, dense bands of vegetation. Thick bands of *Casuarina* trees and mangroves often line the creek/drainage corridors (refer to **Figure 5-6**).

The Cooks River open space corridor is also linked by a cycle path that runs roughly parallel to the river for most of its length. This path links all the parks associated with the corridor and allow it to be used for commuting purposes as well as recreation. The path brings many visitors from other areas to open space that may not have been used as extensively if they were not linked.

The interface between the Cooks River open space and the surrounding LCZs varies along its length due to the differing development and topography as the river widens, and also due to the width of the open space corridor.

Figure 5-6 A corridor of open space is associated with the Cooks River and includes a cycleway which runs generally parallel to the river, which is often fringed with mangroves

Sydney Park is the largest isolated regional parkland within this LCZ. This park has been constructed on an old landfill site, which gives it its undulating topography and contributes to the form of the

vegetation that grows on the clay capping. Some areas within the park are elevated, providing views to the extended landscape, including towards the city skyline (refer to **Figure 5-7**).

This park is large and well used, with four large wetlands situated within the 'drainage corridor' within the park. These wetlands are linked by a landscaped 'stream bed' which is piped in the lower areas of the park. A group of linked bioretention systems line the largest of the wetlands, and filter water as it flows (piped) into the system from the neighbouring suburbs. The vegetation surrounding the wetlands frames each pond, and lookout platforms and bench seats are provided throughout the park to provide viewing points for focus areas (refer to **Figure 5-8**).

The park comprises a series of large, turfed 'rooms' set amongst thick 'walls' of fully structured bushland vegetation. Areas of vegetation with different characters (for example Eastern Suburbs Banksia Scrub species, or temperate rainforest species) give certain areas of the parks different character. The edges of the park are typically framed with large tree plantings and bands of screening vegetation, with the topography also helping to enclose the internal park spaces visually and acoustically.

Figure 5-7 Typical areas within the park are undulating turf 'rooms' with surrounding vegetation

Figure 5-8 A series of wetlands with fringing vegetation and lookouts within the park. The western edge of the wetland is fringed by bioretention systems (to the right of frame)

The landscape surrounding the park includes industrial areas and residential development, and several large roadways (infrastructure corridors). There is a large amount of construction associated with the New M5 project along the southern, eastern and western edges of the parkland, however this is largely screened from the internal areas of the park by vegetation.

A small number of large parks which include sporting fields are present in the landscape surrounding the project area. While these are typically embedded in the fabric of the residential development, some parks are more disconnected from the surrounding landscape character. One such example of this is at Camdenville Park, in St Peters, where the park lies adjacent to a rail line and has construction activity associated with the New M5 project on another boundary. This park (and others like it) are typically framed by mature screening vegetation and other structures (such as landscaped berms, refer to **Figure 5-9**) which visually and acoustically separate it from the surrounding landscape.

Figure 5-9 Camdenville Park in St Peters

While some parks and recreational spaces have flood lit night lighting, this lighting is typically only used when night-time sporting events are programmed. Lighting along park edges and pedestrian pathways typically comprises low, directional and targeted lighting, with the majority of ovals and parks unlit in the centres.

5.1.1.2 Landscape character impact assessment

An assessment of the potential impact on landscape character within LCZ1: Recreational Open Space as a result of the project is presented in **Table 5-1**.

Table 5-1 Landscape character impact assessment, LCZ 1: Recreational Open space

Construction	
Changes due to the project	Proposed changes within this LCZ include construction activities associated with the transmission cable circuit (such as site preparation, tree removal, trenching, underboring, installation of cable bridges, conduit installation and construction of joint bays, erection of tents or demountable buildings during cable jointing), road restoration and construction laydown areas (including vehicle movements). The proposed construction activities are detailed in **Section 2.4**.
Sensitivity	The sensitivity of LCZ 1 Recreational Open Space is High due to the following: • public open space has a high recreational landscape value due to the limited open space within the urban setting; • the condition of many areas within the LCZ are of a high quality, particularly in areas containing remnant vegetation or where parks (or areas within larger parks or tracts of parkland) have been well designed and managed; • the association of open space with the drainage channels/waterways create a broader, connected network of open space which improves its recreational and associated active transport values, while also having environmental value (for example water filtering and habitat); • the quality of public open space influences the value of the adjacent landscape (i.e. the parklands increase the value of surrounding properties, culturally, monetarily, and visually); and • the project has little opportunity to be 'visually absorbed' within the LCZ, particularly when the project passes through the open spaces, rather than adjacent to them (for example the transmission cable route passing through Sydney Park, or the use of parks as construction laydown areas).
Magnitude of change	The magnitude of change affecting the landscape character in this LCZ is High, considering: • the number of public open spaces affected by the project, including the transmission cable route and the construction laydown areas; • it is unlikely that changes of this scale and nature would be visually absorbed, particularly in relation to the size of the individual areas affected; • the character of the change is incongruous with the character of the LCZ; • previously unlit park areas may be lit to undergo construction activities where the transmission cable route enters a park, or for the lighting of construction laydown areas, where these are located within parks; and • the change to the overall character of the spaces also impacts on surrounding LCZs, given the relationship the public open spaces have with their surrounds.
Overall assessment	The impact on landscape character during construction would be High. The construction of the project would result in a significant change in landscape character which would affect many recreational open space areas throughout the LCZ within the study area. This is due to the length of the transmission cable route traversing Camdenville Park and Sydney Park and the use of multiple public open spaces as construction laydown areas. The visual character and activity of construction activity within open space would be atypical of the existing character of these areas. However, the construction period would be short-term, with many areas affected by construction activity being reinstated to their original condition (or as otherwise agreed with the relevant authority). The length of time that changes due to construction activity would be observed would vary from location to location. Sites affected by construction laydown areas would experience these changes potentially over the entire construction period (up to two years), while other areas affected by construction would only experience changes over a shorter period (for example where transmission conduits are installed, or a cable bridge constructed). While some areas of open space would be less affected by the project during the construction period, or affected over a relatively short timeframe, the timeframe of the construction period of the project is not enough to lower the rating of impact on landscape character from High.

Operation	
Changes due to the project	Proposed changes to this LCZ due to the project would comprise cable bridges (which have the potential to be visually intrusive) spanning the Cooks River and cycleway near Lindsay Street at Campsie (this is one of three crossing point options at this location) and the rail corridor at Bedwin Road adjacent to public open spaces and Camdenville Park at St Peters).
Sensitivity	The sensitivity of this LCZ remains High.
Magnitude of change	The new permanent electrical infrastructure with the potential to be visually intrusive (i.e. cable bridges) would only occur within this LCZ at two locations. The cable bridges within this LCZ at the Cooks River and Bedwin Road would be built adjacent to existing road and pedestrian infrastructure within this LCZ, resulting in a limited change in the existing character of that immediate area. Other permanent electrical infrastructure (for example link boxes and joint bays) located adjacent to this LCZ would result in minimal change and would not affect the overall character of the LCZ. There would be no change to lighting levels or frequency. Due to the above, the magnitude of change to the character of the LCZ arising from the project during operation would be Low.
Overall assessment	The impact during operation would be Moderate. While there would be permanent changes, they largely result from the cable bridges which would be installed adjacent to an existing bridge, rather than a new element within the landscape. The final assessment rating is the result of the high sensitivity of the LCZ rather than the magnitude of the change which was assessed as Low, as discussed previously.

5.1.2 LCZ 2: Infrastructure Corridor

5.1.2.1 Existing environment

Within the study area, LCZ 2: Infrastructure Corridors comprise the following:

- rail corridors, including commuter and freight train lines and light rail;
- major road reserves including highways; and
- broader, point source areas, for example at the Enfield Intermodal Logistics Centre and the Sydney Water Reservoirs at Potts Hill.

Two broad character types exist within this LCZ: corridors and sites which are predominantly screened from the surrounding landscape, and those that are framed by the surrounding landscape, with visual influence occurring between the infrastructure element and its surrounds.

Rail lines and the water reservoirs are predominantly screened from the surrounding landscape, with fringing vegetation and landform both assisting in visually screening these areas. However, while both examples listed have opportunities for viewing from elevated surrounding areas, these opportunities are limited (for example where roads cross rail lines or where lookouts are situated). These areas are utilitarian in character, with minimal maintenance regimes keeping them in working order. They are typically flat, even corridors or sites, with batters and elevated areas due to undulations in the surrounding landscape (refer to **Figure 5-10**).

Figure 5-10 Typical rail crossing at Muir Road, Chullora

Major road reserves within the study area include the Hume Highway, Princes Highway, Punchbowl Road, Georges River Road and Canterbury Road. The road reserves generally have an uneven grade compared to rail corridors as they follow the surrounding topography. The road reserves are flanked by residential, industrial and commercial development that front onto and are accessed via the roads. The character of these roads are influenced by the adjacent development.

Within the project area, the visual quality of the infrastructure corridors differs greatly. There are some corridors where the industrial development coupled with limited road verge vegetation creates a utilitarian character (refer to **Figure 5-11**). Other parts of major roadways pass through areas with fringing residential development or large green spaces. These areas typically have a higher amount of publicly accessible open space, include street trees and are fringed by well-designed and maintained private properties (refer to **Figure 5-12**). There are no visually isolated road reserves (for example freeways or motorways) within the project area.

All these areas are zoned SP2 Infrastructure. They are predominantly linear elements that have limited scenic value within the landscape.

Figure 5-11 The visual quality of this area (Punchbowl Road) is low, with industrial development fringing the road and vegetation limited to drainage corridors or limited landscaped areas on private property

Figure 5-12 Residential development along other major road reserves within the study area creates areas that are of a higher visual quality, with street trees and landscaped verges and gardens, and a higher quality of architecture

Typically, this LCZ is well lit due to governing safety requirements. Roads (which contain regularly spaced, bright lighting) are better lit than rail corridors, which are only lit where required for safety purposes.

5.1.2.2 Landscape character impact assessment

An assessment of the potential impact on landscape character as a result of the project for LCZ 2: Infrastructure Corridor is presented in **Table 5-2**.

Table 5-2 Landscape character impact assessment, LCZ 2: Infrastructure Corridor

Construction	
Changes due to the project	Proposed changes within this LCZ include construction activities associated with the transmission cable circuit (such as site preparation, tree removal, trenching, underboring, installation of cable bridges, conduit installation and construction of joint bays, erection of tents or demountable buildings during cable jointing, and road restoration) and construction laydown areas (including vehicle movements). The proposed construction activities are detailed in **Section 2.4**.
Sensitivity	This LCZ has a Low sensitivity, due to the following: • road and rail corridors are typically utilitarian in that their primary function is the safe and efficient movement of traffic. Point source infrastructure elements within the study area are likewise utilitarian, and therefore their character comes from the use of that land or the surrounding landscape; • typically, this LCZ is somewhat inward-looking, with fringing vegetation and some planted street trees, built form and localised landform visually containing it. However, some of the road reserve and the transmission cable route pass through more sensitive landscapes, including areas of heritage conservation; and • much of the project would be constructed within the existing road reserve but along more minor streets (i.e. streets not included in this LCZ, but contained within other LCZs), only crossing over or travelling along major road corridors for short lengths.

Magnitude of change	The magnitude of change affecting the LCZ is Moderate due to the following: • The transmission cable route traverses major road reserves for short sections of its length only and would locally affect the character of these roads during construction. However, most of the roads associated with the infrastructure corridor LCZ would not be impacted by the project. Where the transmission cable route follows local roads, the changes associated with these portions of construction have been assessed within the LCZs that these roads lie within; • There would be a change in the frequency and brightness of lighting within this LCZ at the construction work sites, but since these corridors are already typically lit this change would not be significant, especially when considering the limited area of the LCZ that the project passes through when the whole LCZ is considered; • Although the transmission cable route crosses a rail corridor (i.e. another infrastructure corridor) in three places, requiring construction activity associated with building cable bridges or underboring, the works do not significantly impact the character of the whole rail corridor due to the limited, localised changes that would be experienced at these locations only, and the proposed cable bridges would be constructed adjacent to existing bridge structures over the rail corridors; • If required, the removal of street trees along an infrastructure corridor would have the potential to change the character of a portion of the LCZ significantly, but only a limited portion of the overall LCZ is affected by the changes; and • Some level of construction is expected along major roads due to ongoing maintenance and upgrades, however, the changes due to the project would be greater than regular road maintenance construction works due to: - the length of road affected; - the construction period in some areas would be longer periods than routine maintenance within road reserve; - the use of tents or demountable buildings over joint bays; and - the removal of vegetation, including street trees if required, would be a significant change and greater than that expected due to routine road maintenance.
Overall assessment	The impact during construction would be Moderate to Low. While areas of the infrastructure corridor that are affected by the construction activity are limited to a small number of main road reserves (passing over several rail corridors), these portions of road/rail are small areas compared to the overall area of the LCZ within the study area.
Operation	
Changes due to the project	Cable bridges would potentially pass this LCZ at two locations: • on Muir Road in Chullora; • over the rail corridor at Bedwin Road, St Peters. All construction laydown areas would be removed following construction and the sites returned to pre-existing conditions (or as agreed with the relevant landowner).
Sensitivity	The sensitivity of this LCZ remains Low.

Magnitude of change	At the completion of the project, the magnitude of change during operation would be Moderate. The potential removal of street trees along an infrastructure corridor during the construction period would have the capacity to change the character of a road reserve at project completion, as would the removal of vegetation adjacent to a rail corridor. However, where tree replacement is possible, the impact on landscape character due to the removal of street trees would be short-term. Where replacement planting is possible, and the replacement trees grow, the character of the road reserve would be restored, assuming trees that are planted to replace the removed ones are the same or similar species in height and overall character. The proposed cable bridges are typical of electrical infrastructure found within this LCZ and are positioned adjacent to existing bridges. Road and electricity cable bridges over rail lines and major road reserves are integral to the utilitarian character of these areas and would not constitute a significant change in character. There would be no change in lighting levels or frequency.
Overall assessment	The impact during operation is Moderate to Low, considering the visual 'fit' of the cable bridges within infrastructure corridors as both are typically utilitarian in character. Where trees are required to be removed during construction, an appropriate tree replanting strategy/landscape plan would be developed in consultation with the relevant council (i.e. replanting similar species of trees where feasible and where this is not possible selecting suitable trees for specific local conditions).

5.1.3 LCZ 3: Mixed Residential Development

5.1.3.1 Existing environment

This LCZ is the most prevalent within the study area, with zoning within this LCZ comprising R2 Low Density Residential, R3 Medium Density Residential, and R4 High Density Residential housing. The majority of the residential development within the study area is low density residential (the suburbs of Greenacre and Belfield), as well as the inner west suburbs (Campsie, Croydon Park, Ashbury, Dulwich Hill, Stanmore and Enmore). Pockets of medium and high density residential development are scattered throughout the area, particularly within the suburbs of Lakemba, Belmore, Campsie and Canterbury.

The topography within these areas is typically relatively flat, with housing types clustered in pockets throughout the study area. The western end of the proposed transmission cable route is surrounded by low density residential homes, characterised by wide, straight streets laid in a northeast to southwest direction, with some small street trees scattered along them. Modest, single storey brick and fibro homes and workers cottages constructed predominantly in the 1940s and 50s dominate the area, with typically neat, manicured front gardens. Some areas within this zone have been redeveloped, with larger, two storey brick homes built between the smaller original housing, and wide streets lined with mature trees such as Brush Box (refer to **Figure 5-13**).

Figure 5-13 Typical streetscape in Greenacre where the original smaller fibro and brick cottages have been removed and replaced with larger two storey brick homes

At Punchbowl Road, the character of the residential development changes. South along Punchbowl towards King Georges Road, there is a much higher percentage of medium and high density housing. Apartment buildings constructed around the 1960s and 70s dominate the streetscapes, with some Federation homes scattered in between. Apartment blocks typically have small, low front gardens addressing the streets, and parking areas typically to the rear of the properties. A mix of street trees are used in the surrounding streets, the most common being Brush Box and Casuarina (Bottle Brush) species. Red and brown brick are typical construction materials in these areas.

At Lakemba and Campsie, areas of medium density housing fringe more major roads, e.g. along Wangee and Yangoora Roads. In these areas, built form typically comprise three storey brick apartment blocks with small pockets of commercial buildings scattered along major roads.

Large HCAs exist within this LCZ, occurring from the Cooks Rover east within the study area, the largest being the suburb of Ashbury (the Ashbury Conservation Area, listed in the Canterbury Local Environmental Plan, 2012). This LCZ has been listed due to its street and subdivision pattern, consistent built form and style (predominantly detached houses in Federation, Californian Bungalow, and other Inter-War housing styles), landscaped setting of the houses and extensive street tree planting, often typical of the Federation and Inter-War periods. Wide streets lined with mature street trees are fringed with high quality housing on reasonably large blocks of land and feature mature gardens.

Further west, the inner west suburbs typically comprise homes on smaller blocks, with terrace housing or narrow detached dwellings. Housing is typically one and two storeys in height, with some apartment blocks limited to certain streets. Narrow streets are laid out in a more complex shaped grid pattern, with many streets featuring large, old street trees such as Paperbarks (refer to **Figure 5-14**), Brush Box and Peppercorn Trees.

Figure 5-14 Example narrow streets within the study area with large, mature street trees and on-street parking typical of the inner west

Lighting within this LCZ comprises two sources: street lighting and lighting from private residences. Street lighting is typically high up and illuminates the street pavement and verge, while light sources from residential homes comprises light spill from windows and front entries.

5.1.3.2 Landscape character impact assessment

An assessment of the potential impact on landscape character due to the project for LCZ 3: Mixed Residential Development is presented in **Table 5-3**.

Table 5-3 Landscape character impact assessment, LCZ 3: Mixed Residential Development

Construction	
Changes due to the project	Proposed changes within this LCZ include construction activities associated with the transmission cable circuit (such as site preparation, tree removal, trenching, underboring, installation of cable bridges, conduit installation and construction of joint bays, erection of tents or demountable buildings during cable jointing and restoration of road surfaces) and construction laydown areas (including vehicle movements). The proposed construction activities are detailed in **Section 2.4**.
Sensitivity	The overall sensitivity of this LCZ is Moderate. The more sensitive aspects of this LCZ include the following: • the LCZ contains areas with high cultural value, including local HCAs in Precincts 3, 4 and 5; • there are picturesque areas within this LCZ, some occurring within the HCAs, where a high quality of housing stock and streetscapes (including mature street trees) have been maintained and preserved; and • the LCZ is relatively uniform in the scale of streets and built form, but with periodic larger, denser housing types or wider streets scattered across it. However: • this is a very large LCZ compared to the size of the area directly affected by the project, meaning that much of the LCZ would be unaffected by the project and this would limit the impact that it would have on the overall character of this LCZ; • the relatively flat topography of the area results in the landscape typically being visually contained. Limited views are available from elevated areas or to the greater landscape. This makes the LCZ less sensitive to changes within it; and • the construction period is relatively short-term.
Magnitude of change	The magnitude of change affecting the LCZ is Moderate. The transmission cable route traverses this LCZ for a large portion of its overall length, including through and adjacent to HCAs, and would locally affect the character in these residential areas temporarily. However, due to the large size of the LCZ and the limited area that would be directly impacted by the project, the majority of this LCZ remains unaffected by the project. There would be a change in the frequency and brightness of lighting within this LCZ at the construction work sites, with targeted construction points lit with much brighter, directional flood lighting when night work was required. The construction period would be short-term in nature, meaning that most of the areas affected by construction activity would be returned to their original state. The length of time that changes due to construction activity would be observed would vary from location to location. Areas affected by construction laydown areas would experience these changes potentially during the entire construction period (up to two years), while other areas affected by construction would only experience changes over a number of weeks (for example along the transmission cable route).
Overall assessment	The impact during construction would be Moderate. The changes are either contained to road reserves or to scattered construction laydown areas. The project area makes up only a very small proportion of the overall LCZ within the study area, and while there may be instances of change to the character of the immediate area surrounding the project, the impact on the overall character of the LCZ is limited. While construction along the transmission cable route would be new and atypical of the character of this LCZ, this activity would be temporary, which limits the magnitude rating. The construction laydown areas would potentially be visible for longer periods of time (up to two years) but would be visually contained within another LCZ (LCZ 1: Recreational Open Space).

Operation	
Changes due to the project	During operation, the major visible changes due to the project would be the potential cable bridges, which would be within or adjacent to this LCZ at the following locations: • spanning the Cooks River at Campsie; and • over the rail corridor at Bedwin Road, St Peters. Road surfaces would be reinstated, and all construction laydown areas would be reinstated to pre-existing conditions, or as otherwise agreed with the relevant authority or landowner.
Sensitivity	The sensitivity of this LCZ remains Moderate.
Magnitude of change	The magnitude of change during operation would be Moderate. The potential removal of street trees during the construction period would result in a change in the character of these streets at completion of the project. Where tree replacement is possible, the impact on landscape character due to the removal of street trees would be short-term. Where replacement planting is possible, and the replacement trees grow, the character of the road reserve would be restored, assuming trees that are planted to replace the removed ones are the same or similar species in height and overall character. However, the potential loss of trees would only affect a minor portion of the overall LCZ, with a majority of the zone unaffected. Given the large size of this LCZ, the impact of tree loss on the whole LCZ is Moderate rather than High. There would be no change to night lighting within this LCZ at operation. The cable bridges would most often occur within road reserve and would be installed adjacent to existing bridges. The positioning of the cable bridge in association with an existing bridge would reduce the overall impact of the proposed bridges on the LCZ as they would visually comprise an increase in the overall bulk of the existing bridge, rather than comprising a completely new built element within the landscape.
Overall assessment	The impact during operation would be Moderate. The road surface would be restored along the transmission cable route following construction for example road pavement and footpaths reinstated. However, the potential loss of street trees within this LCZ would be a source of change in character, as street trees are typically important elements within the residential streetscape. The cable bridges would be permanent operational infrastructure. While these comprise a new element within the landscape, when within or adjacent to this LCZ, they are positioned adjacent to an existing bridge which would reduce the impact of these structures on the local and overall character of the LCZ.

5.1.4 LCZ 4: Industrial Development

5.1.4.1 Existing environment

This LCZ comprises areas where a majority of the land use are for industrial purposes. It occurs in all construction precincts but with the largest areas in Precincts 1, 2, and 5. Typically, these areas are zoned IN1 General Industrial or IN2 Light Industrial. Industrial development is predominantly clustered at Potts Hill and Chullora at the western end of the transmission cable route, and at St Peters and Marrickville at the eastern end of the transmission cable route.

These areas are typified by large blocks of land with large scale industrial buildings and a utilitarian character. In newer areas (for example the Chullora Industrial Park), the front of each block has some form landscaping adjacent to the street. These lots are occupied by the headquarters of large companies (for example Volkswagen). Other blocks are used for other industrial purposes, such as storage, logistics, or manufacture. These lots are typically less ‘landscaped’, and therefore less attractive from the streetscape.

Figure 5-15 Large scale buildings with some landscaping along the street edge within the Chullora Industrial Park in Precinct 1

Within the study area, areas of industrial development are situated on generally flat or gently undulating landform. At the western end of the transmission cable route (within Precincts 1 and 2), drainage lines that pass through industrial areas are either piped or channelized (i.e. Coxs Creek and the upper reaches of the Cooks River). At the eastern end of the transmission cable route in Precinct 5, the main drainage line/waterway is the Alexandra Canal, which is channelised. A large number of industrial sites back onto this channel, making the waterway generally inaccessible by the public.

These zones typically do not have many (or any) recreational areas, and have wide, major roads passing through or adjacent to them. Truck and heavy vehicle movement in and around these areas is common. Night lighting within this LCZ comprises street lighting and flood lighting to car parks and building entries. Light spill from inside buildings would be minimal due to work typically limited to business hours.

5.1.4.2 Landscape character impact assessment

The impact on landscape character due to the project for LCZ 4: Industrial Development is assessed in **Table 5-4**.

Table 5-4 Landscape character impact assessment, LCZ 4: Industrial Development

Construction	
Changes due to the project	Proposed changes within this LCZ include construction activities associated with the transmission cable circuit and substations (such as site preparation, tree removal, trenching, underboring, installation of cable bridges, conduit installation and construction of joint bays, erection of tents or demountable buildings during cable jointing and road restoration) and construction laydown areas (including vehicle movements). The proposed construction activities are detailed in **Section 2.4**.
Sensitivity	This LCZ has a Low sensitivity, due to the following: • the flat topography of the area results in the landscape typically being visually contained. Limited views are available from high points or to the greater landscape. This makes this LCZ less sensitive to changes within it; • it typically not picturesque, and does not contain areas of high sensitivity within it (for example recreational areas, natural waterways or HCAs); • it is utilitarian in character, in that it is designed for functionality rather than aesthetic appeal. There are only small amounts of landscaping in some areas within this LCZ; • traffic movement within this LCZ is typically high in frequency, volume, and with a high proportion of heavy vehicles moving within it; and • the LCZ is relatively uniform in the scale of built form, with major roads passing through or adjacent.
Magnitude of change	The magnitude of change affecting the LCZ is Low. The transmission cable route passes through this LCZ at a few locations, with construction activity contained within the road reserve. However, the character of the overall area would not be affected by construction work along the transmission cable route or at the construction laydown areas as heavy vehicle movement and construction would by typical throughout this area in general. The typically wide roads in this LCZ would also assist in minimising the impact on landscape character due to construction activity, as construction vehicles would be characteristic and of an appropriate scale to the road reserve. There are also a number of large, long term infrastructure projects being constructed concurrently at the eastern end of the transmission cable route (for example New M5 and Sydney Metro), meaning construction activity and associated work zones are already a typical occurrence within this area. The construction period would be short-term, meaning that most of the areas affected by construction activity would be returned to their original state (with the exception of the potential removal of street trees and vegetation, and the remaining cable bridges, which are both assessed within the operation phase below). The length of time that changes due to construction activity would be observed would vary from location to location. Areas affected by construction laydown areas would experience these changes potentially during the entire construction period (up to two years), while other areas affected by construction would only experience changes over a number of weeks (for example along the transmission cable route or where cable bridges were constructed). There would be a change in the frequency and brightness of lighting within this LCZ at the construction locations, but due to the businesses typically operating during the day time and not at night, this change would not be significant, especially when considering the limited area of the LCZ that the project passes through.

Overall assessment	Overall, the impact during construction would be Low, given the low sensitivity and magnitude ratings of the LCZ. The LCZ has a low sensitivity due to its utilitarian character, where developments are designed for functionality rather than aesthetic appeal. The sensitivity of the LCZ is somewhat dependent on the ability of this LCZ to visually accept the proposed changes. While construction activity along the transmission cable route and within construction laydown areas would be a new element where they occur within the LCZ, they are not particularly out of character. Furthermore, the project would be limited to a very small proportion of this LCZ and therefore would only locally affect landscape character, leaving a majority of the LCZ unchanged.
Operation	
Changes due to the project	Cable bridges would be at two locations within this LCZ: • on Muir Road in Chullora; and • over the rail corridor at Bedwin Road, St Peters. All construction laydown areas would be reinstated to pre-existing conditions, or as agreed with the landowner.
Sensitivity	The sensitivity of this LCZ remains Low.
Magnitude of change	The magnitude of change during operation would be Low. Of the cable bridges listed above, only one would be built within the LCZ (on Muir Road, Chullora), with the other positioned adjacent to the edge of the LCZ and associated with existing bridges. The cable bridges would not affect the character of this utilitarian LCZ. They would be minor new infrastructure elements within an LCZ featuring much larger infrastructure elements, large built form, and ongoing construction activity. The potential loss of trees during the construction period along the road or within the median strip within the streetscape of the industrial development at Chullora (along Muir Road) would result in a change in the character of the area at completion of the Project, considering that this is a major road within this estate. However, as this road comprises one small portion of the overall LCZ, the character of most of the LCZ would remain unchanged due to the project. There would be no change to night lighting within this LCZ at operation.
Overall assessment	The impact during operation would be Low. Due to the utilitarian character of the LCZ, it has a high tolerance to changes of similar character, such as infrastructure projects. The two cable bridges situated within the LCZ would be built adjacent to existing bridges, thereby helping the new structures visually recede in the landscape. The potential loss of trees within this LCZ would be the most visible change, and although the project would only pass through the LCZ in limited places, the loss of trees (if required) would locally alter the landscape character where it occurs. Tree replacement (where possible) would reduce this change, and over time reduce the local impact.

5.1.5 LCZ 5: Commercial Development

5.1.5.1 Existing environment

Commercial development within the study area is typically zoned B1 Neighbourhood Centre, B2 Local Centre, and B4 Mixed Use. This LCZ generally follows main roads (for example Punchbowl Road, Hume Highway or Canterbury Road at Hurlstone Park), at major intersections, or where there are train stations or other transport infrastructure hubs. These areas are often linear and rely on their associated roads or transport hubs for commercial activity.

The LCZ is predominantly flat, or on gently undulating topography. Built form is often directly adjacent to the road reserve with little or no landscaping fronting the roads (with the exception of street trees in some locations, refer to **Figure 5-16**). Built form is often attached, or in large blocks such as shopping malls, which can take up entire street blocks. Streets are often busy, with high pedestrian visitation rates.

Some commercial areas contain or are associated with cultural facilities, such as places of religious worship, community facilities such as scout halls, or schools. They often contain recreational businesses such as pubs and restaurants, such as at Lakemba, where the Mosque is fringed by a cultural centre and businesses such as a café, child care facilities and a recreation centre.

Figure 5-16 Built form is often attached and directly addresses the streets, with limited or no landscaping (Livingstone Road, Petersham)

Commercial areas are typically well lit at night. Lighting sources include street lighting, lighting to pedestrian footpaths (under shop awnings where present), and light spill from inside commercial enterprises where shop fronts are illuminated for safety and surveillance. Where local centres include restaurants and pubs, these would be lit out of regular work hours also.

5.1.5.2 Landscape character impact assessment

An assessment of the potential impact on landscape character due to the project for LCZ 5: Commercial Development is presented in **Table 5-5**.

Table 5-5 Landscape character impact assessment, LCZ 5: Commercial Development

Construction	
Changes due to the project	Proposed changes within this LCZ include construction activities associated with the transmission cable circuit and substations (such as site preparation, tree removal, trenching, underboring, conduit installation and construction of joint bays, erection of tents or demountable buildings during cable jointing and road restoration) and construction laydown areas (including vehicle movements). The proposed construction activities are detailed in **Section 2.4**.
Sensitivity	This LCZ has a Moderate sensitivity, due to the following: • the flat topography of the area, the built form, and the association of this LCZ with roads and intersections results in the landscape typically being visually contained. Limited views are available from high points or to the greater landscape. This makes the zone less sensitive to changes within it; • the LCZ is picturesque in places where it meets or contains heritage items or HCAs. Some built form within this LCZ have cultural significance; • pedestrian and vehicular traffic movement is typically high in frequency, and volume; and • the LCZ is relatively uniform in the scale of built form, with major roads passing through or adjacent to them.
Magnitude of change	The magnitude of change affecting the LCZ is Moderate. The transmission cable route passes portions of this LCZ. During construction, there would be a temporary change in the character of the affected areas due to construction activity, which would comprise the addition of elements including covered work areas where cable jointing would occur. The construction period along the transmission cable route would be short-term. The potential removal of street trees would also be a change that would locally influence the character of the LCZ, however there are few street trees in the stretches of road affected by the project. There would be a change in the frequency and brightness of lighting within this LCZ at the construction work sites, with targeted construction points lit with much brighter, directional flood lighting when night work is required. Night construction work is likely to occur along major roads and near signalised intersections, and due to the fact that these local centres are often positioned along major roads or around intersections, these areas are likely to experience night works and the change in lighting. However, major roads are often well lit therefore the change would not be a completely new element.
Overall assessment	The impact during construction would be Moderate due to the following: • there are only a few areas of this LCZ within the overall study area; • the project typically affects these areas because local commercial centres are often positioned along main roads which the transmission cable route would pass; • while these areas are not particularly sensitive due to the visual containment of the landscape by built form, the local centres are typically small, therefore the project would affect whole areas of the LCZ where it traverses them; and • the LCZ is not typically picturesque, but it does have areas where it is more sensitive due to HCAs and heritage items.
Operation	
Changes due to the project	No changes expected during operation.
Sensitivity	The sensitivity of this LCZ remains Moderate.
Magnitude of change	The magnitude of change during operation would be Negligible.
Overall assessment	The impact during operation would be Negligible. No changes would occur to the overall streetscape with limited (if any) trees potentially removed during construction.

5.1.6 Summary of landscape character impacts

The impacts of the project on landscape character are summarised in **Table 5-6**.

Table 5-6 Landscape character impact summary table

LCZ	Sensitivity	Construction		Operation	
		Magnitude	Rating	Magnitude	Rating
LCZ 1: Recreational Open Space	High	High	**High**	Low	**Moderate**
LCZ 2: Infrastructure Corridor	Low	Moderate	**Moderate to Low**	Moderate	**Moderate to Low**
LCZ 3: Mixed Residential Development	Moderate	Moderate	**Moderate**	Moderate	**Moderate**
LCZ 4: Industrial Development	Low	Low	**Low**	Low	**Low**
LCZ 5: Commercial Development	Moderate	Moderate	**Moderate**	Negligible	**Negligible**

The project would have the greatest impact on landscape character during the construction period, as much of the construction activity is uncharacteristic of the LCZs in the study area. This is particularly true within the most sensitive LCZ (Recreational Open Space (LCZ 1)), where there is a high scenic quality to the landscape and where construction work (including night lighting) would be atypical within the LCZ. However, the construction period is short-term (up to two years) and in most cases the impact on landscape character is reduced during operation. The work sites make up only a very small proportion of the overall LCZs within the study area, and although in some instances they may change the character of the immediate area surrounding the project, the impact on the overall character of the LCZs are limited.

The greatest potential impact of the project on landscape character during operation would be due to the potential removal of street trees during construction, which in some areas would alter the character of the LCZ to varying degrees, depending on the size and character of the individual LCZs and the number, area and type of trees to be removed. Where possible, suitable replacement trees would be planted, which would assist in reducing the potential impacts of the project. Cable bridges are also a source of permanent change within the landscape, however, as there are only three proposed, and they would be adjacent to existing bridges, the cable bridges would not change the landscape character of the LCZs.

6.0 Visual impact assessment

6.1 Visibility of the project

In this section the visibility of the project is discussed during construction and operation.

The majority of the project is situated along an approximately 20 kilometre route, with three construction laydown areas located along the transmission cable route, and two located close by (the furthest approximately 1km from the transmission cable route).

For the purpose of this assessment, the project is divided into the construction of the transmission cable route (including cable bridges and joint bays), which includes linear works; and the use of construction laydown areas, which are contained to specific locations.

6.1.1 Transmission cable circuit

The proposed transmission cable circuit is located predominantly within road reserves, with three cable bridge crossings potentially required. Underboring is proposed at other points where the transmission cable route is required to cross features, including rivers or rail corridors.

Within the road reserve, the visibility of the construction activity would be fairly localised, with views to the works limited to within the built form on either side of the road, and along the road itself. The roads within the study area are predominantly flat to gently undulating. There are no areas where significant views to the surrounding landscape (or views back from the surrounding landscape) are seen from a vantage point.

Built form within the study area predominantly comprises low density residential housing (both attached and detached) with some industrial complexes in Precinct 1, 3 and 4 and some taller residential apartment blocks scattered along the transmission cable route (e.g. at the corner of New Canterbury Road and Herbert Street, Dulwich Hill).

There are few areas where views to the project area are not contained by the built form on either side of the road reserve. This typically occurs where the transmission cable route passes directly next to green open space, such as Allum Park in Greenacre, Gough Reserve and Yeo Park in Hurlstone Park, Enmore Park in Enmore, and Sydney Park in Alexandria and Camdenville Park in St Peters. Views to the project from within these parks is limited by vegetation and landform.

Visibility of the proposed cable bridges, which would be located adjacent to existing pedestrian and vehicular bridges and would cross rail corridors or watercourses, would vary at each location. Views to bridges are sometimes limited by the visual containment of the crossing point, for example where a road bridge crosses a rail corridor the bridge deck is visible to traffic passing over it, but views to the bridge from below (i.e. from within the rail corridor) are limited by the difference in grade between the rail corridor and the surrounding landscape, and by fringing vegetation along the rail corridor which screens views into the corridor. Views to the crossing structures would be most accessible where public open spaces are associated with the bridges, for example at the crossing point of the Cooks River and at Camdenville Park, St Peters.

6.1.2 Construction laydown areas

Views to the construction laydown areas would vary with each location. These are listed in **Table 6-1**.

Table 6-1 Views to construction laydown areas

Construction laydown area	Views
Muir Road, Chullora	Reasonably open, with views available into the construction laydown area from two sides (the access path to the Freshwater Wetlands to the northwest, and the former TAFE Chullora Campus to the southeast), although the side fronting Muir Road is bordered by a tall black metal fence with mature street trees and some vegetation.
Cooke Park, Belfield	Large park with one side open to Chisolm Street to the east and Madeline Street to the west, with the southern and western boundaries predominantly bordered by back fences of properties, and one side bounded by the Cooks River. Views into the park from Chisolm Street are limited by large tree plantings along the boundary.
Peace Park, Ashbury	The park is visually open to Trevenar Street along one edge, but the location of construction laydown area is positioned away from the street frontage and contained by landform, built form and planting. Views into the park can be seen from Trevenar Street and from the rear property boundaries of homes backing onto the park.
Camdenville Park, St Peters	Visually contained by the rail corridor and localised mounding along the northern boundary. Views into the park are available from May Street and Council Street and distant views into the park seen from the Bedwin Road rail bridge over the rail corridor to the west of the park.
Beaconsfield West substation, Alexandria	Visually contained within the high walls of the substation and between other substation infrastructure. Some views may be available from the eastern side of the Alexandria Canal, but typically these are from private properties and not publicly accessible areas.

6.2 Visual receptors

6.2.1 Overview

The visual catchment of the study area comprises the following receptors:

- residents of homes along the transmission cable route and adjacent to the construction laydown areas, including low density single residences and multi-storey apartment blocks;
- employees and customers of businesses along the transmission cable route and adjacent to the construction laydown areas (including cafés and restaurants, or businesses along more major roads and in industrial areas);
- students and teachers at schools and childcare facilities adjacent to the transmission cable route and construction laydown areas;
- worshipers and visitors to religious and cultural centres, for example at the Lakemba Mosque;
- recreational receptors in parks adjacent to the transmission cable route and construction laydown areas, or where the transmission cable route passes through the park itself (for example Sydney Park, Alexandria and Camdenville Park, St Peters); and
- receptors travelling (vehicles, pedestrians and cyclists) on roads along or past the transmission cable route and adjacent to construction laydown areas.

6.2.2 Representative Observer Locations

The representative Observer Locations (OLs) have been identified in **Table 6-2** and are shown on **Figure 6-1** to **Figure 6-4**.

As the works would not be seen from public areas surrounding the Sydney South substation due to its visual isolation, Sydney South substation has been excluded from the assessment and therefore OLs for this site have not been selected.

Table 6-2 Observer locations

Precinct	Observer Location (OL)
Precinct 1	OL 1: Rookwood Road substation, Rookwood
	OL 2: Muir Road Rail Overpass, Potts Hill
	OL 3: Muir Road construction laydown area, Chullora
Precinct 2	OL 4: Allum Park, Greenacre
	OL 5: Lakemba Mosque, Lakemba
	OL 6: Yangoora Road, Lakemba
	OL 7: Carter Street, Belfield
	OL 8: Cooke Park, Belfield
	OL 9: Rudd Park, Belfield
Precinct 3	OL 10: Cowper Street Playground, Campsie
	OL 11A: Croydon Avenue, Croydon Park
	OL 11B: Lindsay Street, Campsie
	OL 12: Harmony Street Playground, Croydon Park
	OL 13: Cheviot Street, Ashbury
	OL 14: Second Street, Ashbury
	OL 15: Peace Park construction laydown area, Ashbury
	OL 16: Old Canterbury Road, Hurlstone Park
	OL 17: Sideways Deli Café, Dulwich Hill
	OL 18A: Terry Road, Dulwich Hill
	OL 18B: Arlington Light Rail Station, Dulwich Hill
	OL 19: 370 New Canterbury Road, Dulwich Hill
	OL 20: Marrickville High School, Marrickville
	OL 21: Amy Street Playground, Marrickville
	OL 22: Charles Street, Marrickville
Precinct 4	OL 23: Enmore Park, Enmore
Precinct 5	OL 24: Edgeware Road, St Peters
	OL 25: Camdenville Park, St Peters
	OL 26: 53 Barwon Park Road, St Peters
	OL 27: Sydney Park, Alexandria
	OL 28: 2-34 Campbell Road, St Peters
	OL 29: Driveway, Euston Road, Alexandria
	OL 30: Beaconsfield West substation, Alexandria

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Note: The project area is confined to the roadway reserve with the exception of parks and existing substations
Source: Department of Finance, Services and Innovation - Spatial Services (2018), Nearmap (2018)

STUDY AREA AND OBSERVER LOCATIONS - MAP 1

Powering Sydney's Future
Potts Hill to Alexandria Transmission Cable Project

FIGURE 6-1

G:\ENV\GIS\Projects\605\60558835 Rookwood to Beaconsfield EIS\FIGURES\2019\LVIA\60558835 F6.1 Study Area and Observer Locations - Map 1 26 08 2019

G:\ENV\GIS\Projects\605\60558835 Rookwood to Beaconsfield EIS\FIGURES\2019\LVIA\60558835 F6.2 Study Are and Observer Locations - Map 2 26 08 2019

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STUDY AREA AND OBSERVER LOCATIONS - MAP 2

Powering Sydney's Future
Potts Hill to Alexandria Transmission Cable Project

Note: The project area is confined to the roadway reserve with the exception of parks and existing substations
Source: Department of Finance, Services and Innovation - Spatial Services (2018), Nearmap (2018)

FIGURE 6-2

G:\ENV\GIS\Projects\605\60558835 Rookwood to Beaconsfield EIS\FIGURES\2019\LVIA\60558835 6.5 Study Area and Observer Locations - Map 3 26 08 2019

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STUDY AREA AND OBSERVER LOCATIONS - MAP 3

Powering Sydney's Future
Potts Hill to Alexandria Transmission Cable Project

Note: The project area is confined to the roadway reserve with the exception of parks and existing substations
Source: Department of Finance, Services and Innovation - Spatial Services (2018), Nearmap (2018)

FIGURE 6-3

G:\ENV\IGIS\Projects\605\60558835 Rookwood to Beaconsfield EIS\FIGURES\2019\LVIA\60558835 F6.4 Study Area and Observer Locations - Map 4 26 08 2019

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STUDY AREA AND OBSERVER LOCATIONS - MAP 4

Powering Sydney's Future
Potts Hill to Alexandria Transmission Cable Project

Note: The project area is confined to the roadway reserve with the exception of parks and existing substations
Source: Department of Finance, Services and Innovation - Spatial Services (2018), Nearmap (2018)

FIGURE 6-4

6.3 Assessment of Observer Locations

6.3.1 Observer Location 1: Rookwood Road substation

Location description

The Rookwood Road substation is situated on the corner of Rookwood Road and William Holmes Street, Potts Hill. Rookwood Road is a busy, six lane road, while William Holmes Street is a semi-private entry road to the Potts Hill Business Park, which has two business complexes within it: the Potts Hill Police Facility; and the Sydney Water Depot and Administration Facility. The Potts Hill Reservoirs can also be accessed via this road. Potts Park lies on the opposite side of William Holmes Street, and comprises an oval, carpark and small grand stand. The park also hosts other sporting activities such as greyhound racing.

The Rookwood Road substation is surrounded by recently landscaped grounds planted with indigenous trees, shrubs and grasses.

Receptors

OL 1 represents the view to the project as seen by:

- travellers (vehicles, pedestrians and cyclists) on William Holmes Street, predominantly made up of workers and visitors to the Sydney Water facility and the Police facility within the business park;
- travellers on Rookwood Road (vehicles, pedestrians and cyclists); and
- recreational users of Potts Park.

Existing views

The OL is located on William Holmes Street, west of the substation and on the northern verge of the road (refer **Figure 6-5**).

Proposed changes to the substation would be limited to the southern area of the site, along William Holmes Street; therefore, the views to the southern boundary of the project are the focus of this assessment.

Views of the southern side of the substation are predominantly restricted to receptors on William Holmes Street and within Potts Park. More distant views of the substation would be experienced by receptors within the Police Facility, approximately 230 metres southwest of the substation, as well as buildings fronting Rookwood Road to the southeast. While the substation would be clearly visible from the Sydney Water facility, views to the southern façade of the substation (where construction activity would be seen within the driveway and William Holmes Street) are unlikely to be seen due to the angle of viewing.

The substation is set on a corner block, separated from William Holmes Street by a strip of landscaping which includes trees, shrubs and grasses (refer to **Figure 6-5**). Semi-mature trees line the southern boundary (refer to **Figure 6-6**), along with screen planting of large and small shrubs. A black metal fence surrounds the substation.

From in front of the substation, views to (and from) Potts Park oval can be seen through the roadside vegetation. Further west along William Holmes Street, the oval lies at a lower level to the road, obscuring views from the western end of the oval and from the building associated with the oval back to the substation and William Holmes Street.

Views to the substation from Rookwood Road are available, but the substation equipment is partly screened by landscaping and roadside vegetation.

Figure 6-5 Existing view looking east along William Holmes Street, with the Rookwood Road substation to the left of frame

Figure 6-6 View east along William Holmes Street from the front entry gate on the southern façade of Rookwood Road substation. Note the black fence and screen planting along the street frontage

Night lighting at this location comprises typical high-level street lighting and lighting to the façade of the substation itself for security purposes. Although the oval at Potts Park is surrounded by flood lighting, it is likely that this lighting would only be used when a night-time sporting event or evening training session occurs, rather than every night. The oval would typically be viewed as a dark, unlit space when no sporting event or training session is being held.

Visual impact assessment

An assessment of the visual impacts associated with the project at OL 1 is presented in **Table 6-3**.

Table 6-3 Visual impact assessment, Observer Location 1: Rookwood Road substation

Construction	
Changes to the view	During construction the project would introduce the following visual elements: • construction plant and equipment, including heavy and light vehicles and traffic management equipment; • construction materials, including conduits and cable drums; • trenches associated with the installation of the transmission cable circuit below the substation driveway and north on Rookwood Road; • tents or demountable buildings and associated construction activities for the installation of joint bays; • potential clearing of landscaping vegetation near the substation driveway on William Holmes Street, as well as along the street's verge, to facilitate the trenching and cable laying; • lighting for night works within the road reserve and substation; and • construction activity within the substation which is likely to be largely screened from public view.
Sensitivity of Receptors	The sensitivity of receptors is assessed as Low due to the following: • workers (i.e. at the Police Facility or the Sydney Water facility): - would be viewing from a reasonable distance away, and some from an oblique viewing angle that would at least partly obscure their views of construction; - would be viewing for moderate periods of time, but have their attention focussed on their everyday work activities rather than on the view from their place of work; - a moderate number of receptors working in these two facilities are anticipated, limited to those working on the eastern edges of the buildings; • Potts Park users: - a low number of receptors would view the substation, as the sports field is only used intermittently, with players focussed on the activity they are engaged in rather than views to the surrounding landscape; - receptors using the sports fields would have views to the project for short periods of time, and see the substation through two rows of screening vegetation from only the eastern portion of the field; • travellers would view the substation as they pass the substation. The views would be fleeting and would not typically dominate their journeys; and • a low number of receptors would see the view at night.
Magnitude of Visual Impacts	The visual impact of construction would be localised and limited to short-term construction works. There is potential that some vegetation, including street trees may be removed, opening up currently screened views to the substation. Night lighting within the streetscape would also increase in brightness and frequency during the construction period. On this basis the magnitude of impact is considered to be Moderate.
Overall Assessment	The visual impact would be Moderate to Low.
Operation	
Changes to the View	Limited changes to the view would be experienced during operation. No views of the changes inside the substation would be seen from publicly accessible locations. Where feasible, trees or vegetation would replace any trees removed. Potential markers of the transmission cable circuit may remain but would not be visually prominent.
Sensitivity of Receptors	The sensitivity of the receptors remains Low.

Magnitude of Visual Effects	The magnitude of change during operation would be Low due to the removal of the trees within the street, however, over time this change would be Negligible if trees were replanted. There would be no change to night lighting during operation.
Overall Assessment	The visual impact would be Low but could be reduced over time if trees and landscaping are replaced.

6.3.2 Observer Location 2: Muir Road Rail Overpass

Location description

Muir Road is a four-lane road that travels in an east-west direction between Rookwood Road and the Hume Highway in Chullora. A bridge is positioned approximately 150 metres east of Rookwood Road, where the road passes over a rail corridor. The rail corridor passing under the road at this location is overgrown with vegetation, including a high proportion of weeds, with heavily vegetated steep earth slopes on either side which return to the grade of the surrounding landscape (refer to **Figure 6-7** and **Figure 6-8**).

A cable bridge would be built to cross this rail corridor on the southern side of Muir Road.

Figure 6-7 The view north along the rail corridor from the Muir Road overpass

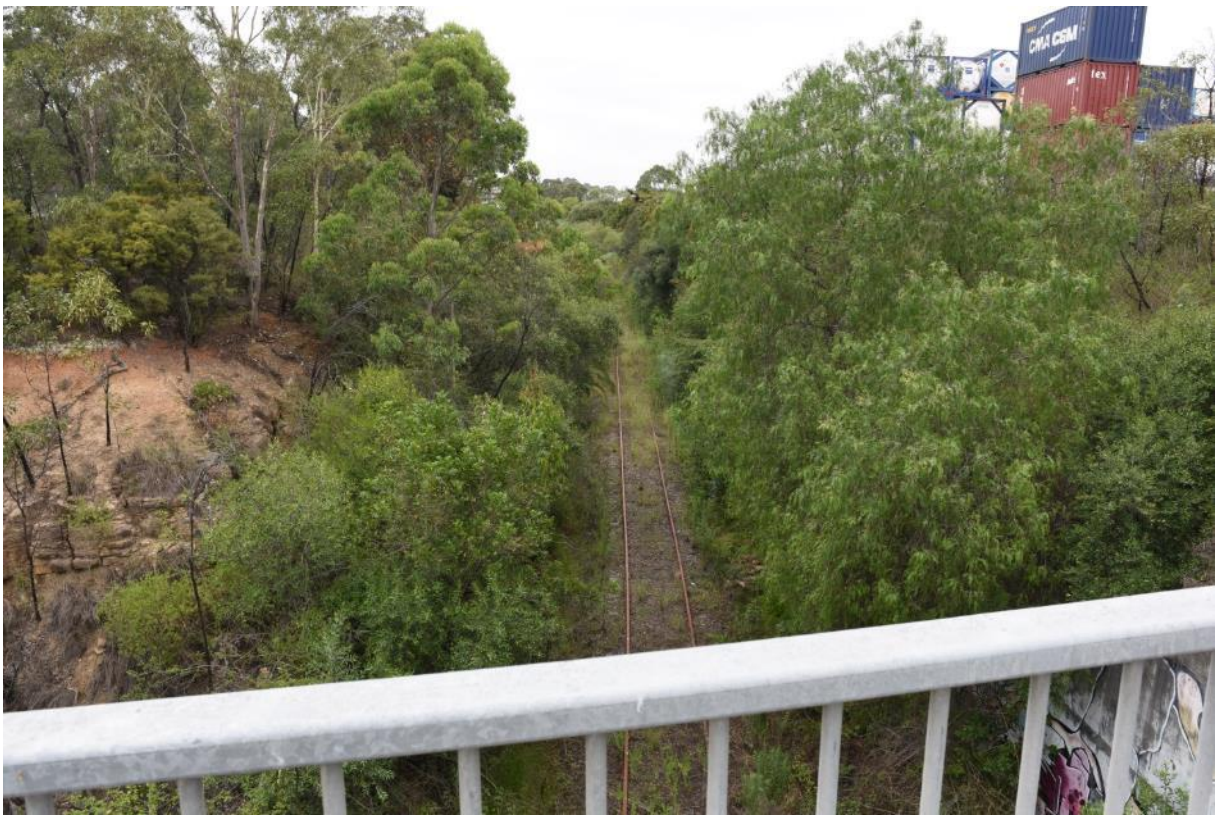

Figure 6-8 The view south along the rail corridor from the Muir Road overpass

Receptors

OL 2 represents the view to the project seen by travellers on Muir Road. Travellers would comprise vehicles, cyclists, and pedestrians. The rail corridor is heavily screened by vegetation south of the rail overpass, and the neighbouring properties would not be able to view the project.

Existing views

The OL is located on Muir Road on the western side of the bridge crossing the rail corridor and on the southern side of the road (refer **Figure 6-9**).

Muir Road passes over the rail corridor on a bridge which is at the same grade as the rest of the road (i.e. the rail corridor is within a cutting). On the overpass, a wide concrete median separates the two sides of the road. A low metal barricade protects the pedestrian pathway on either side of the road, with a taller metal fence/handrail protecting pedestrians from the drop into the rail corridor. The vegetated area on either side of the road bridge is fenced with a tall chain link fence.

From the road, the rail corridor is seen as a weedy, vegetated zone, within a cutting. The tops of trees are seen at, or just above, road level. Views along the rail corridor to the north and south are only available from the pedestrian walkways at the edges of the overpass (refer to **Figure 6-7** and **Figure 6-8**), rather than from the road itself.

The rail overpass is sited within an industrial area and beside a recycling depot. The area has low scenic value as a whole, but with some positive landscape elements such as the mature *Eucalyptus sideroxylon* street trees lining the roadway, and well-maintained landscaped grounds on some of the industrial properties, including the Volkswagen Group Australia Head Office.

Figure 6-9 Panorama showing the existing view from the footpath looking east along Muir Road, with the rail corridor bridge in the middle of the photo

Figure 6-10 Visual simulation showing the proposed cable bridge spanning the rail corridor at Muir Road

Muir Road and the bridge over the rail corridor is lit with typical street lighting, while the rail corridor is unlit.

Visual impact assessment

An assessment of the project's visual impact at OL 2 is presented in **Table 6-4**.

Table 6-4 Visual impact assessment, Observer Location 2: Muir Road Rail Overpass

Construction	
Changes to the View	During construction the project would result in the following changes: • presence of workers, equipment, materials and traffic management; • excavation of the road and verge for trenching; • vegetation clearance and excavation to facilitate construction of the cable bridge across the rail cutting; • night lighting at the construction work site for the cable bridge; and • site demobilisation and rehabilitation activities, including revegetation where possible.
Sensitivity of Receptors	The sensitivity of the receptors is Low. Cyclists and motorists would have their attention focussed on the road, rather than detailed views to partially obscured landscape elements such as the rail corridor. High numbers of vehicular receptors are anticipated and low numbers of cyclists. Pedestrians on Muir Road would get more detailed views to the rail corridor, but again, these would be passing elements within a greater journey, and low receptor numbers are anticipated.
Magnitude of Visual	The magnitude of change during construction would be Moderate, considering the clearing of vegetation adjacent to the road and the construction activity

Impacts	associated with the cable bridge. Pedestrians would be directed to the footpath on the other side of the road during construction, which would reduce their view to the construction activity associated with the cable bridge, although they would still get clear views to the construction activity within the road reserve, both east and west of the rail crossing, associated with the conduit installation. Night lighting within the streetscape would also increase in brightness and frequency during the construction period.
Overall Assessment	The visual impact would be Moderate to Low.
Operation	
Changes to the View	During operation the project would result in the following changes: • the presence of the permanent cable bridge over the rail cutting (refer to **Figure 6-10**), immediately to the south of the Muir Road bridge; • reduced vegetation density either side of the cable bridge; and • potential markers of the transmission cable circuit may remain but would not be visually prominent.
Sensitivity of Receptors	The sensitivity of the receptors remains Low.
Magnitude of Visual Impacts	The permanent cable bridge would visually dominate views to the south of the bridge for all receptors. Views to the north of Muir Road would not be affected. There would be no change to night lighting during operation. There would be some removal of vegetation at the approaches to the new cable bridge, which would reduce the visual softening of the local area. These elements would however not be visible from surrounding industrial properties. On this basis the magnitude of impact at this OL is deemed to be Moderate.
Overall Assessment	The visual impact would be Moderate to Low.

6.3.3 Observer Location 3: Muir Road Construction Laydown Area

Location description

The Muir Road construction laydown area is located at 12 Muir Road, Chullora, approximately 550 metres east of Rookwood Road. The proposed construction laydown area is an open, turfed area with some electricity infrastructure present (refer to **Figure 6-11**), however, the electrical infrastructure lies outside the proposed construction laydown boundary. To the southeast of the construction laydown area is the former TAFE NSW South Western Sydney Institute Chullora campus (TAFE Chullora Campus), Bankstown Campus, and to the northwest is a pathway to the Freshwater Creek Wetlands. East of the Freshwater Creek Wetlands pathway is the Volkswagen Group Australia Head Office.

Figure 6-11 View of the proposed Muir Road construction laydown area, looking through the fence north across the proposed construction laydown area from Muir Road

Receptors

OL 3 represents the view to the project seen by:

- travellers on Muir Road (vehicles, pedestrians and cyclists);
- visitors to the Freshwater Creek Wetlands; and
- employees and visitors at the Volkswagen office.

Existing views

The OL is located on Muir Road approximately 50 metres northwest of the Elcar Place roundabout and on the northern side of the road (refer **Figure 6-12**).

The Muir Road construction laydown area is a flat block of land surrounded by tall fencing. From Muir Road, the foreground of the view contains a berm with mature and juvenile eucalypt trees inside the fencing and along the boundary of the construction laydown area. An earthen berm runs along the western boundary adjacent to the access path to Freshwater Creek. The fencing along the Muir Road boundary is a tall, black metal fence, with a gate at the entry to the former TAFE Chullora Campus at the southern corner of the construction laydown area.

The Muir Road construction laydown area contains a small block of electrical infrastructure which is positioned roughly in the centre of the block. The block has a utilitarian character due to the high fencing, the lack of internal landscaping, and the electrical infrastructure positioned within it.

Several mature *Eucalyptus sideroxylon* street trees line the verge on Muir Road adjacent to the construction laydown area. This tree species is planted along much of the length of the road and are an important element influencing the character of the surrounding area (refer to **Figure 6-12**). The wide median strip in Muir Road has recently been planted with large fig trees.

Figure 6-12 View looking east along Muir Road, with the proposed Muir Road construction laydown area behind the black fence in the centre of the right photo

Night lighting at the construction laydown area comprises light spill from the adjacent road reserve (which is lit from the central median, as shown in **Figure 6-12**). The construction laydown area itself is unlit.

Visual impact assessment

An assessment of the visual impact for OL 3 is presented in **Table 6-5**.

Table 6-5 Visual impact assessment, Observer Location 3: Muir Road construction laydown area

Construction	
Changes to the View	Changes at this location would include the establishment and use of the proposed construction laydown area for the duration of the construction period (up to two years), as described in **Section 2.0**. The transmission cable route also runs along Muir Road past the construction laydown area. In addition to the activity within the construction laydown area, construction activity associated with the transmission cable route would be seen at this location, including the potential removal of trees on one of the verges and in the median strip on Muir Road and the presence of tents or demountable buildings to facilitate the construction of joint bays. The worst-case scenario to change in views at this location would be if the trees on the northern verge were removed, opening up views into the construction laydown area as well as breaking the avenue of mature *Eucalyptus sideroxylon* along the road reserve. The construction laydown area would be floodlit at night during the construction period, as described in **Section 2.7.2**. Further additional night lighting would be seen in the road reserve due to night construction activity along Muir Road.
Sensitivity of Receptors	The sensitivity of the receptors is Low due to the following: • the location proposed for the construction laydown area is utilitarian in character, with low scenic value; • although many receptors would have views to the proposed construction laydown area (considering the amount of traffic on Muir Road), views of the construction laydown area would be partially screened by tall, dark fencing, adjacent street trees, and perimeter planting; and • it is anticipated that receptors would have their attention primarily focussed on their daily tasks, performing tasks within their workplace or passing the construction laydown area as part of a greater journey, rather than on views to the landscape.
Magnitude of Visual Impacts	The magnitude of change during construction would be Moderate. The construction laydown area is situated within an industrial area, meaning that storage of equipment and heavy vehicle access would not be a change from the existing use of many of the lots within the industrial estate. Fencing may not be

	required at the street frontage of the block due to existing tall fencing, meaning the change to the street frontage would be minimal. However, the potential removal of street trees in Muir Road would open up views to the construction laydown area from the road and would break up the avenue of Eucalyptus along the road which currently form a continuous landscape element. The construction laydown area would be lit during construction, which would be a change to the previously unlit site. Additional lighting due to night works along Muir Road would also be seen when night construction work was undertaken along the transmission cable route. However, the road reserve is currently lit, so the increase in lighting for construction of the transmission cable route would be a small change to an existing feature within the view.
Overall Assessment	The visual impact would be Moderate to Low.
Operation	
Changes to the View	The construction laydown area would be returned to its original pre-construction state on completion of construction. Street trees that had been removed would be replaced with like species, where feasible. Potential markers of the transmission cable circuit may remain but would not be visually prominent.
Sensitivity of Receptors	The sensitivity of the receptors remains Low.
Magnitude of Visual Impacts	The magnitude of change during operation would be Low. However, over time, this change would be reduced if the removed trees are replaced. There would be no changes to the lighting within or adjacent to the construction laydown area at operation.
Overall Assessment	The visual impact would be Low but reducing over time if replacement trees are replanted in this area.

6.3.4 Observer Location 4: Allum Park, Greenacre

Location description

Allum Park is a large park with its primary frontage on Maiden Street in the suburb of Greenacre, and a minor access point on Roberts Road. The park comprises two sporting fields, a smaller informal play area, a small playground and a toilet block. The longer northern and southern boundaries of the park back onto residential backyards, with the shorter western boundary opening up to Maiden Street and the eastern boundary a mix of street frontage and the back of residential properties.

Maiden Street is a reasonably quiet residential street, with on-street parking and scattered groupings of mature and semi-mature street trees (*Lophostemon confertus*, refer to **Figure 6-13**).

At this location construction activity would occur within the road reserve (Maiden Street) to install the transmission cable conduits.

Receptors

OL 4 represents the view to the project seen by:

- residents on Maiden Street;
- travellers on Maiden Street (vehicles, pedestrians and cyclists); and
- recreational users of Allum Park.

Existing views

The OL is located on Maiden Street on the western side of the road near the northeast corner of Allum Park (refer **Figure 6-13**).

Maiden Street is a reasonably quiet, wide residential street, with one lane of traffic in either direction and enough space for car parking on either side of the road. Stands of mature *Lophostemon confertus*

are dotted along the length of the road, with some areas (such as directly in front of Allum Park) devoid of trees or planted with a smaller species.

Allum Park has an approximate frontage of 140 metres on Maiden Street and is viewed as a large turfed area with clumps of scattered shade trees at the boundaries. Few trees lie on the boundary fronting Maiden Street. The park is fenced by a tall, black, visually permeable mesh fence on Maiden Street (refer to **Figure 6-13**).

Residential houses fronting Maiden Street are a mix of architectural styles, typically comprising one and two storey detached homes with low or no front fences and front gardens landscaped to varying degrees. These houses have views to the road reserve in the foreground to middle ground, and Allum Park in the background.

Views from within Allum Park to Maiden Street are of the road verge with some street trees in the foreground, as well as tall perimeter mesh fencing. The middle to background of the view comprises the road reserve with fringing residential development.

The landform in the area is reasonably flat to gently undulating, with views along the road reserve limited by the housing to the west, opening out to Allum Park to the east. One level change in the centre of the park splits the park into two areas between an upper field to the west and a lower field to the east.

Figure 6-13 Existing view looking south along Maiden Street, with Allum Park to left of frame

Night lighting at this location comprises light spill from the road reserve on Maiden Street and Roberts Road and some light spill from inside houses that lie adjacent to the oval boundaries. The ovals would be flood lit when in use for night-time activities, otherwise it is likely that the majority of the park would remain unlit at night.

Visual impact assessment

The visual impact for OL 4 is assessed in **Table 6-6**.

Table 6-6 Visual impact assessment, Observer Location 4: Allum Park, Greenacre

Construction	
Changes to the View	During construction the project would introduce the following visual elements: • construction plant and equipment, including heavy and light vehicles and traffic management equipment; • construction materials, including conduits and cable drums; • trenches; • tents or demountable buildings over joint bays; and • potential tree removal along one side of the road to facilitate the trenching and conduit installation.

Sensitivity of Receptors	The sensitivity of the receptors is High due to the following: • residents are typically a sensitive viewer group, given that they have a proprietary interest in the views from their homes and properties, although only a moderate to low number of receptors would see views to the project from this location; • residents would see views to the project for moderate periods of time from within their homes and properties, and from close proximity, but views would be partially screened by mature street trees on the eastern and western verges along the street; • recreational users of Allum Park would have views to the project from close proximity; • the sports field would intermittently be used (potentially on weekends), with players focussed on the activity they are engaged in rather than views to the surrounding landscape, however, recreational users walking their dogs or using the playground would have their attention focussed on the landscape as they walked; • receptors using the sports fields would have views to the project for short periods of time and would see the project (within the road reserve) framed or partially screened by two banks of street trees along Maiden Street.
Magnitude of Visual Impacts	The magnitude of change during construction would be High, given that receptors at this location would view construction activity (including the tents or demountable buildings over joint bays) within the road reserve from close proximity and with little screening.
Overall Assessment	The visual impact would be High. The view to the construction activity within the road reserve would be a significant change from the existing view from Allum Park and residential neighbours.
Operation	
Changes to the View	Limited changes to the view would be experienced during operation. Trees may have been removed during the construction period, and potential markers of the transmission cable circuit may remain but would not be visually prominent.
Sensitivity of Receptors	The sensitivity of the receptors remains High.
Magnitude of Visual Impacts	The magnitude of change at operation would be Low due to the possible change to the trees within the street; however, over time this change would reduce if replanting is feasible with similar trees. There would be no change to lighting in the park or surrounding streetscape at operation.
Overall Assessment	The visual impact would be Moderate, but possibly reducing over time if trees are replaced.

6.3.5 Observer Location 5: Lakemba Mosque, Lakemba

Location description

The Lakemba Mosque (refer to **Figure 6-14**) is situated at 65 – 67 Wangee Road, Lakemba, and is also known as the Masjid Ali Bin Abi Talib and the Imam Ali bin Abi Taleb Mosque. The mosque runs daily prayer services at seven times throughout the day, with the most popular services held on Fridays each week and on religious holidays and festivals.

Figure 6-14The view from Wangee Road looking northeast showing the Lakemba Mosque to the left of frame

A number of support services surround the mosque, such as the Lebanese Muslim Association at 71-75 Wangee Road, which runs a number of programs, education services, and other community services such as fitness programs (refer to **Figure 6-15**). These buildings also contain restaurants and shops.

Figure 6-15 The Lebanese Muslim Association is located at 71-75 Wangee Road and has community facilities, shops and a restaurant associated with it

The block of land to the west of the mosque was under construction at the time of this assessment. Between the block under construction and the Lebanese Muslim Association building lies a channelised tributary to the Cooks River (an upper reach of Coxs Creek).

At this location, construction would occur within the Wangee Road reserve to install conduits within the road reserve.

Receptors

OL 5 represents the view to the project seen by:

- worshipers and visitors to Lakemba Mosque and its associated community facility buildings;
- employees and customers of businesses adjacent to the mosque;
- residents of homes on Wangee Road; and
- receptors travelling (vehicles, pedestrians and cyclists) on Wangee Road.

Existing views

The OL is located on Wangee Road on the northeastern side of the road adjacent to (south of) the mosque (refer **Figure 6-16**).

The view from outside the mosque looking south comprises the Wangee Road verge and road pavement in the foreground. Wangee Road is a busy two lane road with parking provided on either side of the road. A pedestrian crossing is seen in the foreground of the view, with raised concrete road blisters helping to slow traffic near the mosque entrance (refer to **Figure 6-16**).

Construction activity within the vicinity of the mosque is visually prominent at this position, with temporary barriers, fencing and construction activity visible in the road corridor (refer to **Figure 6-16** and **Figure 6-17**) and within the blocks next to the mosque.

Street trees at this location are typically small, with Bottlebrush trees under five metres in height along the street. Flowering shrubs are planted within the road verges adjacent to the footpaths in the vicinity of the mosque on the northern and southern sides of the road.

Figure 6-16 The view from in front of the Lakemba Mosque, looking southwest, with Wangee Road in the foreground. The fence of the mosque can be seen to the right of frame

Figure 6-17 Detail view of Figure 6-16, looking north-west along Wangee Road, with the Lakemba Mosque to the right of frame

In the middle to background, residential housing lining the street comprises a mix of medium density apartment blocks of brick construction, and single storey residential housing. The apartment blocks opposite the mosque have some small trees and shrubs in their front garden areas, and a mix of fencing types.

Visual impact assessment

The visual impact for OL 5 is assessed in **Table 6-7**.

Table 6-7 Visual impact assessment, Observer Location 5: Lakemba Mosque, Lakemba

Construction	
Changes to the View	During construction the project would introduce the following visual elements: • construction plant and equipment, including heavy and light vehicles and traffic management equipment; • construction materials, including conduits and cable drums; • trenches; • tents or demountable buildings over joint bays; and • potential tree and vegetation removal along one side of the road to facilitate the trenching and conduit installation, including the flowering shrubbery on either side of the road verges adjacent to the footpaths in front of the mosque.
Sensitivity of Receptors	The sensitivity of the receptors is High due to the following: • attendees of the mosque are a sensitive receptor group given the cultural and religious importance of the site and they would get detailed views to the project as they enter and leave the mosque; • residents are typically a sensitive viewer group, given that they have a proprietary interest in the views from their homes and properties; • residents would see views to the project for moderate periods of time from within their homes and properties, and from close proximity. • travellers on Wangee Road are less sensitive receptors who would also view the changes.

Magnitude of Visual Impacts	The magnitude of change during construction would be High, given that receptors at this location would view construction activity (including the tents or demountable buildings over joint bays) within the road reserve from close proximity and with little screening.
Overall Assessment	The visual impact would be High. The view to the construction activity within the road reserve would be a significant change from the existing view from Lakemba Mosque and residential neighbours.
Operation	
Changes to the View	The road reserve would be reinstated to its previous condition. Street trees and verge planting that had been removed would be replaced with like species, where feasible. Potential markers of the transmission cable circuit may remain but would not be visually prominent.
Sensitivity of Receptors	The sensitivity of the receptors remains High.
Magnitude of Visual Impacts	The magnitude of change at operation would be Low due to the possible change to the trees and verge planting within the street; however, over time this change would reduce if replanting is feasible with similar trees and shrubs.
Overall Assessment	The visual impact would be Moderate, but possibly reducing over time if trees and verge plantings are replaced.

6.3.6 Observer Location 6: Yangoora Road, Lakemba

Location description

Yangoora Road is a typical residential road, approximately one kilometre long, and travelling in an east-west direction with four roundabouts connecting it to intersecting streets.

Typical housing fringing the road comprises a mix of medium density residential housing, typically brick three storey ‘walk up’ apartments, and detached residential housing with mature front landscaped gardens.

The proposed transmission cable route would run along Yangoora Road from Wangee Road to Neale Street.

Receptors

OL 6 represents the view to the project seen by:

- residents in homes on Yangoora Road; and
- travellers on Yangoora Road (vehicles, pedestrians and cyclists).

Existing views

The OL is located on Yangoora Road on the northern side of the road near Vivienne Avenue (refer **Figure 6-18**).

The view comprises the road pavement and verges in the foreground, including traffic calming devices, roundabouts and parked cars on both sides of the street (refer to **Figure 6-18**). A bike lane is integrated into the on-street parking on both sides of Wangee Road and is only interrupted by the intersection on Yangoora Road. The verge contains evenly spaced mature trees, with the trees on the southern edge pruned so as not to obstruct the overhead powerline. The street trees contribute to the character within the street and are therefore an important element within the view.

Seen in the middle to background, residential homes line the road. On the northern side of the road, the housing comprises a mix of brick apartment blocks and detached homes, both with mature front gardens and low front walls fronting the road. The homes are built in a number of architectural styles, but many of them feature unusual architectural features, such as verandas, gables and ridge decorations. Some intersections along Yangoora Road have corner shops, such as Hamys Allfoods Mixed Business as seen in **Figure 6-19**.

Figure 6-18 The view looking northeast from the traffic island east of the intersection of Vivienne Avenue and Yangoora Road

Figure 6-19 The view from the intersection of Barremma Road and Yangoora Road looking south-west. Hamys Allfoods Mixed Business can be seen on the corner

Visual impact assessment

The visual impact for OL 6 is assessed in **Table 6-8**.

Table 6-8 Visual impact assessment, Observer Location 6: Yangoora Road, Lakemba

Construction	
Changes to the View	During construction the project would introduce the following visual elements: • construction plant and equipment, including heavy and light vehicles and traffic management equipment; • construction materials, including conduits and cable drums; • trenches; • tents or demountable buildings over joint bays; and • potential tree removal along one side of the road to facilitate the trenching and conduit installation.

Sensitivity of Receptors	The sensitivity of the receptors is High due to the following: • residents are typically a sensitive viewer group, given that they have a proprietary interest in the views from their homes and properties. Considering the apartment blocks on the northern side of the road, a moderate to high number of receptors would potentially see views to the project from this location; and • residents would see views to the project for moderate periods of time from within their homes and properties, and from close proximity, but views would be partially screened by mature street trees on northern and southern verges along the street.
Magnitude of Visual Impacts	The magnitude of change during construction would be High, given that receptors at this location would view construction activity (including the tents or demountable buildings over joint bays) within the road reserve from close proximity and with little screening.
Overall Assessment	The visual impact would be High. The view to the construction activity within the road reserve would be a significant change from the existing view from the residences and for travellers along Yangoora Road.
Operation	
Changes to the View	Limited changes to the view would be experienced during operation. Street trees and verge planting that had been removed would be replaced with like species, where feasible. Potential markers of the transmission cable circuit may remain but would not be visually prominent.
Sensitivity of Receptors	The sensitivity of the receptors remains High.
Magnitude of Visual Impacts	The magnitude of change at operation would be Low due to the possible change to the trees within the street; however, over time this change would reduce if replanting is feasible with similar trees.
Overall Assessment	The visual impact would be Moderate, but possibly reducing over time if trees are replaced.

6.3.7 Observer Location 7: Carter Street, Belfield

Location description

Carter Street is a typical residential street approximately 80 metres long that connects Burwood Road and Seymour Parade. The street runs in an east-west direction. Star Academy Kids Learning Centre is located near the intersection with Carter Street and Seymour Parade and cares for children between 0-6 years of age.

The transmission cable route at this location would be underbored beneath the railway track, travel the length of Carter Street and continue into Burwood Road.

Receptors

OL 7 represents the view to the project seen by:

- residents in homes near the intersection of Carter Road and Seymour Parade;
- travellers on Carter Road and Seymour Parade (vehicles, pedestrians and cyclists); and
- employees, parents and children at Star Academy Kids Learning Centre.

Existing views

The Observer Location is located at the intersection of Carter Street and Seymour Parade (refer **Figure 6-20** and **Figure 6-21**).

The view comprises the junction of two quiet, residential streets with the rail corridor visible at the intersection to the west. Carter Street and Seymour Parade are viewed as wide streets with mature street trees on either side. Carter Street has low Bottlebrush trees on the northern verge and

occasional Brush Box trees on the southern side (refer to **Figure 6-20**). Seymour Parade has intermittent mature Brush Box trees on both sides of the road.

There is unmarked on-street parking on both sides of Carter Street and Seymour Parade, with mature trees screening the fence of Star Academy Childcare Centre near the potential crossing location of the rail corridor. No views would be seen from within the Star Academy Childcare Centre due to a high, solid fence surrounding the centre (refer **Figure 6-21** and **Figure 6-22**).

Figure 6-20 The view looking east along Carter Street from the potential crossing location, with Seymour Parade to the left of frame

The rail corridor is seen in the middle to background of the view from the corner of Carter Street and Seymour Parade behind a tall galvanised metal fence (refer to **Figure 6-21** and **Figure 6-22**), comprising a grassed 'verge' in front of the train tracks, seen in front of a band of mature trees and a solid grey block fence. A clump of mature trees partly screens the view north along the rail corridor, but the view south along the rail corridor is visible, as well as a rail bridge spanning the corridor. A pedestrian path leading to the rail bridge is seen between the residential houses and the rail corridor fencing, east of OL 7 (refer to **Figure 6-21**, to the left of frame).

Figure 6-21 The view from the potential crossing point looking west across the railway line. Refer Figure 6-22 for a detailed view of the red fence of the childcare centre seen to the right of frame

Figure 6-22 A detailed view of the right of frame of Figure 6-21, showing the red fence of the childcare centre on Seymour Parade

Visual impact assessment

The visual impact for OL 7 is assessed in **Table 6-9**.

Table 6-9 Visual impact assessment, Observer Location 7: Carter Street, Belfield

Construction	
Changes to the View	During construction the project would introduce the following visual elements at the intersection of Carter Street and Seymour Parade: • construction plant and equipment, including heavy and light vehicles and traffic management equipment; • construction materials, including conduits and cable drums; • trenches; • tents or demountable buildings over joint bays; • some potential night lighting when night construction works (i.e. underboring) is required; and • potential tree removal to facilitate the trenching and conduit installation. Further construction equipment and activity would be seen from this location, associated with underboring activity under the rail corridor, including worker amenities, vehicle entry and parking, excavation and boring equipment, water management plant and sediment containers.
Sensitivity of Receptors	The sensitivity of the receptors is High due to the following: • residents are typically a sensitive viewer group, given that they have a proprietary interest in the views from their homes and properties, although only a moderate to low number of receptors would see views to the project from this location; and • residents would see views to the project for moderate periods of time from within their homes and properties, and from close proximity, but views would be partially screened by mature street trees on northern and southern verges along the street. Although workers and children at the childcare centre would typically be a sensitive receptor group, views of the construction site would only be visible when workers and visitors to the childcare centre were entering or exiting the property as views from within the centre would be obstructed by mature vegetation and a fence approximately two metres tall.
Magnitude of Visual Impacts	The magnitude of change during construction would be High, given that residential receptors at this location would view construction activity (including the tents or demountable buildings over joint bays and works associated with the underboring work) within the road reserve from close proximity and with little screening. Night lighting within the streetscape would also increase in brightness and frequency during the construction period.
Overall Assessment	The visual impact would be High. The view to the construction activity within the road reserve (including night lighting) would be a significant change from the existing view from the residences and for travellers along Carter Street and Seymour Parade.
Operation	
Changes to the View	Limited changes to the view would be experienced during operation. Street trees and verge planting that had been removed would be replaced with like species, where feasible. Potential markers of the transmission cable circuit may remain but would not be visually prominent.
Sensitivity of Receptors	The sensitivity of the receptors remains High.
Magnitude of Visual Impacts	The magnitude of change at operation would be Low due to the possible change to the trees within the street; however, over time this change would reduce if replanting is feasible with similar trees.

Overall Assessment	The visual impact would be Moderate, but possibly reducing over time if trees are replaced.

6.3.8 Observer Location 8: Cooke Park Construction Laydown Area, Belfield

Location description

Cooke Park is located on the southern bank of Coxs Creek, a tributary of the Cooks River in Belfield. The park has its major street frontage on the eastern boundary at Chisholm Street and a shorter frontage on the western boundary at Madeline Street. Several residential lots line the south western and southern boundaries of the park. The boundaries with the creek and roads are lined with vegetation creating a visual barrier to the park. A chicane is located on Madeline Street toward the bridge over Coxs Creek.

Development surrounding the park is primarily residential to the south and east while industrial development dominates the land to the north and west of the proposed construction laydown area. The park contains a skate park, playground and sports oval, as well as toilet facilities.

Receptors

OL 8 represents the view of the project seen by:

- visitors to the park (users of the sports field, playground and skate park);
- residents in neighbouring houses; and
- travellers on Chisholm Street and Madeline Street.

Existing views

The OL is located on Chisolm Street on the eastern side of the road between Chatfield Avenue and Excelsior Avenue.

The construction laydown area would be limited to the southern portion of the park to the south of the pedestrian path and sports field (refer to **Figure 6-23**). There are mature plantings along all the boundaries of the park partially screening views from the residential lots and footpaths on Chisholm and Madeline streets.

The residential lots with rear access to the park also have obstructed views due to timber fencing and mature trees in yards. Coxs Creek canal is below the ground level of the park and obstructed by dense vegetation and planting. The park is not visible from the industrial lots on the northern side of the Coxs Creek canal.

A playground is positioned on the western boundary of the park on Madeline Street. Views into the park (and to the area which would be used for the construction laydown area) are partially screened by vegetation and landscaping surrounding the playground equipment.

Lighting at this location comprises light spill from the adjacent streets on the north eastern and south western boundary, but lighting from these streets would be seen filtered through the trees that surround the park. The park itself has floodlights, but these would only be used during night-time sporting activities, and the park is typically unlit at night. Some light spill from the windows of neighbouring houses would be seen, although these would be minimal from residential homes backing onto the park due to tall, solid fencing and vegetation.

Figure 6-23 View south to the proposed construction laydown area from the centre of the sports field (the construction laydown area would be positioned to left of frame)

Visual impact assessment

The visual impact for OL 8 is assessed in **Table 6-10**.

Table 6-10 Visual impact assessment, Observer Location 8: Cooke Park construction laydown area, Belfield

Construction	
Changes to the View	Changes at this location would include the establishment and use of a construction laydown area for the duration of the construction period (up to two years), as described in **Section 2.0**. The construction laydown area would include a driveway connecting to Chisolm Street to the east of the park. The construction laydown area would be floodlit at night during the construction period, as described in **Section 3.3.1**.
Sensitivity of Receptors	The sensitivity of the receptors is High due to the following: • a low number of receptors would see the view to the proposed construction laydown area from residential properties, but only from their backyards over the top of rear fences, and probably not from within their homes; • residents are typically a sensitive viewer group, given that they have a proprietary interest in the views from their homes and properties, although only a moderate to low number of receptors would see views to the project from this location; • recreational users of the playground and skate park would have views to the project from close proximity, but partially screened by vegetation surrounding the playground; • the sports field would intermittently be used (potentially on weekends), with players focussed on the activity they are engaged in rather than views to the surrounding landscape, however, recreational users walking their dogs or using the playground may have their attention focussed on the landscape around them; • few receptors (cyclists and vehicles) would be passing the construction laydown area directly as Chisholm Street is not a through road. Those passing would see the view to the construction laydown area as part of a greater journey, and therefore only have short periods of viewing; and • the construction laydown area is obstructed from view for receptors traveling on Madeline Street by the vegetation, playground, sports facilities, road chicane and residential lots.
Magnitude of Visual Impacts	The magnitude of change during construction would be High. Although the construction laydown area would have more activity within and around it, the character and primary use of the park would not change overall, considering the small portion of the park that would be used. The fencing surrounding the construction laydown area would visually contain the construction laydown area with the exception of the driveway, which may result in the removal of trees along Chisolm Street. However, the construction laydown area would be lit during

	construction, which would be a change to the previously unlit park. This lighting (the lighting structures and light spill) may be seen from surrounding/adjacent residences due to the height and brightness of the floodlights, which would protrude above the back fences of adjacent residences.
Overall Assessment	The visual impact would be High.
Operation	
Changes to the View	The construction laydown area would be returned to its original pre-construction state on completion of construction.
Sensitivity of Receptors	The sensitivity of these receptors remains High.
Magnitude of Visual Impacts	The magnitude of change during operation would be Negligible as the park would be returned to its original condition.
Overall Assessment	The visual impact would be Negligible.

6.3.9 Observer Location 9: Rudd Park, Belfield

Location description

Rudd Park is popular neighbourhood park, bounded by Omaha Street to the south, Varidel Avenue to the west and Clarence Street to the north. The parks eastern boundary is bounded by the rear of residential properties fronting onto First Avenue, Anne Marie Place and Clarence Street.

The park is used by many local sports teams, including soccer, cricket, rugby and tennis groups. The park has a fenced playground and tennis courts that are positioned on Omaha Street, a carpark with access from Varidel Avenue, and an oval that is positioned adjacent to Clarence Street.

A channelised tributary to the Cooks River runs through the site, delineating the boundary between the oval and the rest of Rudd Park. The channel runs parallel to Omaha Street with a secondary channel connecting at the southwest corner of Rudd Park (refer to **Figure 6-24**).

At this location, the transmission cable route is positioned within the road corridor of Omaha Street adjacent to the playground and tennis courts.

Figure 6-24 The view from the northern footpath of Omaha Road to the channelised tributary to the Cooks River bordered by a metal fence

Receptors

OL 9 represents the view of the project seen by:

- residents in homes on Omaha Street;
- recreational receptors within the playground and tennis courts adjacent to Omaha Street; and
- receptors travelling (vehicles, pedestrians and cyclists) on Omaha Street.

Existing views

The OL is located on Omaha Street on the northern side of the road adjacent to the playground (refer **Figure 6-25**).

The view along the road corridor at Omaha Street comprises a typical quiet, leafy residential street, with the southern verge of the street fringed with low density residential development and the park on the northern side of the street.

Directly opposite the park at this location, the residences front onto Lincoln Street, with the side boundary fences fronting Omaha Street, as seen in **Figure 6-26**. Residential development typically comprises one storey brick homes, some with second storey additions. While front fencing (on Lincoln Street) is typically low brick walls, side boundary fencing is tall colourbond or timber fencing, approximately 1.8 metres high.

Overhead powerlines run along the southern verge of Omaha Street. In the vicinity of Rudd Park, street trees are positioned on the southern verge of the street only and comprise Bottlebrush (Casuarina species). These are less than five metres tall and have been pruned to fit beneath the overhead wires. On the northern side of the road, while there are no street trees in the verge at this location, Sheoak (Casuarina species) trees within the park provide a leafy green aesthetic to the street (refer to). A green metal pool type fence, approximately 1.2 metres high, surrounds the playground, which is seen on the northern verge of the street.

There is on street parking and planted traffic calming devices immediately in the front of the park on Omaha Street (refer to **Figure 6-26**).

Within the park at OL 9, a channelised creek/stormwater drain passes under the road and through the park, through a turfed area with scattered Casuarina trees. This area is fenced with a low timber post fence along the street frontage, with the channel protected by a taller metal safety fence.

Figure 6-25 The view from the footpath along Omaha Street in front of Rudd Park looking east

Figure 6-26 The view from the northern footpath along Omaha Street in front of Rudd Park looking south

Visual impact assessment

The visual impact for OL 9 is assessed in **Table 6-11**.

Table 6-11 Visual impact assessment, Observer Location 9: Rudd Park, Belfield

Construction	
Changes to the View	During construction the project would introduce the following visual elements: • construction plant and equipment, including heavy and light vehicles and traffic management equipment; • construction materials, including conduits and cable drums; • trenches; • tents or demountable buildings over joint bays; and • potential tree removal along one side of the road to facilitate the trenching and conduit installation.
Sensitivity of Receptors	The sensitivity of the receptors is High due to the following: • residents are typically a sensitive viewer group, given that they have a proprietary interest in the views from their homes and properties, although only a low number of receptors would see views to the project from this location; • residents would see views to the project for moderate periods of time from within their homes and properties, and from close proximity, but views would be partially screened by mature street trees on the southern verges along the street and tall boundary fencing; • primary users of the playground include children and their caretakers and although the period of time the playground would be used for would be low to moderate, it would be used on a regular basis by locals; and • Users of the tennis courts would also see the changes, although this receptor group would not be as sensitive as it is assumed, they would have their attention on their sport as they played. The tennis courts are also partly screened from the road due to the setback of the courts, a amenities block and mature trees.
Magnitude of Visual Impacts	The magnitude of change during construction would be High, given that receptors at this location would view construction activity (including the tents or demountable buildings over joint bays) within the road reserve from close proximity and with little screening.

Overall Assessment	The visual impact would be High. The view to the construction activity within the road reserve would be a significant change from the existing view from the residences and for travellers along Omaha Street.
Operation	
Changes to the View	Limited changes to the view would be experienced during operation. Street trees and verge planting that had been removed would be replaced with like species, where feasible. Potential markers of the transmission cable circuit may remain but would not be visually prominent.
Sensitivity of Receptors	The sensitivity of the receptors remains High.
Magnitude of Visual Impacts	The magnitude of change at operation would be Low due to the possible change to the trees within the street; however, over time this change would reduce if replanting is feasible with similar trees.
Overall Assessment	The visual impact would be Moderate, but possibly reducing over time if trees are replaced.

6.3.10 Route options for Observer Locations 10, 11A and 11B

As described in **Section 2.4**, there are multiple options for the cable route and special crossings at the Cooks River in the area of Campsie, Croydon Park and Ashbury.

6.3.10.1 Observer Location 10: Cowper Street Playground, Campsie

Location description

The Cowper Street playground is a fenced play area within Mildura Reserve, Campsie. The playground is positioned so it fronts Cowper Street, adjacent to the side fence of a residence also fronting Cowper Street (refer to **Figure 6-27**).

Figure 6-27 The existing view looking north from Cowper Street, with the playground to the right of frame adjacent to the side boundaries of residential housing

Mildura Reserve is an irregularly shaped, medium sized reserve bounded by Brighton Avenue to the northwest, a small frontage on Cowper Street to the southwest, and the Cooks River to the northeast and east. The southern boundary of Mildura Reserve is bounded by the back and side fences of residences which front onto Cowper Street, Adam Street, Lindsay Street, and Gordon Street. A high voltage overhead transmission line passes through the reserve and runs parallel to the Cooks River through the reserve. Steel lattice transmission line towers are positioned near the ends of Gordon Street, Adam Street and near Brighton Avenue at the northern extent of the reserve.

From this OL, all three transmission cable route options would be visible.

Receptors

OL 10 represents the view to the project seen by:

- residents in homes on Cowper Street in the vicinity of the playground;
- recreational receptors in Mildura Reserve, but particularly within the Cowper Street playground; and
- receptors travelling (vehicles, pedestrians and cyclists) on Cowper Street in the vicinity of the playground.

Existing views

The OL is located on the northern verge of Cowper Street, adjacent to the playground (refer **Figure 6-27**).

From the playground, receptors get views into Mildura Reserve to the north, northeast, and east. Views to the south comprise the side fencing of 2 and 2a Cowper Street with the homes protruding above the fencing (refer to **Figure 6-27**).

Mildura reserve dominates the foreground of the view. The reserve comprises a flat, turfed area with scattered trees. These trees are predominantly eucalyptus, but with occasional other species, such as the mature Phoenix palm (*Phoenix canariensis*) located on the corner of Cowper Street and Brighton Avenue near the roundabout. Most of the eucalyptus trees within the reserve are juvenile and evenly spaced within the park. Some mature examples are seen to the northeast of the playground.

To the north, beyond the reserve, the road pavement, passing traffic and residential housing on Brighton Avenue is screened by a band of vegetation lining Mildura Reserve (refer to **Figure 6-28**), comprising predominantly Brush Box (*Lophostemon confertus*) with an understorey of *Lomandra longifolia*.

To the northeast a thick band of mangrove trees is visible lining the Cooks River. Within the reserve to the northeast and east, the overhead high voltage electricity transmission line is visible, seen as a many overhead wires strung between tall steel lattice towers running parallel to the Cooks River (refer **Figure 6-29**).

Figure 6-28 A wide landscaped band of trees and grasses separating Brighton Avenue and Mildura Reserve. A transmission tower within the reserve is seen in the background to the right of frame

To the west and southwest Cowper Street is visible from the playground. This view comprises the verge with small street trees and footpath in the foreground, fringed by parked cars on the road (refer to **Figure 6-29**). Housing lining the street is clearly visible, comprising single storey fibro and brick cottages with low front fences and mature front gardens. Typical street trees are Bottlebrush (Casuarina species) and Water Gum (*Tristaniopsis laurina*).

Figure 6-29 The view from the footpath of Cowper Street looking west with the viewers back to the playground

Visual impact assessment

The visual impact for OL 10 for each option is assessed in **Table 6-12**.

Table 6-12 Visual impact assessment, Observer Location 10: Cowper Street Playground, Campsie

Construction	
Changes to the View	All three route options would result in changes to views during construction. While Options 2 and 3 would result in changes within Mildura Reserve north of the Cowper Street playground, Option 1 would result in changes within the Cowper Street road reserve. These changes to views are as a result of: • construction plant and equipment, including heavy and light vehicles and traffic management equipment; • construction materials, including conduits and cable drums; • trenches; • tents or demountable buildings over joint bays; • some potential night lighting when night construction works are required; and • potential tree removal within the reserve to facilitate the trenching and conduit installation. Option 2 would result in further construction equipment and activity being visible from this location, associated with potential underboring at the Cooks River. The work site would include worker amenities, vehicle entry and parking, excavation and boring equipment, water management plant and sediment containers.
Sensitivity of Receptors	The sensitivity of the receptors is High due to the following: • Two receptor groups at this location are typically very sensitive: residents and recreational users of the reserve and playground: - residents have a proprietary interest in the views from their homes and properties, although only a moderate to low number of receptors would see views to the project from this location; - residents would see views to the project for moderate periods of time from within their homes and properties, and from close proximity, but views would be partially screened by street trees, boundary fencing and mature vegetation within front gardens; and - recreational users of the playground would have uninterrupted views to the project from close proximity. • Cyclists and motorists on Cowper Street near the playground would have their attention focussed on the road, rather than detailed views to the landscape. Moderate numbers of vehicular receptors are anticipated and low numbers of cyclists. Pedestrians on Cowper Street would get more detailed views to the playground and reserve, but these would be passing elements within a greater journey, and low receptor numbers are anticipated.

Magnitude of Visual Impacts	The magnitude of change to the views due to all options are High. All receptors at this location would be viewing construction activity within the quiet, open reserve, or the quiet residential street, and the changes would potentially include the removal of trees. These changes would be seen by a moderate number of receptors and potentially for prolonged periods of time, particularly from residential neighbours. Receptors within the playground would also view the changes for prolonged periods of time as they use the playground. Night lighting within the streetscape would also increase in brightness and frequency during the construction period if night construction works are required.
Overall Assessment	The visual impact of all three options would be High.
Operation	
Changes to the View	The changes to the view from this OL would be similar with Options 2 and 3, with the potential loss of trees within the reserve the greatest change due to the project, although most of the trees within the reserve are juvenile. The reserve would be returned to its pre-construction state on completion of the project. Option 1 would also result in the potential removal of trees within Cowper Street, which would be seen from the verge and playground. Potential markers of the transmission cable circuit may remain with all options but would not be visually prominent.
Sensitivity of Receptors	The sensitivity of the receptors remains High.
Magnitude of Visual Impacts	The magnitude of change during operation for all three options would be Low due to the potential loss of trees within the reserve or streetscape. However, over time this change could reduce if trees were replanted. There would be no change to lighting in the park or streetscape at operation.
Overall Assessment	The visual impact for all three options would be Moderate but reducing over time if trees are replanted in the reserve or streetscape.

6.3.10.2 Observer Location 11A: Croydon Avenue, Croydon Park

Location description

The Cooks River cycleway is a 30 kilometre long shared path that predominantly follows the Cooks River from Settlers Park in Ryde to Botany Bay at Kyeemagh. The cycleway comprises a mix of on-road and off-road paths.

The Cooks River at this location comprises a wide channel with public spaces on either side (refer to **Figure 6-30**). On the northern bank of the river, north of OL 11A, is Croydon Park, a large sporting field and associated playground and public amenities. On the southern bank of the Cooks River is Mildura Reserve, assessed in OL 10.

Of the Cooks River crossing options, OL 11A assesses the visual impact of Option 2, which would comprise the underboring of the Cooks River and the use of Croydon Avenue, Dunstan Street and Hay Street for the transmission cable route.

Figure 6-30 View looking south along the Cooks River from the Lindsay Street pedestrian bridge, approximately 200 metres southeast of OL 11A

Receptors

OL 11A represents the view to the project seen by:

- travellers (vehicles, pedestrians and cyclists) on Croydon Avenue;
- residents living in nearby houses; and
- recreational cyclists and pedestrians using the Cooks River cycleway and recreational park users of the adjacent park and playground.

Existing views

This OL is located on the Cooks River Cycleway at the end of Croydon Avenue, Croydon Park.

The view is dominated by the Cooks River, which is a landmark feature within the landscape. The river is channelised at this location, although the hard channel banks are sloping and in parts, vegetated, with mangroves lining the southern bank and vegetation growing in pockets of sediment build up adjacent to the concrete channel walls.

Looking south, the foreground of the view comprises the cycleway and associated green corridor. The Cooks River is seen to the right of frame (refer to **Figure 6-31**) fringed by a thick band of mangrove trees on the southern bank. These mangroves screen views to the landscape beyond the southern bank of the river, with the exception of the overhead high voltage electricity towers and wires which can be seen above the canopy of the trees. To the east, Croydon Avenue is seen, with fringing houses partly screened by mature trees and vegetation within the road verge and in the front yards of private lots.

The view is focussed along the river with vegetation fringing the river screening views to the wider landscape in the middle to background.

Figure 6-31 The view looking southeast along the Cooks River and associated cycleway from the cycleway itself

The view to Croydon Park can be seen looking north from this location.

The Cooks River cycleway is periodically lit along the pathway for pedestrian and cyclist safety. There is other lighting from streetlights on Croydon Avenue and some light spill from residential properties near the cycleway. Croydon Park would be periodically floodlit at night when in use for sporting events, but at other times would remain unlit.

Visual impact assessment:

The visual impact for OL 11A is assessed in **Table 6-13**.

Table 6-13 Visual impact assessment, Observer Location 11A: Croydon Avenue, Croydon Park

Construction	
Changes to the View	During construction the project would introduce the following visual elements within the vicinity of the Cooks River Cycleway and along Croydon Avenue: • construction plant and equipment, including heavy and light vehicles and traffic management equipment; • construction materials, including conduits and cable drums; • trenches; • tents or demountable buildings over joint bays; • some potential night lighting when night construction works are required; and • potential tree removal within the reserve to facilitate the trenching and conduit installation. Further construction equipment and activity would be seen from this location, associated with underboring activity at the Cooks River, including worker amenities, vehicle entry and parking, excavation and boring equipment, water management plant and sediment containers. The works associated with the exit location of the underbore would be less than that required on the opposite side of the river, with a smaller footprint as well.
Sensitivity of Receptors	The sensitivity of the receptors is High due to the following: • Two receptor groups at this location are typically very sensitive: residents; and recreational users of the Cooks River Cycleway, Croydon Park and the playground: - residents have a proprietary interest in the views from their homes and properties, although only a low number of receptors would see views to the project from the end of Croydon Avenue this location; - residents would see views to the project for moderate periods of time from within their homes and properties, and from close proximity, but views would be partially screened by street trees, boundary fencing and mature vegetation within front gardens; and - recreational users of the cycleway (including cyclists and pedestrians) and playground would have uninterrupted views to the project from close proximity, while users of the sports field within Croydon Park would be viewing the changes from a further distance. • Croydon Avenue is a cul-de-sac but has two features that would bring additional traffic to the street: parking for park users is allowed along its length, and cyclists accessing the Cooks River cycleway would also use Croydon Avenue. These would result in a moderate number of cyclists and motorists travelling along Croydon Avenue and viewing the project. This receptor group would have their attention focussed on the road, rather than detailed views to the landscape, and this view would be one of many within a greater journey; and • Pedestrians on Croydon Avenue would get more detailed views to the project within the landscape as they would pass the site more slowly than vehicular traffic and are more likely to have their attention focussed on the landscape as they travel.

Magnitude of Visual Impacts	The magnitude of change during construction would be High, given that receptors at this location would be viewing construction activity within a quiet suburban landscape adjacent to an important recreational space, and the changes would potentially include the removal of trees, both within the recreational green corridor adjacent to the Cooks River, and the street. These changes would be seen by a moderate to high number of receptors, considering the popularity of the Cooks River Cycleway. Residents would potentially see the changes for prolonged periods of time, although much of the housing at the southern end of Croydon Avenue is screened from the road by mature trees and shrubs. Receptors within the playground would also view the changes for prolonged periods of time as they use the playground. Night lighting to illuminate the construction activity within the reserve and road corridor would result in an increase in brightness and frequency of lighting during the construction period if night construction works are required. There is existing lighting along the Cooks River Cycleway, within Croydon Park and along Croydon Avenue, therefore, night lighting would not be a new element within the view.
Overall Assessment	The visual impact would be High.
Operation	
Changes to the View	Limited changes to the view would be experienced during operation. Tree removal would be the predominant change within the park and street. Potential markers of the transmission cable circuit may remain but would not be visually prominent
Sensitivity of Receptors	The sensitivity of the receptors remains High.
Magnitude of Visual Impacts	The magnitude of change during operation would be Low due to the potential loss of trees within the transmission cable route. However, over time this change could reduce if trees were replanted.
Overall Assessment	The visual impact would be Moderate but reducing over time if trees are replanted in the area.

6.3.10.3 Observer Location 11B: Lindsay Street, Campsie

Location description

Lindsay Street terminates in a cul-de-sac at the Cooks River, with access to a linear band of turfed green open space (refer to **Figure 6-32**) which runs adjacent to the river linking Mildura Reserve to the north with Little Tasker Park to the south.

A pedestrian bridge spans the Cooks River at the end of Lindsay Street (refer to **Figure 6-32**), linking the eastern and western sides of the river. The bridge lands on the eastern side of the river adjacent to the Cooks River Cycleway and Lees Park.

An overhead high voltage electricity transmission line runs along the linear parkland on the western side of the Cooks River, with wires and towers visible from the end of Lindsay Street. A tower is visible both to the north and south of OL 11B within Mildura Reserve.

Figure 6-32 The view looking north along the reserve adjacent to the Cooks River (left) and the view looking east to the Lindsay Street pedestrian Bridge (right)

From OL 11B, Options 1 and 3 for the transmission cable route would be seen approaching the eastern end of Lindsay Street. At the cul-de-sac at the end of Lindsay Street, the transmission cables would then cross via a cable bridge (Options 1a and 3a) or be underbored to cross the Cooks River (Options 1b and 3b). All these options are assessed in **Table 6-14**.

Receptors

OL 11B represents the view to the project seen by:

- residents of homes at the end of Lindsay Street, comprising single and two storey brick and weatherboard detached homes;
- recreational receptors within Mildura Reserve on the western side of Cooks River; and
- receptors travelling (vehicles, pedestrians and cyclists) on Lindsay Street, with pedestrians and cyclists continuing along the pedestrian bridge from the road.

Existing views

OL 11B is located at the eastern end of Lindsay Avenue, Campsie. The view from this location is dominated by the linear band of green open space within Mildura Reserve on the southern bank of the Cooks River. The reserve is viewed as a narrow band of turfed land with occasional trees scattered along the corridor. The open space corridor is framed to the east by a thick band of mangrove vegetation fringing the Cooks River. This screens views to the river itself from the road and from within the reserve.

Only the entry point of the pedestrian bridge is seen from OL 11B, viewed as a set of two white metal handrails that protrude from the band of mangrove vegetation.

Overhead, the wires of the high voltage transmission line can be seen against the sky. A tower can be seen in the background of the view looking north, with a backdrop of mature trees in the distance.

The western edge of the view from this location is framed by the side and back fences of houses that line the reserve, with the front of a few houses viewed on Lindsay Street to the far right of the view.

Figure 6-33 The existing view from the maintenance access point to Mildura Reserve on the northern edge of the cul-de-sac on Lindsay Street, looking southeast along the mangroves lining the Cooks River. The Lindsay Street pedestrian bridge is seen in the centre of the image lined with white metal hand rails

Figure 6-34 A visual simulation showing the proposed cable bridge crossing at this location

Visual impact assessment

The visual impact for OL 11B is assessed for potential changes due to Options 1a, 1b, 3a, and 3b of the project are shown in **Table 6-14**.

Table 6-14 Visual impact assessment, Observer Location 11B: Lindsay Street, Campsie

Construction	
Changes to the View	During construction both options of the project would introduce the following elements into the view: • construction plant and equipment, including heavy and light vehicles and traffic management equipment; • construction materials, including conduits and cable drums; • excavation of the road and verge for trenching; • tents or demountable buildings over joint bays; • potential tree removal, either within the reserve or within the road corridor; • some potential night lighting when night construction works are required; and • site demobilisation and rehabilitation activities, including revegetation where possible. However, Option 3 would introduce these elements within the green open space west of the Cooks River between the mangroves and the residential housing, and at the existing pedestrian bridge spanning the river, and Option 1 would introduce these elements within the Lindsay Street road corridor. **Options 1a and 3a – cable bridge** Construction activity associated with cable bridge construction would be seen at the crossing point, including vegetation clearance and excavation to facilitate construction of the cable bridge across the river. The removal of mangrove vegetation along the river edge would open up views to the opposite side of the river with this crossing option. **Options 1b and 3b - underbore** Construction equipment and activity would be seen from this location associated with underboring activity at the Cooks River, including worker amenities, vehicle entry and parking, excavation and boring equipment, water management plant and sediment containers.
Sensitivity of Receptors	The sensitivity of the receptors is High due to the following: • residents would have a proprietary interest in the views from their homes and properties. A low number of receptors would see views to the project from the end of Lindsay Street at this location, with some residents seeing the changes from the front of their properties and some experiencing the changes from their side boundaries with the transmission cable circuit installed adjacent to their homes; • residents would see views to the project for moderate periods of time from within their homes and properties, and from close proximity, but views would be partially screened by street trees, boundary fencing and mature vegetation within front and side gardens; • recreational users of Mildura Reserve would view the changes from close proximity; and • Lindsay Street is a cul-de-sac but has access to the pedestrian bridge over the Cooks River, connecting to the Cooks River Cycleway. This would result in a moderate number of cyclists and pedestrians travelling along Lindsay Street and viewing the project from close proximity. This view would be one of many within their greater journey.

Magnitude of Visual Impacts	The magnitude of change resulting from all transmission cable route options (Options 1a, 1b, 3a, and 3b) during construction would be High, given that receptors at this location would be viewing construction activity within the quiet, cul-de-sac street and from either a parkland setting, or from a quiet residential street, and the changes would potentially include the removal of trees with the reserve, streetscape, and potentially mangroves along the river frontage. These changes would be seen by a moderate number of receptors and potentially for prolonged periods of time, particularly from residential neighbours. Night lighting within the reserve and/or street would also increase in brightness and frequency during the construction period if night construction works are required.
Overall Assessment	The visual impact would be High for all transmission circuit options and Cooks River crossing options.
Operation	
Changes to the View	The changes due to Options 1b and 3b would be similar, resulting in the potential reduction of trees seen within the reserve to the north of Lindsay Street cul-de-sac, or within the streetscape. Options 1a and 3a would result in the greatest change to views, resulting in in the removal of the mangroves along the Cooks River in the vicinity of the cable bridge. The view to the river and parkland on the opposite (northern) bank would potentially be opened up, and the cable bridge would be an additional piece of infrastructure seen within the view. Changes due to the potential cable bridge that would be seen at this location are illustrated in **Figure 6-34**.
Sensitivity of Receptors	The sensitivity of the receptors remains High.
Magnitude of Visual Impacts	The magnitude of change during operation for Options 1b and 3b would be Low. The loss of trees within the reserve or along the Lindsay Street road corridor would be seen, with this impact reducing with the replanting of trees, if feasible. The magnitude of change during operation for Options 1a and 3a would be Moderate due to the potential loss of mangroves next to the river, and the additional piece of infrastructure seen spanning the river, which would be a more visually prominent structure than the existing bridge due to the safety cage over the bridge deck. However, over time this change could reduce if the mangrove vegetation again partially screened the bridge deck and cage from the road and the reserve next to the river.
Overall Assessment	The visual impact of Options 1b and 3b would be Moderate but reducing over time if trees are replanted in the area. Potential markers of the transmission cable circuit may remain but would not be visually prominent. The visual impact of Options 1a and 3a would be High to Moderate but reducing over time if the mangrove vegetation recolonised the areas that had been cleared, partially screening the proposed cable bridge and views to the opposite bank of the Cooks River.

6.3.11 Observer Location 12: Harmony Street Playground, Croydon Park

Location description

The Harmony Street playground is an unfenced play area within Lees Park, Croydon Park. The playground is positioned fronting onto Harmony Street, adjacent to the back fence of a residence which fronts Crieff Street. In between the footpath and the playground is a paved area with some planting as a visual buffer between the road corridor and playground (refer to **Figure 6-35**).

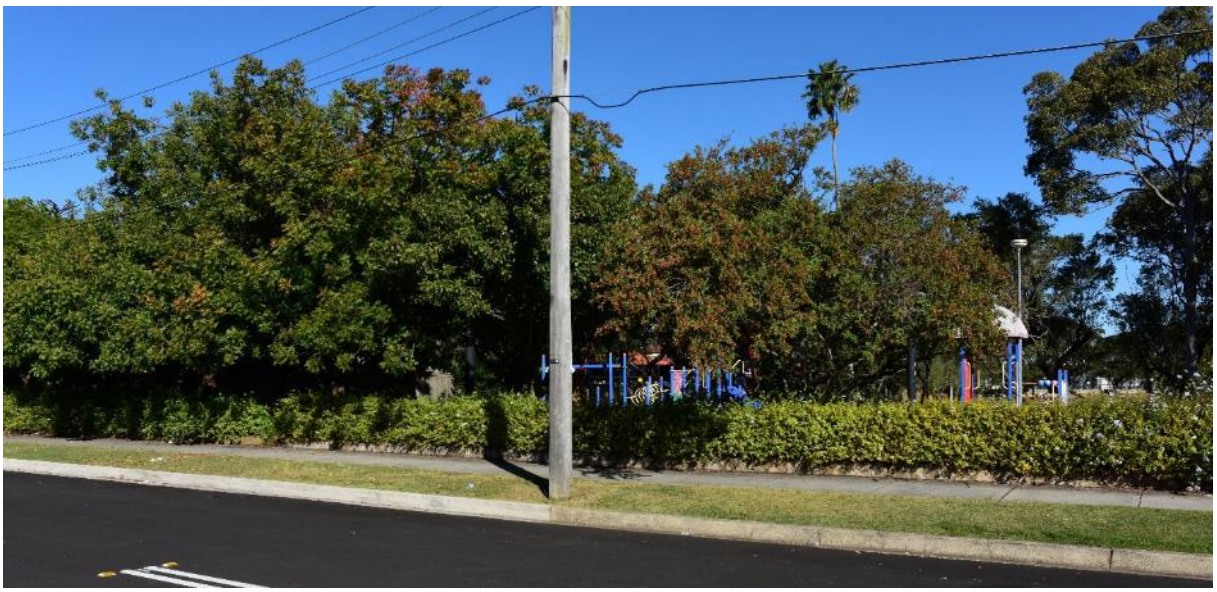

Figure 6-35 The existing view looking south towards the Harmony Street playground from the northern verge of Harmony Street with the playground mostly obstructed from view

Lees Park is a moderate sized park which is connected to Croydon Park to the northwest and to Canterbury Racecourse to the southeast, with all three reserves bordering the Cooks River to the south. All three open spaces are connected by the Cooks River cycle path, with the border between Lees Park and Croydon Park defined by a utility building and tennis courts, and fencing separating Lees Park the Canterbury racecourse.

Lees Park contains the Harmony Street Playground and two paths that cut through the park connecting the park pathway network to the Harmony Street and Crieff Street footpaths. The two footpaths converge at a nearby pedestrian bridge crossing the Cooks River and joining Lindsay Street, Campsie, on the western side.

At this location there are two transmission cable route options that would be seen from the Harmony Street Playground as described in **Section 6.3.10** and below:

- Option 2: the transmission cable route travels in a northeasterly direction from Byron Street at the intersection with Brighton Avenue, Campsie, through Mildura Reserve. From this parkland, the conduits would be underbored beneath the Cooks River, surfacing in Croydon Park in Croydon Park; or
- Options 1 and 3: (hereafter referred to as ‘Option 1’) the transmission cable route would cross the Cooks River at Lindsay Street, either via cable bridge (Option 1a and 3a) or by underboring (Options 1b and 3b), passing through Lees Park and between the Harmony Street playground and tennis courts.

G:\ENV\GIS\Projects\605\60558835 Rookwood to Beaconsfield EIS\FIGURES\2019\LVIA\60558835 F6.37 Route Options at the Harmony Street Playground 05 07 2019

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TransGrid

Note: The project area is confined to the roadway reserve with the exception of parks and existing substations
Source: Department of Finance, Services and Innovation - Spatial Services (2018), Nearmap (2018)

ROUTE OPTIONS SEEN AT THE HARMONY STREET PLAYGROUND

Powering Sydney's Future
Potts Hill to Alexandria Transmission Cable Project

FIGURE 6-36

Receptors

OL 12 represents the view to the project seen by:

- residents in homes on Harmony Street in the vicinity of the playground;
- recreational receptors in Lees Reserve, but particularly within the Harmony Street playground; and
- receptors travelling (vehicles, pedestrians and cyclists) on Harmony Street in the vicinity of the playground.

Existing views

This OL is located on Harmony Street adjacent to the playground, on the southern side of the road. When within the playground, the view comprises the playground itself in the foreground, with Lees Park and Harmony Street in the middle to background. From the playground, receptors get a partially obscured view to Lees Reserve due to a band of vegetation between the reserve and the playground and scattered mature trees throughout the reserve. The reserve trees seem to comprise mainly eucalypts, and a partial view to the oval and goal posts (refer to **Figure 6-37**).

A mix of exotic trees screen Harmony Street from the playground, including Jacaranda (*Jacaranda mimosifolia*), *Fraxinus sp*., *Viburnum sp*., and Cotoneaster (*Cotoneaster franchetii*). An informal hedge of Plumbago (*Plumbago auriculata)* screens views from the playground onto Harmony Street (refer to **Figure 6-35**). When standing immediately to the west of Harmony Street playground, as shown in **Figure 6-38**, the view along Hay Street and to Harmony Street can be seen. An overhead transmission line runs north-south along Hay Street, connecting to a post and continuing east along Harmony Street.

Houses across from Lees Park on Harmony Street can be seen from within the park, however these houses face onto Hay Street, with side fences obstructing any views from the residences to the playground and the park. Small street trees line Harmony and Hay Streets, with typical species comprising Bottlebrush (Casuarina species) and Water Gum (*Tristaniopsis laurina*).

Figure 6-37 The existing view looking north towards Harmony Street and Hay Street (left of frame) from within Lees Park, with the playground to the right of frame

Figure 6-38 The existing view looking southwest into Lees Park from the Harmony Street playground with Harmony Street in the right of frame

Visual impact assessment

The visual impact for OL 12 is assessed in **Table 6-15**.

Table 6-15 Visual impact assessment, Observer Location 12: Harmony Street Playground, Croydon Park

Construction	
Changes to the View	Both Options 1 and 2 would result in the following changes to views from the Harmony Street playground during construction: • construction plant and equipment, including heavy and light vehicles and traffic management equipment; • construction materials, including conduits and cable drums; • trenches; • tents or demountable buildings over joint bays; • some potential night lighting when night construction works are required; and • potential tree removal within the reserve or along the street to facilitate the trenching and conduit installation. These changes would be seen only along Harmony Street for Option 2, and both along the street and within Lees Park for Option 1. Construction activity associated with the transmission cable route would be seen stretching through the park to the southwest from this location, although it is unlikely that construction activity from the cable bridge or underbore at the Cooks River (Options 1a and 1b) would be seen in detail due to the distance of viewing at this OL. These elements would include worker amenities, tree and vegetation removal, and construction of the bridge / surfacing of the underbore.
Sensitivity of Receptors	The sensitivity of the receptors is High due to the following: • Two receptor groups at this location are typically very sensitive: residents; and recreational users of the reserve and playground: - residents have a proprietary interest in the views from their homes and properties, although only a moderate to low number of receptors would see views to the project from this location; - residents would see views to the project for moderate periods of time from within their homes and properties, and from close proximity, but views would be partially screened by street trees, boundary fencing and mature vegetation within front gardens; - recreational users of the playground would have partially screened views to the project due to trees surrounding the playground and within the park; • Cyclists, pedestrians and motorists on Harmony Street near the playground would have their attention focussed on the road corridor, within which some construction would take place, however, this view would be passing elements within a greater journey. Moderate numbers of vehicular receptors are anticipated and low numbers of cyclists.
Magnitude of Visual Impacts	The magnitude of change during construction would be High for both Options 1 and 2, given that receptors at this location would be viewing construction activity within street for both route options, and within the parkland for Option 1. The changes would potentially include the removal of street and park trees. These changes would be seen by a moderate number of receptors and potentially for prolonged periods of time, particularly from residential neighbours. Receptors within the playground would also view the changes for prolonged periods of time as they use the playground. Night lighting would also increase in brightness and frequency during the construction period if night construction works are required. This lighting would be seen along the street for both options, and within the park for Option 1. At present there is no lighting within the park.

Overall Assessment	The visual impact would be High for both route options.
Operation	
Changes to the View	Limited changes to the view would be experienced during operation. Tree removal would be the predominant change, occurring along the street for both route options, and potentially within the park for Option 1, along with any potential markers. The footpath would also potentially change within the reserve depending on which route is selected.
Sensitivity of Receptors	The sensitivity of the receptors remains High.
Magnitude of Visual Impacts	The magnitude of change during operation would be Low for both route options due to the potential loss of trees within the street (both route options) and within the park (Option 1). However, over time this change could reduce if trees were replanted.
Overall Assessment	The visual impact for both transmission route options would be Moderate but reducing over time if trees are replanted in the area.

6.3.12 Observer Location 13: Cheviot Street, Ashbury

Location description

Cheviot Street is a residential street lined with mature Brush Box trees within the Ashfield HCA. The Canterbury Racecourse backs onto Cheviot Street at this location. The racecourse, which is listed as a local heritage item, has its primary access point at the main entrance gate on King Street, Ashbury.

Figure 6-39 The existing view looking south from the entry point to Canterbury Racecourse from Cheviot Street

The transmission cable route would pass along Cheviot Street between Malleny Street to the west and Roslyn Street to the northeast. The Ashbury HCA, is listed due to its street and subdivision pattern, consistent built form and style (predominantly detached houses in Federation, Californian Bungalow, and other Inter-War housing styles), landscaped setting of the houses and extensive street tree planting, often typical of the Federation and Inter-War periods.

Receptors

OL 13 represents the view of the project seen by:

- residents of homes along Cheviot Street, Ashbury; and
- receptors travelling (vehicles, pedestrians and cyclists) on Cheviot Street, including those accessing the overflow parking facilities of Canterbury Racecourse during events.

Existing views

OL 13 is positioned on Cheviot Street, Ashbury, near the entrance to an area used for overflow parking for Canterbury Park Racecourse during race events (refer to **Figure 6-39**). From this location, the view along Cheviot Street comprises the wide street pavement, which has allowance for parking

on either side of the road as well as two lanes of through traffic (refer to **Figure 6-40**). A grass verge and paved footpath lies on both sides of the street, and the street is lined with mature street trees, predominantly Brush Box (*Lophostemon confertus*).

Housing is typically single and double storey brick dwellings set back consistently from property boundaries by approximately five metres.

On the southern side of the street, a tall mesh fence separates Canterbury Racecourse from the street, and the verge is lined with mature street trees. Access to the racecourse can be seen at the very corner of the street, where a gate and driveway are provided.

Typical street lighting lines the road corridor, and the racecourse site is equipped to be flood lit during race meets when the area is in use as a car park. The racecourse grounds is unlit between events.

Figure 6-40 The view looking north from the southern footpath on Cheviot Street, with the Canterbury Racecourse behind the receptor

Visual impact assessment

The visual impact for OL 13 is assessed in **Table 6-16**.

Table 6-16 Visual impact assessment, Observer Location 13: Cheviot Street, Ashbury

Construction	
Changes to the View	During construction the project would introduce the following visual elements: • construction plant and equipment, including heavy and light vehicles and traffic management equipment; • construction materials, including conduits and cable drums; • trenches; • tents or demountable buildings over joint bays; and • potential tree removal along one side of the road to facilitate the trenching and conduit installation.
Sensitivity of Receptors	The sensitivity of the receptors is High due to the following: • residents are typically a sensitive viewer group, given that they have a proprietary interest in the views from their homes and properties, although only a moderate number of receptors would see views to the project from this location; • residents would see views to the project for moderate periods of time from within their homes and properties, and from close proximity, but views would be partially screened by mature street trees on the eastern and western verges along the street; • the area lies within an HCA, in which street trees are referenced as important to the listing of the area; • the racecourse area adjacent to OL 13 would intermittently be used (potentially on weekends), with high numbers of receptors potentially seeing the changes from close proximity when a race meeting is in progress, although these viewers would see the view for short periods of time as they enter and leave the racecourse; and • receptors passing the site by car, bike, or on foot would see the view to the changes as part of a greater journey, and therefore only have short periods of viewing as they pass by.
Magnitude of	The magnitude of change during construction would be High, given that receptors

Visual Impacts	at this location would view construction activity (including the tents or demountable buildings over joint bays) within the road reserve from close proximity and with little screening.
Overall Assessment	The visual impact would be High. The view to the construction activity within the road reserve would be a significant change from the existing view from the residential neighbours on Cheviot Street.
Operation	
Changes to the View	Limited changes to the view would be experienced during operation. Street trees and verge planting that had been removed would be replaced with like species, where feasible. Potential markers of the transmission cable circuit may remain but would not be visually prominent.
Sensitivity of Receptors	The sensitivity of the receptors remains High.
Magnitude of Visual Impacts	The magnitude of change at operation would be Moderate due to the possible change to the trees within the street. These trees are mature and unique and are an important element within the street, particularly considering the HCA listing of the area. If trees were removed and replaced it would take a long time for the replacement trees to meet the size and quality of the existing trees within the street. For this reason, the magnitude has been determined as Moderate rather than the Low rating of other residential streets. There would be no change to lighting in the park or surrounding streetscape at operation.
Overall Assessment	The visual impact would be High to Moderate, but possibly reducing over time if trees are replaced.

6.3.13 Observer Location 14: Second Street, Ashbury

Location description

Second Street is a typical residential street approximately 400 metres long and running in an east-west direction connecting King Street and Holden Street within the Ashbury HCA. The HCA is listed due to its street and subdivision pattern, consistent built form and style (predominantly detached houses in Federation, Californian Bungalow, and other Inter-War housing styles), landscaped setting of the houses and extensive street tree planting, often typical of the Federation and Inter-War periods. Street trees within this road typically comprise Melaleuca species (potentially *M. linarifolia*) but has other smaller tree species as well.

At the intersection with King Street a vegetated traffic calming device has been installed (refer to **Figure 6-41**).

The transmission cable route would run along the entire length of Second Street.

Figure 6-41 The view from within Second Street looking west out through the continuous footpath treatment towards King Street

Receptors

OL 14 represents the view of the project seen by:

- residents in homes on Second Street; and
- travellers on Second Street (vehicles, pedestrians and cyclists).

Existing views

This OL is located at the eastern end of Second Street, just past the traffic calming device near King Street. Views along Second Street comprise a typical residential road setting, with the wide, two lane road including provision for street parking, and lined with mature street trees. Street tree planting typically comprises Melaleuca species such as *M. linarifolia* and *M. stypheliodes*, however there are a variety or other mature species such as Bottlebrush (*Callistemon sp*), *Eucalyptus ficifolia*, *Tibouchina alstonville*, *Elaeocarpus reticulatus* and Crepe myrtle (*Largestroemia indica*) (refer **Figure 6-42**).

An overhead transmission line runs along the northern verge of the street.

Residential development in the street comprises single, detached brick homes in Federation, Californian Bungalow, and other Inter-War housing styles). Low front fencing line the street, with a high quality of mature, landscaped garden within the front of properties. The character of these houses, combined with the mature vegetation along the street may contribute to the landscape character associated with the HCA in this area (refer **Figure 6-43**).

Figure 6-42 The view from the intersection of Second Street and King Street looking east

Figure 6-43 An example of the architectural types along Second Street associated with the area's heritage conservation listing

Visual impact assessment

The visual impact for OL 14 is assessed in **Table 6-17**.

Table 6-17 Visual impact assessment, Observer Location 14: Second Street, Ashbury

Construction	
Changes to the View	During construction the project would introduce the following visual elements: • construction plant and equipment, including heavy and light vehicles and traffic management equipment; • construction materials, including conduits and cable drums; • trenches; • tents or demountable buildings over joint bays; and • potential tree removal along one side of the road to facilitate the trenching and conduit installation.

Sensitivity of Receptors	The sensitivity of the receptors is High due to the following: • residents are typically a sensitive viewer group, given that they have a proprietary interest in the views from their homes and properties, although only a moderate to low number of receptors would see views to the project from this location; • residents would see views to the project for moderate periods of time from within their homes and properties, and from close proximity, but views would be partially screened by mature street trees on northern and southern verges along the street; and • this area is within an HCA so receptors (especially the residents of Second Street) will have attached a certain value to the landscape character associated with it.
Magnitude of Visual Impacts	The magnitude of change during construction would be High, given that receptors at this location would view construction activity (including the tents or demountable buildings over joint bays) within the road reserve from close proximity and with little screening.
Overall Assessment	The visual impact would be High. The view to the construction activity within the road reserve would be a significant change from the existing view from the residences and for travellers along Second Street.
Operation	
Changes to the View	Limited changes to the view would be experienced during operation, restricted to the removal and potential replacement of street trees and vegetation within vegetated traffic calming devices Potential markers of the transmission cable circuit may remain but would not be visually prominent.
Sensitivity of Receptors	The sensitivity of the receptors remains High.
Magnitude of Visual Impacts	The magnitude of change at operation would be Moderate due to the possible change to the trees within the street. These trees are mature and unique and are an important element within the street. If trees were removed and replaced it would take a long time for the replacement trees to meet the size and quality of the existing trees within the street. For this reason, the magnitude has been determined as Moderate rather than the Low rating of other residential streets.
Overall Assessment	The visual impact would be High to Moderate, but possibly reducing over time if trees are replaced.

6.3.14 Observer Location 15: Peace Park Construction Laydown Area, Ashbury

Location description

Peace Park is located on Trevenar Street in Ashbury on a large block with residential lots on all but one boundary. The construction laydown area is located in the southwestern portion of the park adjacent to the fenced dog park. The park is steeply sloped from Trevenar Street to the south, with a lookout tower in the eastern portion. A playground, barbeques and a paved area are located in the northern portion of the park adjacent to the car park. The park is predominantly turfed, with scattered native and exotic trees. The remains of a grove of olive trees are situated adjacent to Trevenar Street to the north.

Receptors

OL 15 represents the view of the project seen by:

- visitors to the park;
- residents in homes on Trevenar Street, King Street, Fifth Street and Holden Street; and
- travellers on Trevenar Street (vehicles, pedestrians and cyclists).

Existing views

The view into the construction laydown area from the roads surrounding the park are limited. The view from Trevenar Street is obscured by mature trees located along the boundary of the road, within the park itself, and the steep landform. The park is not visible from Holden Street, King Street or Fifth Street due to residential housing between the roads and the park. Views into the park at an entry point on King Street (where the construction laydown area would be) are obscured by four mature trees located on the boundary of the site. Due to the topography of the land, the construction laydown area is not visible from the northern portion of the park.

The primary views to the construction laydown area are from within the park itself and from over the fences of neighbouring residential homes, therefore the OL at this location is within the park. Views within the park are often obscured by the scattered tree cover within park (refer **Figure 6-44**).

Figure 6-44 View southwest to the construction laydown area from within the park

Although the park itself contains lighting within it that illuminates pedestrian pathways travelling through the park (these would be lit every night), the location of the construction laydown area is unlit. Some light spill from the pedestrian pathway and from the windows of neighbouring residential properties may be seen at this location.

Visual impact assessment

The visual impact for OL 15 is assessed in **Table 6-18**.

Table 6-18 Visual impact assessment, Observer Location 15: Peace Park Construction Laydown Area, Ashbury

Construction	
Changes to the View	Changes at this location would include the establishment and use of the site as a construction laydown area for the duration of the construction period (up to two years), as described in **Section 2.0**. The construction laydown area would include a driveway constructed from Trevenar Street, which may result in the removal of one or more of the mature trees at the boundary of the area. The construction laydown area would be floodlit at night during the construction period, as described in **Section 3.3.1**.
Sensitivity of Receptors	The sensitivity of the receptors is High due to the following: • although there are a high to moderate number of residences that back onto the park, only a low number of receptors would see the view to the construction laydown area from residential properties. These receptors would see the construction laydown area only from their backyards over the top of rear fences, and probably not from within their homes. However, residents are typically a sensitive viewer group, given that they have a proprietary interest in the views from their homes and properties; and • recreational users of the park would receive views to the construction laydown area from close proximity, but partially screened by vegetation (scattered mature trees) within the park itself. This receptor group are typically a sensitive group, as they have their attention focussed on a high quality landscape while within the park.

Magnitude of Visual Impacts	The magnitude of change during construction would be High. The construction laydown area would have more activity within and around it and the character of a construction laydown area would be a change from the existing condition. Construction fencing would be added around the laydown area, visually containing the elements within it. The potential removal of trees on the boundary of the area on Trevenar Street would open up views from the road to the construction laydown area. Night lighting in the construction laydown area would be a new element within this area of the park, which is presently unlit. Light from floodlighting may spill over into neighbouring residential properties, due to the height at which the construction laydown area must be lit from.
Overall Assessment	The visual impact would be High.
Operation	
Changes to the View	The construction laydown area would be returned to its original pre-construction state on completion of construction.
Sensitivity of Receptors	The sensitivity of the receptors remains High.
Magnitude of Visual Impacts	The magnitude of change during operation would be Negligible.
Overall Assessment	The visual impact would be Negligible.

6.3.15 Observer Location 16: Old Canterbury Road, Hurlstone Park

Location description

Old Canterbury Road is a busy four lane road that travels in a northeast, southwest direction and runs along the eastern edge of Yeo Park and Gough Reserve in Hurlstone Park. There is unmarked, intermittent, restricted parking on both sides of the road, reducing traffic to two lanes in some sections (refer to **Figure 6-45**). Within Yeo Park is an infant care centre, a playground, an oval, some amenities buildings and turfed open space scattered with mature trees.

Yeo Park contains an item of heritage significance (rotunda) within it. To the east of the park lies C49 – Prospect Hall Summer Hill HCA. This area is of local heritage significance, deriving from the 1908 subdivision pattern, pre-1943 Brush Box street tree plantings and built form predominantly comprising single storey brick detached housing in the Federation Queen Anne and Inter-war California Bungalow styles. However, the streetscape on Old Canterbury Road at this location does not feature these trees.

The transmission cable route would run within the road reserve on Old Canterbury Road, then right onto Arlington Street, which is also within an HCA.

Figure 6-45 View looking northeast along Old Canterbury Road near Gough Reserve and Yeo Park, from the footpath on the western verge of the road

Figure 6-46 View looking southwest along Old Canterbury Road near Yeo Park and Gough Reserve, from the footpath on the western verge of the road

Receptors

OL 16 represents the view to the project seen by:

- residents in homes on Old Canterbury Road;
- recreational receptors in Gough Reserve and Yeo Park; and
- receptors travelling (vehicles, pedestrians and cyclists) on Old Canterbury Road.

Existing views

This OL is located on Old Canterbury Road adjacent to Gough Reserve, on the western side of the road, however, the potential views from the housing fringing the road corridor at this location is also assessed.

The view along Old Canterbury Road from the western footpath comprises residential housing lining the eastern side of the road corridor, and Gough Reserve and Yeo Park, on the eastern side of the road. The road corridor slopes down towards the north, then rises to a ridgeline on the horizon of the view. Views into Gough Reserve and Yeo Park are partially obstructed (refer to **Figure 6-45** and **Figure 6-46**) due to the mature trees lining the western edge of the park, including large Fig trees and Camphor Laurels.

Some mature street trees lie within the eastern verge of the street, partially screening views to the residential housing from this location. An overhead powerline runs along the road corridor at the edge of Yeo Park. There is no lighting within the park, however, there is street lighting along Old Canterbury Road and a four bus stops in total on both sides of the road.

Development in the street comprises single detached residential homes and small unit complexes of brick construction. Front fencing and tall hedges at the boundary of these properties along Old Canterbury Road would predominantly screen the views to the road corridor from within these properties.

Visual impact assessment

The visual impact for OL 16 is assessed in **Table 6-19**.

Table 6-19 Visual impact assessment, Observer Location 16: Old Canterbury Road, Hurlstone Park

Construction	
Changes to the View	During construction the project would introduce the following visual elements: • construction plant and equipment, including heavy and light vehicles and traffic management equipment; • construction materials, including conduits and cable drums; • trenches; • tents or demountable buildings over joint bays; and • potential tree removal along one side of the road to facilitate the trenching and conduit installation.
Sensitivity of Receptors	The sensitivity of the receptors is High due to the following: • residents are typically a sensitive viewer group, given that they have a proprietary interest in the views from their homes and properties, although many residences at this location have tall hedges screening their properties from the road; • residents would potentially see views to the project for moderate periods of time from within their homes and properties, and from close proximity, but views would be in many cases screened by vegetation within their front gardens and occasional street trees within the verge along the road; and • recreational users of the park would receive views to the project from close proximity, but partially screened by scattered mature trees and trees along the edges of the park. This receptor group are typically a sensitive group, as they have their attention focussed on a high quality landscape while within the park.
Magnitude of Visual Impacts	The visual impact would be High. The view to the construction activity within the road reserve and the park would be a significant change from the existing view from the residences, recreational receptors and for travellers along Old Canterbury Road.
Overall Assessment	The visual impact would be High.
Operation	
Changes to the View	Limited changes to the view would be experienced during operation. Street trees and verge planting that had been removed would be replaced with like species, where feasible. Potential markers of the transmission cable circuit may remain but would not be visually prominent.
Sensitivity of Receptors	The sensitivity of the receptors remains High.
Magnitude of Visual Impacts	The magnitude of change at operation would be Low due to the possible change to the trees within the street; however, over time this change would reduce if replanting is feasible with similar trees.
Overall Assessment	The visual impact would be Moderate, but possibly reducing over time if trees are replaced.

6.3.16 Observer Location 17: Sideways Deli Café, Dulwich Hill

Location description

Sideways Deli Café is a café in Dulwich Hill that is located at the junction point of a five-way roundabout with the following roads: Arlington Street; Union Street; Windsor Road; and Constitution Road. All these streets meet at the roundabout and are typical residential streets with mature trees and planted verges which contribute to the leafy, green character of the area.

The café has an outdoor seating area that faces the roundabout and wraps around approximately a quarter of the circumference of the intersection.

Route Options at Observer Location 17

At this location, the transmission cable route would travel along Arlington Street in an easterly direction, before heading east at the roundabout intersection with one of two options (refer to **Figure 6-47**):

- Option 1: heading north east along Windsor Road, then south east along Terry Street to a crossing point of the light rail corridor as seen in OL 18A; or
- Option 2: heading southeast along Constitution Road to a crossing point of the light rail corridor at the Arlington Light Rail Station as seen in OL 18B.

G:\ENV\GIS\Projects\605\60558835 Rookwood to Beaconsfield EIS\FIGURES\2019\LVIA\60558835 F6.48 Route Options Along Constitution Roads and Windsor Road 26 08 2019

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ROUTE OPTIONS ALONG CONSTITUTION ROAD AND WINDSOR ROAD

Powering Sydneys Future
Potts Hill to Alexandria Transmission Cable Project

Note: The project area is confined to the roadway reserve with the exception of parks and existing substations
Source: Department of Finance, Services and Innovation - Spatial Services (2018), Nearmap (2018)

FIGURE 6-47

Receptors

OL 17 represents the view to the project seen by:

- residents in homes at the roundabout connecting Arlington Street, Union Street, Windsor Road and Constitution Road;
- travellers at the roundabout (vehicles, pedestrians and cyclists); and
- employees and visitors to the Sideways Deli Café.

Existing views

The OL is located on the southern footpath on the corner of Constitution Road and Union Street. From the Sideways Deli Café, the road corridors terminating at the roundabout are the dominant features within the view. All of the roads that meet at the roundabout in front of Sideways Deli Café are two lane roads with on street parking. All of the roads have mature street tree vegetation (some pruned to avoid the overhead powerlines) comprising a mix of native and exotic species.

The outdoor seating of the café is protected by an awning and protective bollards between the footpath and the road pavement. Views to the road corridor and roundabout are seen from inside of the café due to its floor to ceiling windows, and from outdoor seating set up on the footpath (refer to **Figure 6-48**).

Residential development comprises a mix of closely spaced detached houses and semis on small blocks with moderately high fences and mature gardens. Fencing and mature garden vegetation, combined with the planted verges and mature street trees, contribute to the leafy green local character of the area (refer to **Figure 6-49**).

An overhead powerline runs across the roundabout as can be seen in **Figure 6-48** and the area has standard street lighting.

Figure 6-48 The view from Arlington Street looking north towards Sideways Deli Street Café and west towards Constitution Road

Figure 6-49 The view looking northwest along Constitution Road about 50 metres from the intersection with Arlington Street

Visual impact assessment

The visual impact for OL 17 is assessed in **Table 6-20**.

Table 6-20 Visual impact assessment, Observer Location 17: Sideways Deli Café, Dulwich Hill

Construction	
Changes to the View	During construction the project would introduce the following visual elements: • construction plant and equipment, including heavy and light vehicles and traffic management equipment; • construction materials, including conduits and cable drums; • trenches; • tents or demountable buildings over joint bays; and • potential tree removal along one side of the road to facilitate the trenching and conduit installation. The changes to the view due to Options 1 and 2 would be similar, but with more construction activity viewed in close proximity due to Option 2 as the route passes closer to the café, along Constitution Road.
Sensitivity of Receptors	The sensitivity of the receptors is High due to the following: • residents are typically a sensitive viewer group, given that they have a proprietary interest in the views from their homes and properties, although a moderate number of receptors would see views to the project from this location; • residents would see views to the project for moderate periods of time from within their homes and properties, and from close proximity, but views would be partially screened by mature street trees, garden vegetation and fencing; and • employees and visitors to Sideways Deli café would have close, uninterrupted views to the construction work. Employees would see the works for a prolonged period of time. Visitors would have a shorter timeframe in which they would view the construction works. The outdoor seating and view is one of the appeals of the café and the presence of construction work would reduce the quality of the view.
Magnitude of Visual Impacts	The magnitude of change during construction would be High, given that residential and café visitors at this location would view construction activity (including the tents or demountable buildings over joint bays) within the road reserve from close proximity and with little screening.
Overall Assessment	The visual impact would be High. The view to the construction activity within the road reserve would be a significant change from the existing view from the residences, the cafe and for travellers along Arlington Street, Union Street, Windsor Road and Constitution Road.
Operation	
Changes to the View	Limited changes to the view would be experienced during operation. Street trees and verge planting that had been removed would be replaced with like species, where feasible. Potential markers of the transmission cable circuit may remain but would not be visually prominent.
Sensitivity of Receptors	The sensitivity of the receptors remains High.
Magnitude of Visual Impacts	The magnitude of change at operation would be Low due to the possible change to the trees within the street; however, over time this change would reduce if replanting is feasible with similar trees.
Overall Assessment	The visual impact would be Moderate, but possibly reducing over time if trees are replaced.

6.3.17 Observer Location 18A: Terry Road, Dulwich Hill

Location description

Terry Road is a quiet residential road that intersects with Windsor Road at its north western end and the light rail corridor to the southeast. The street runs in a northwest, southeast direction and is barricaded off with an aluminium fence and vegetation at the rail corridor. Residential development along the street comprises a mix of low density, detached homes and a high rise apartment block comprising a converted flour mill (refer to **Figure 6-50**).

This OL assesses Option 1 for crossing the light rail corridor at Dulwich Hill. This option for the transmission cable route would underbore beneath the light rail corridor, surfacing on the other side of the tracks in Hill Street.

Figure 6-50 Converted flour mill residential development, overlooking the light rail tracks to the right of frame

Existing views

This OL is located at the south eastern end of Terry Road, on the southern footpath (refer **Figure 6-50**). The view from this location comprises the concrete verge pavement and cul-de-sac in the foreground, with the apartment blocks and detached residential housing in the middle to background. All residences have their entrances facing Terry Road.

Mature vegetation and fencing lines the light rail corridor, obscuring the tracks and light rail from view. There are a few street lights along the road, however, none at the end of the street in front of the apartment buildings (refer to **Figure 6-50**).

A mix of mature and juvenile street trees line the street, but no trees are positioned at the cul-de-sac within the view from this OL.

Figure 6-51 Panorama showing the existing view to the southeast, with the light rail track in the centre of the image screened by vegetation and fencing, and the residential apartment blocks to the left and right of frame

Visual impact assessment

The visual impact for OL 18A is assessed in **Table 6-21**.

Table 6-21 Visual impact assessment, Observer Location 18A: Terry Road, Dulwich Hill

Construction	
Changes to the View	During construction the project would introduce the following visual elements into the streetscape at Terry Road: • construction plant and equipment, including heavy and light vehicles and traffic management equipment; • construction materials, including conduits and cable drums; • trenches; • tents or demountable buildings over joint bays; • some potential night lighting when night construction works are required; and • potential tree removal within the reserve to facilitate the trenching and conduit installation. Further construction equipment and activity would be seen from this location, associated with underboring activity under the light rail corridor, including worker amenities, vehicle entry and parking, excavation and boring equipment, water management plant and sediment containers.
Sensitivity of Receptors	The sensitivity of the receptors is High due to the following: • residents of nearby houses and apartments would have views to the project from their properties as they enter or leave and potentially from inside their houses. Residents are typically a sensitive viewer group, given that they have a proprietary interest in the views from their homes and properties; • a moderate to high number of residents would see the views from the high rise apartments immediately adjacent to the light rail corridor and would have an unobstructed view to the construction due to their elevation; and • a low number of travellers on Terry Road would have views to the project, but as this is a no through road, the only travellers are likely to be residents or visitors. This receptor group is unlikely to have views of the works for extended periods of time.
Magnitude of Visual Impacts	The magnitude of change during construction would be High, given that residential receptors at this location would view construction activity (including the tents or demountable buildings over joint bays and underboring activity)

	within the road reserve from close proximity and with little screening. Night lighting within the streetscape would also increase in brightness and frequency during the construction period if night construction works are required. Receptors in apartment blocks would also potentially get views to the project, including works on the other side of the rail corridor and further along the transmission cable route.
Overall Assessment	The visual impact would be High.
Operation	
Changes to the View	Limited changes to the view would be experienced during operation. Street trees and verge planting that had been removed would be replaced with like species, where feasible. Potential markers of the transmission cable circuit may remain but would not be visually prominent.
Sensitivity of Receptors	The sensitivity of the receptors remains High.
Magnitude of Visual Impacts	The magnitude of change at operation would be Low due to the possible change to the trees within the street; however, over time this change would reduce if replanting is feasible with similar trees.
Overall Assessment	The visual impact would be Moderate, but possibly reducing over time if trees are replaced.

6.3.18 Observer Location 18B: Arlington Light Rail Station, Dulwich Hill

Location description

The Arlington Light Rail Station can be accessed by stairs and ramps from Constitution Road on both the north western and south eastern sides of the station. On the south eastern side of the station, the cul-de-sac laneway off Grove Street is also labelled as Constitution Road. Arlington Station is set down approximately four metres from the road level and is heavily vegetated with shrubs in planter beds along the tracks and mature vegetation in the landscape bordering the station at road level (refer to **Figure 6-52**). On the eastern side of the tracks lies a pedestrian footpath at road level which connects to the internal pedestrian network of the nearby residential apartments (refer to **Figure 6-53**).

This OL assesses Option 2 for crossing the light rail corridor at Dulwich Hill. The transmission cable route at this location would be underbored beneath the light rail tracks from Constitution Road near Johnson Park, surfacing at the northern end of the Constitution Road cul-de-sac, then continuing southeast along Constitution Road.

Figure 6-52 The view of Arlington Light Rail station from the eastern platform looking west

Figure 6-53 Industrial character of buildings in the cul-de-sac on Constitution Road on the southern side of Arlington Light Rail Station

Receptors

OL 18B represents the view to the project seen by:

- residents in the apartment buildings in the cul-de-sac on Constitution Road, southeast of the light rail station;
- pedestrians, cyclists and motorists on Constitution Road at the cul-de-sac; and
- passengers on the light rail to and from Arlington Light Rail Station.

Existing views

This OL is located on Constitution Road at the north western end of the cul-de-sac on the southeastern side of the light rail station (refer **Figure 6-54**). From this location, the view comprises the landscaped gardens surrounding the station and light rail corridor. Views through to the Arlington Light Rail Station are minimal due to juvenile and mature trees and shrub plantings and high mesh

fencing (refer to **Figure 6-54**). The only publicly accessible location where the station is visible is from the access points to and from the station itself.

Residents in the high rise apartments adjacent to the light rail corridor on Constitution Road would get views to the tracks and landscape beyond. A recreational pathway called 'The Greenway' runs parallel to the light rail tracks on the opposite side of the apartments, however it is heavily screened by vegetation and has almost no view into the light rail station.

There is night lighting along Constitution Road, Grove Street and within the Arlington Light Rail Station. The bridge spanning the rail corridor on Constitution Road is approximately 54 metres south of the light rail station, and as shown in **Figure 6-55**, and is screened by high mesh fencing.

Figure 6-54 Panorama showing the existing view to the light rail tracks from the Constitution Road cul-de-sac

Figure 6-55 The view of Arlington Light Rail station from the eastern platform looking south

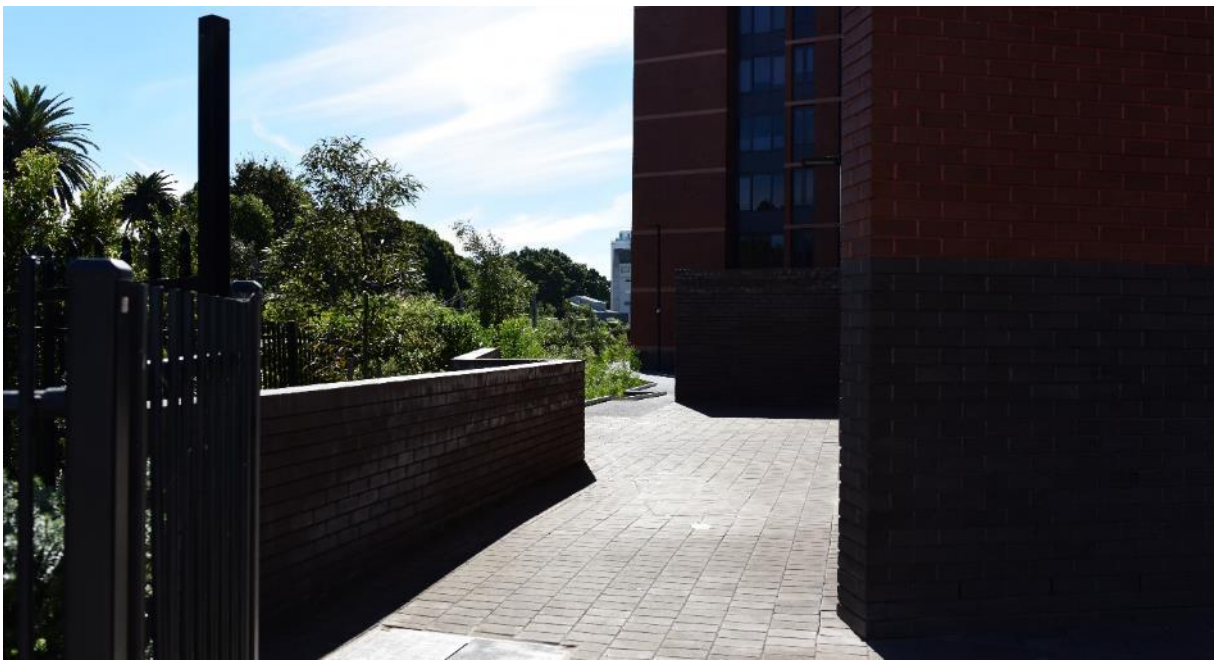

Figure 6-56 The view of the pedestrian access to the building, taken from the cul-de-sac on Constitution Road looking north

Visual impact assessment

The visual impact for OL 18B is assessed in **Table 6-22**.

Table 6-22 Visual impact assessment, Observer Location 18B: Arlington Light Rail Station, Dulwich Hill

Construction	
Changes to the View	Changes at this location include construction activity associated with the underboring of the Arlington Light Rail Station on Constitution Road. There would be construction associated with the transmission cable circuit (i.e. trenching, underboring and other activities). Views to the construction activity would include construction equipment and materials, light and heavy vehicles, work crews, and traffic management measures. Some vegetation clearing on the embankments on either side of the rail corridor would also be required for construction of the underbore and there would be night lighting within the road reserve of Constitution Road.
Sensitivity of Receptors	The sensitivity of the receptors is High due to the following: • pedestrians and cyclists on Constitution Road would have uninterrupted views to the project as they travel to and from the light rail station. Moderate to high numbers of pedestrians would use the light rail entrance at the cul-de-sac on Constitution Road; • nearby residents on Constitution Road would have views to the construction activity on Constitution Road from their properties as they enter or leave and potentially from inside their houses and apartments. Residents are typically a sensitive viewer group, given that they have a proprietary interest in the views from their homes and properties; • a moderate number of residents in the high rise apartment immediately adjacent to the light rail corridor would have an unobstructed view to the construction due to their increased elevation; and • travellers on Constitution Road would have views to the project, however, a very low number of vehicles would see these changes due to the fact that this is a cul-de-sac rather than a through road.

Magnitude of Visual Impacts	The magnitude of change during construction would be High. Receptors would see the construction activity associated with the underboring of the light rail corridor and the transmission cable route. There would be increased traffic on the quiet residential street. Receptors would get prolonged, detailed views from their places of residence. Increased night lighting within the road reserve might be difficult to see from the residents in the nearby apartments, however, there is currently minimal street lighting with the road reserve. This lighting would be an increase to what is currently experienced.
Overall Assessment	The visual impact would be High.
Operation	
Changes to the View	Limited changes to the view would be experienced during operation. Street trees and verge planting that had been removed would be replaced with like species, where feasible. Potential markers of the transmission cable circuit may remain but would not be visually prominent.
Sensitivity of Receptors	The sensitivity of the receptors remains High.
Magnitude of Visual Impacts	The magnitude of change at operation would be Low due to the possible change to the trees at this location; however, over time this change would reduce if replanting is feasible with similar trees. Few trees would potentially be affected due to the underboring and there are a low number of street trees at this location.
Overall Assessment	The visual impact would be Moderate, but possibly reducing over time if trees are replaced.

6.3.19 Observer Location 19: 370 New Canterbury Road, Dulwich Hill

Location description

New Canterbury Road is a busy, four lane road travelling through Lewisham and Petersham at this location. The transmission cable route would cross New Canterbury Road at this location, from Pigott Street to Herbert Street.

Receptors

OL 19 represents the view to the project seen by:

- visitors to the commercial businesses along the road reserve;
- residents of the apartments at 370 New Canterbury Road; and
- travellers (vehicles, cyclists, and pedestrians).

There is a high volume of traffic travelling along New Canterbury Road.

Existing views

OL 19 is situated at the corner of New Canterbury Road and Pigott Street, Dulwich Hill (refer **Figure 6-57**).

From this location, the foreground of the view comprises the road corridor and intersection. A mixed use, medium density apartment building is seen in the foreground, with some strip retail shops visible to the right of frame. The view to the road would be seen from several locations, including businesses along both New Canterbury Road and the residents of the apartment building. Many of these businesses at this location are local grocers, private practices, although there is a café that opens onto the street underneath the apartment block and a few scattered restaurants to the south of the OL.

There is no on street parking at this location and the intersection is not signalised.

This area has a quiet mix of revitalised industrial and shopping strip mall character, with a low to moderate volume of foot traffic and a high volume of vehicular traffic passing through the intersection.

The road reserve is brightly lit by street lights to the south of the intersection, but less so to the north. There are no street trees along New Canterbury Road at the location.

Figure 6-57 The existing view looking southeast from the corner of Pigott Street and New Canterbury Road

Visual impact assessment

The visual impact for OL 19 is assessed in **Table 6-23**.

Table 6-23 Visual impact assessment, Observer Location 19: 370 New Canterbury Road, Dulwich Hill

Construction	
Changes to the View	During construction the project would introduce the following visual elements: • construction plant and equipment, including heavy and light vehicles and traffic management equipment; • construction materials, including conduits and cable drums; • trenches; and • night lighting to facilitate night construction work around the intersection, as described in **Section 3.3.1**.
Sensitivity of Receptors	The sensitivity of the receptors is High due to the following: • there would be a moderate number of pedestrians who would have views to the project as they walk along the road or visit one of the restaurants or shops; • receptors would see the view to the project for short periods of time from within commercial properties, and from close proximity, although due to the busy road corridor and utilitarian character of the streetscape these businesses would not have views concentrated on the streetscape from inside these premises; • travellers on New Canterbury Road would have views of the project at moderate speeds due to the busy street, and are only likely to be affected by it at the intersection as the works do not continue down New Canterbury Road; • residents are typically a sensitive viewer group, given that they have a proprietary interest in the views from their homes and properties; and • residents would see views to the project for moderate periods of time from within their homes and properties, from moderately close proximity from the apartments.
Magnitude of Visual Impacts	The magnitude of change during construction would be Moderate. The changes would be seen from close proximity by travellers, residents, and visitors to commercial properties (including cafes and restaurants). However, the construction activity in any one location would be short-term and viewed within a busy road corridor. Night lighting within the streetscape would also increase in brightness and frequency during the construction period if night construction works are required.
Overall Assessment	The visual impact would be Moderate to High.

Operation	
Changes to the View	No changes to the view would be experienced during operation. The road would be returned to its pre-construction state on completion of construction (or as otherwise agreed with the relevant road authorities). No street trees would be impacted at this location. Potential markers of the transmission cable circuit may remain but would not be visually prominent.
Sensitivity of Receptors	The sensitivity of the receptors remains Moderate.
Magnitude of Visual Impacts	The magnitude of change during operation would be Negligible.
Overall Assessment	The visual impact would be Negligible.

6.3.20 Observer Location 20: Marrickville High School, Marrickville

Location description

Marrickville High School is bounded by five streets: Centennial Street, Petersham Road, Yabsley Avenue, Northcote Street and Sydenham Road. OL 20 is taken from Centennial Street as the transmission cable route will run the length of the street before meeting Sydenham Road, where it will either travel through Henson Park or follow Neville Street.

Receptors

OL 20 represents the view to the project seen by:

- residents in homes on Centennial Street;
- travellers on Centennial Street (vehicles, pedestrians and cyclists); and
- teachers, parents and students at Marrickville High School.

Existing views

This OL is located at the rear of Marrickville High School, near a secondary entry to the site. The primary access point and car park for the high school is located on Northcote Street, on the opposite side of the school to OL 20.

Centennial Street a wide, two lane street, planted with street trees along the northern and southern verges, although more so in the northern verges where residential properties front the street. There is restricted on street parking on both sites of the road (refer to **Figure 6-58**). Overhead powerlines run along the southern verge of the street parallel to the high school with smaller street trees planted underneath.

Within the school, large mature *Casuarinas* (She-Oaks) partially screen the view from inside the school to the intersection between Centennial Street and Sydenham Road (refer to **Figure 6-59)**. Two basketball courts lie within the school grounds adjacent to Centennial Street, with only a few short, mature trees within the road corridor screening this area. A bus stop shelter also provides minimal screening from the road corridor into the basketball courts. This bus stop sits around the midpoint of Centennial Street (refer to **Figure 6-60**).

Across from Marrickville High School on Centennial Street are single detached residential homes. The homes are built in a number of architectural styles, but many of them feature unusual architectural features, such as verandas, gables and ridge decorations. The buildings in the high school are set back from Centennial Street and are not visible from the road corridor (refer to **Figure 6-59**).

Figure 6-58 The view from in front of Marrickville High School looking southwest along Centennial Street

Figure 6-59 The view from in front of Marrickville High School looking northeast along Centennial Street

Figure 6-60 The view of Marrickville High School from Centennial Street and the bus stop which is a primary public transport location for the school

Visual impact assessment

The visual impact for OL 20 is assessed in **Table 6-24**.

Table 6-24 Visual impact assessment, Observer Location 20: Marrickville High School, Marrickville

Construction	
Changes to the View	During construction the project would introduce the following visual elements: • construction plant and equipment, including heavy and light vehicles and traffic management equipment; • construction materials, including conduits and cable drums; • trenches; • tents or demountable buildings over joint bays; and • potential tree removal along one side of the road to facilitate the trenching and conduit installation.
Sensitivity of Receptors	The sensitivity of the receptors is High due to the following: • residents are typically a sensitive viewer group, given that they have a proprietary interest in the views from their homes and properties, although only a moderate to low number of receptors would see views to the project from this location; • residents would see views to the project for moderate periods of time from within their homes and properties, and from close proximity, but views would be partially screened by mature street trees on the northern verge along the street; and • employees and students of the school would be sensitive receptors, although less so than residents. Views to the construction works would only be visible for shorter periods of time, such as during school breaks, before and after school when entering or leaving the grounds, and during outdoor education classes, as the buildings are set back from the road and there is mature vegetation screening all other parts of the school grounds. Most people would use the main entry for arrival and departure from school, and the longest period of viewing at this location is potentially when students would be using the bus stop.
Magnitude of Visual Impacts	The magnitude of change during construction would be High, given that residential receptors at this location would view construction activity (including the tents or demountable buildings over joint bays) within the road reserve from close proximity and with little screening.
Overall Assessment	The visual impact would be High. The view to the construction activity within the road reserve would be a significant change from the existing view from the residences and for travellers along Centennial Street.
Operation	
Changes to the View	Limited changes to the view would be experienced during operation. Street trees and verge planting that had been removed would be replaced with like species, where feasible. Potential markers of the transmission cable circuit may remain but would not be visually prominent.
Sensitivity of Receptors	The sensitivity of the receptors remains High.
Magnitude of Visual Impacts	The magnitude of change at operation would be Low due to the possible removal of street trees; however, over time this change would reduce if replanting is feasible with similar trees.
Overall Assessment	The visual impact would be Moderate, but possibly reducing over time if trees are replaced.

6.3.21 Observer Location 21: Amy Street Playground, Marrickville

Location description

The Amy Street Playground is a fenced playground that lies within the greater Henson Park reserve, positioned between tennis courts associated with the Marrickville and District Hardcourt Tennis Club, and residential housing on Amy Street and Horton Street. A very small portion of the playground backs onto Henson Park to the southwest. Amy Street ends in a cul-de-sac at the playground, and a pedestrian footpath continues along the southern edge of the playground and through Henson Park, joining with Centennial Street to the southwest (refer to **Figure 6-61** and **Figure 6-62**).

Figure 6-61 The view of the Amy Street Playground looking southwest from the end of the Amy Street cul-de-sac

Figure 6-62 The existing view of the Amy Street playground when looking northeast from the southeastern corner of the playground

Henson Park comprises a large playing field with stadium seating and an indoor tennis club. The park and some surrounding land parcels, including the Amy Street Playground, are within an HCA under the Marrickville Local Environmental Plan 2011.

This OL assesses the potential changes to views at the Amy Street playground, which lies on one of the two potential transmission cable route options for the project. If this option was selected, the transmission cable would be underbored beneath the playground, diving within the northern edge of Henson Park and daylighting in Amy Street. The transmission cable route would then travel from Amy Street southeast either along Charles Street or Horton Street.

Receptors

OL 21 represents the view to the project seen by:

- residents in nearby housing on Amy Street;
- recreational receptors within the Amy Street playground; and

- receptors travelling (vehicles, pedestrians and cyclists) on Amy Street in the vicinity of the playground and through Henson Park.

Existing views

This OL is located at the southwestern end of Amy Street on the north eastern edge of the playground. From this location receptors get foreground views to the soft-fall and play equipment within the playground itself, with on-street parking within the cul-de-sac in the foreground. The tall mesh fences surrounding the tennis courts is seen above the play equipment and trees in the playground. Residential housing is seen to the north and south of the playground. Beyond the fenced edge of the playground, the view into Henson Park and the adjacent footpath is predominantly screened by vegetation, play equipment and parked cars within the street.

Visual impact assessment

The visual impact for OL 21 is assessed in **Table 6-25**.

Table 6-25 Visual impact assessment, Observer Location 21: Amy Street Playground, Marrickville

Construction	
Changes to the View	During construction the project would introduce the following visual elements within the Amy Street road corridor: • construction plant and equipment, including heavy and light vehicles and traffic management equipment; • construction materials, including conduits and cable drums; • trenches; • tents or demountable buildings over joint bays; • some potential night lighting when night construction works are required; and • activity associated with underboring would include worker amenities, vehicle entry and parking, excavation and boring equipment, water management plant and sediment containers.
Sensitivity of Receptors	The sensitivity of the receptors is High due to the following: • residents are typically a sensitive viewer group, given that they have a proprietary interest in the views from their homes and properties, although only a moderate number of receptors would see views to the project from this location; • residents would see views to the project for moderate periods of time from within their homes and properties, and from close proximity; • receptors within playgrounds are typically a highly sensitive receptor as views from the play areas contribute to the quality of the recreational experience.
Magnitude of Visual Impacts	The magnitude of change during construction would be High, given that residential receptors at this location would view construction activity (including the tents or demountable buildings over joint bays and activities associated with the underboring) within the road reserve from close proximity and with little screening.
Overall Assessment	The visual impact would be High. The view to the construction activity along the pedestrian footpath and for travellers along the Amy Street road reserve (including night lighting if required) would be a change from the existing view from both the playground and road reserve.

Operation	
Changes to the View	No changes to the view would be experienced during operation. The road and footpath would be returned to its pre-construction state on completion of construction (or as otherwise agreed with the relevant road authorities). Potential markers of the transmission cable circuit may remain but would not be visually prominent. No trees would be removed as there are no street trees at this location, and trees within the playground would not be affected by the underboring works.
Sensitivity of Receptors	The sensitivity of the receptors remains High.
Magnitude of Visual Impacts	The magnitude of change during operation would be Negligible. No trees would be impacted at the Amy Street playground.
Overall Assessment	The visual impact would be Negligible.

6.3.22 Observer Location 22: Charles Street, Marrickville

Location description

Charles Street is a typical residential street in Marrickville, approximately 315 metres long, connecting Illawarra Road to Amy Street, and travelling in an east-west direction.

At this location, the transmission cable route would continue from Surrey Street onto Charles Street before continuing onto Illawarra Road (refer to **Figure 6-64**).

The visual impacts at this location would be similar to those experienced within Horton Street (refer **Figure 6-64**), which runs parallel to Charles Street.

Figure 6-63 The view along Charles Street looking southeast

Figure 6-64 The view along Horton Street looking southeast

Receptors

OL 22 represents the view to the project seen by a number of receptors, including:

- residents in homes on Charles Street; and
- travellers on Charles Street (vehicles, pedestrians and cyclists).

Existing views

This OL is positioned adjacent to 13 Charles Street on the eastern side of the road (refer to **Figure 6-63).** The view along the road corridor at this location comprises the footpath lined with mature street trees in the foreground (*Pyrus species*), with the road corridor fringed with low density, residential housing (refer to **Figure 6-65**).

On street parking is provided on both sides of the road, and an overhead transmission line runs along the southern verge of the street. Regularly spaced tree pits line the street, planted with shrubs and small to medium sized trees (refer **Figure 6-65**).

Development in the street comprises single detached residential homes on small, narrow blocks. Built form is uniformly set back from the road, with small front gardens and low, typically brick or rendered front fencing to the blocks.

Figure 6-65 The view from Charles Street looking northwest along the southern pedestrian footpath

Visual impact assessment

The visual impact for OL 22 is assessed in **Table 6-26**.

Table 6-26 Visual impact assessment, Observer Location 22: Charles Street, Marrickville

Construction	
Changes to the View	During construction the project would introduce the following visual elements: • construction plant and equipment, including heavy and light vehicles and traffic management equipment; • construction materials, including conduits and cable drums; • trenches; • tents or demountable buildings over joint bays; and • potential tree removal along one side of the road to facilitate the trenching and conduit installation.
Sensitivity of Receptors	The sensitivity of the receptors is High due to the following: • residents are typically a sensitive viewer group, given that they have a proprietary interest in the views from their homes and properties, although only a moderate to low number of receptors would see views to the project from this location; • residents would see views to the project for moderate periods of time from within their homes and properties, and from close proximity, but views would be partially screened by mature street trees on northern and southern verges along the street; and • although this OL is not within an HCA, there is an established desirable landscape character that residents will have attached a certain value to and associate with their properties.
Magnitude of Visual Impacts	The magnitude of change during construction would be High, given that receptors at this location would view construction activity (including the potential removal of street trees, tents or demountable buildings over joint bays) within the road reserve from close proximity and with little screening.
Overall Assessment	The visual impact would be High. The view to the construction activity within the road reserve (including night lighting if required) would be a significant change from the existing view from the residences and for travellers on Charles Street.

Operation	
Changes to the View	Limited changes to the view would be experienced during operation. Street trees and verge planting that had been removed would be replaced with like species, where feasible. Potential markers of the transmission cable circuit may remain but would not be visually prominent.
Sensitivity of Receptors	The sensitivity of the receptors remains High.
Magnitude of Visual Impacts	The magnitude of change at operation would be Low due to the possible change to the trees within the street; however, over time this change would reduce if replanting is feasible with similar trees.
Overall Assessment	The visual impact would be Moderate, but possibly reducing over time if trees are replaced.

6.3.23 Observer Location 23: Enmore Park, Enmore

Location description

Enmore Park is located in Enmore, bounded by Enmore Road to the west, Llewellyn Street to the north, Black Street to the east and Victoria Road to the south. The park is orientated to front Enmore Road, with its primary entrance (including decorative stone elements) and formal entrance avenue. The Annette Kellerman Aquatic Centre is positioned at the rear (northeastern section) of the park, adjacent to Black Street.

This OL assesses the potential changes to views in the vicinity of Enmore Park, which lies adjacent to one of the two potential transmission cable route options for the project. If this option was selected, the transmission cable route would be split at this location, with one route traveling along Addison Road to the intersection with Enmore Road, then head north along Enmore Road.

Receptors

OL 23 represents the view to the project seen by several receptors in and surrounding the park, including:

- recreational users of Enmore Park, including those visiting the Annette Kellerman Aquatic Centre;
- residential receptors on Enmore Road adjacent to the park;
- visitors and employees to the commercial businesses on Enmore Road; and
- travellers on Enmore Road (vehicles, pedestrians and cyclists).

Existing views

This OL is located on Enmore Road near the northeastern corner of the park. Enmore Park is a medium sized park with a formal path layout, including an entry avenue off Enmore Road. The entry avenue runs between Addison Road and Wilcox Lane and is bounded by a single row of Phoenix Palms on either side. The park is bounded by rows of mature trees on the outer edge, which partially screens views into and out of the park. The transmission cable route would run adjacent to the park on two sides, and views to the road reserve (and the project) would be seen by those in the park along or near the western and northern boundaries. Addison Road and Llewellyn Street would probably not be seen in detail by those in the centre or southern portions of the park, including the children's playground and aquatic centre.

A very small number of commercial businesses front Enmore Road from the intersection with Addison Road to Llewellyn Street. Many of these are closed, with the majority of receptors at the hotel/pub on the corner of Enmore Road and Addison Road. Views to these roads would be seen as visitors entered and left the pub, with a small number of receptors seeing the streetscape from the first floor windows.

A low number of terrace houses front onto Enmore Road opposite Enmore Park. Receptors in these homes would get clear, uninterrupted views to the streetscape as they enter or leave their properties, and from windows in the front of their homes on the ground and first floors. Views to the street from

these residences are to a busy, four lane road, with mature street trees in the verge of the road on Enmore Road. The park is seen across the busy road reserve.

Enmore Park is lit within the park at night for safety and pedestrian movement. The park would also experience light spill from surrounding streets.

Figure 6-66 Existing view looking southeast towards Enmore Park from the corner of Addison Road and Enmore Road

Visual impact assessment

The visual impact for OL 23 is assessed in **Table 6-27**.

Table 6-27 Visual impact assessment, Observer Location 23: Enmore Park, Enmore

Construction	
Changes to the View	During construction the project would introduce the following visual elements: • construction plant and equipment, including heavy and light vehicles and traffic management equipment; • construction materials, including conduits and cable drums; • trenches; • tents or demountable buildings over joint bays; and • potential tree removal along one verge to facilitate trenching and conduit installation. The construction works may be lit at night, as described in **Section 3.3.1**.
Sensitivity of Receptors	The sensitivity of these receptors is High due to the following: • there are a low number of residences fronting onto Enmore Road at this location, all of which would have views to the project. Residents are typically a sensitive viewer group, given that they have a proprietary interest in the views from their homes and properties; • residents would see views to the project for moderate periods of time from within their homes and properties, and from close proximity. Views to the streetscape are fairly scenic, given the quiet, leafy character of the park opposite these busy streets and the quality of the terrace housing; • travellers on Enmore Road would have views of the project at low speeds due to the number of intersections with traffic lights. However, these travellers would see the view to the street as part of their greater journey. Furthermore, given the linear nature of the project and the staged construction, travellers may be affected by construction works at multiple locations within the road reserve; and • the view to the project would be seen from within Enmore Park. Recreational park users are typically a sensitive receptor group due to the importance placed on the visual quality of the landscape and as they use the park facilities for active or passive recreation. These receptors would see views to the road reserve from within the park to the north and west, although these views would be partially screened by mature trees within the park.

Magnitude of Visual Impacts	The magnitude of change during construction would be Moderate, given: • the changes (including the potential removal of trees) would be seen from close proximity by many residents from their homes; • park users would see the changes from the boundaries of the park, and through screening vegetation within the park; • travellers would see the changes as part of their greater journey, but from close proximity; and • the construction activity in this one location would be short-term. Night lighting within the road reserve would be seen from residential properties, and to a lesser degree, from inside the park (due to low receptor numbers at night). The brightness and frequency of lighting along the road would increase, particularly at the intersection where there is more likely to be construction work required at night.
Overall Assessment	The visual impact would be High to Moderate.
Operation	
Changes to the View	The potential loss of trees along roads would be the greatest change due to the project. The roads would be returned to their pre-construction state on completion of construction (or as otherwise agreed with the relevant road authorities). There would be no change to the provision of street lighting along the roads. Potential markers of the transmission cable circuit may remain but would not be visually prominent.
Sensitivity of Receptors	The sensitivity of the receptors remains High.
Magnitude of Visual Impacts	The magnitude of change at operation would be Low due to the possible change to the trees within the street; however, over time this change would reduce if replanting is feasible with similar trees.
Overall Assessment	The visual impact would be Moderate but reducing over time if trees are replanted in the area.

6.3.24 Observer Location 24: Edgeware Road, St Peters

Location description

Edgeware Road is a busy road through Enmore. It travels roughly in a north-south direction, finishing at the rail corridor adjacent to Camdenville Park, St Peters. At OL 24, Edgeware Road curves in a 'U' shape and passes under Bedwin Road, adjacent to the rail corridor (refer to **Figure 6-67**).

A cable bridge would be constructed on the eastern side of the Bedwin Road rail bridge to span Edgeware Road and the rail corridor.

Receptors

OL 24 represents the view to the project seen by:

- residents along Edgeware Road on the eastern side of the Bedwin Road rail bridge; and
- travellers on Edgeware Road and Bedwin Road.

Existing views

This OL is located on Edgeware Road adjacent to terrace houses to the east of the existing road bridge (refer **Figure 6-67**). Views towards the Bedwin Road rail bridge are only clearly seen from the southern end of Edgeware Road, due to the cul-de-sac nature of the road (which turns to pass under the bridge). The view to the eastern elevation of the bridge is only seen for a short period of time while travelling along Edgeware Road as the road turns to travel under the bridge. This means there is a very oblique viewing angle of the bridge before the traveller turns to pass under it, then passes it.

Figure 6-67 The view west from the eastern kerb of Edgeware Road, looking back at the Bedwin Road rail bridge. The rail corridor is to the left of frame, partly screened by vegetation

Figure 6-68 A visual simulation of the proposed cable bridge as viewed from the eastern kerb of Edgeware Road

Approximately four residential terrace houses at the southern end of Edgeware Road have direct views to the Bedwin Road rail bridge from close proximity (refer to **Figure 6-69**).

Figure 6-69 View looking north along Edgeware Road, with the terrace houses facing the Bedwin Road rail bridge to the right of frame

The view to the bridge seen by these receptors is from close proximity and in a high amount of detail. The bridge is a simple, concrete structure alighting from an earthen berm, strengthened by brick abutments decorated with graffiti (refer to **Figure 6-67**). Some parking is provided beneath the bridge adjacent to the rail line, which passes directly south of Edgeware Road.

Edgeware Road and Bedwin Road both have typical street lighting, with further light spill seen from the windows and entries of residential properties lining Edgeware Road.

When travelling over Bedwin Road bridge, receptors see the road pavement and footpath with safety fencing on either side of the road in the foreground of the view. The landform drops from the approaches to the bridge either side of the road to Edgeware Road, which passes below. Street trees comprise one large fig tree on the western side of the bridge approach. Once at the top of the bridge, views along the rail corridor can be seen to the east and west. Camdenville Park can be seen to the southeast and industrial warehouses to the southwest.

Visual impact assessment

The visual impact for OL 24 is assessed in **Table 6-28**.

Table 6-28 Visual impact assessment, Observer Location 24: Edgeware Road, St Peters

Construction	
Changes to the View	Changes at this location include construction activity associated with installation of a cable bridge crossing over the rail corridor on Bedwin Road and cable installation within the road reserve (Edgeware Road) and within Camdenville Park. Construction activity would include establishment of work sites including traffic control measures. Views to the construction activity would include construction equipment and materials, light and heavy vehicles, work crews, and traffic management measures. Some vegetation clearing between Edgeware Road and the rail corridor may be required. Night lighting would be seen within the road reserve and at the work site for the cable bridge, as described in **Section 3.3.1**.
Sensitivity of Receptors	The sensitivity of the receptors is High due to the following: • travellers on Edgeware Road would have uninterrupted views to the project, and would see the project from close proximity as they travel towards and under the Bedwin Road bridge; • residents in the nearby terrace houses on Edgeware Road would have views to the project from close proximity. Residential receptors are typically a highly sensitive receptor group given that they have a proprietary interest in the views from their homes and properties; • only low numbers of residents would have views to the project from close proximity, with more residents further north up Edgeware Road getting more distant views from their homes; • travellers would potentially get fleeting views to the project as they cross over Edgeware Road and the rail corridor on Bedwin Road, but these views would be from oblique viewing angles and at speed, and only a small part of their greater journey; and • the view to the proposed cable bridge is not particularly picturesque, particularly when viewed in conjunction with the utilitarian character of the rail corridor.
Magnitude of Visual Impacts	The magnitude of change during construction would be High. Receptors would see the construction activity associated with the cable bridge and the increased traffic on the reasonably quiet street (Edgeware Road). Receptors would have prolonged, detailed views of construction activity from their places of residence. However, construction activity in any one location would be short-term. Views along the Bedwin Road bridge to the rail corridor would be increased due to the removal of vegetation along the rail corridor. Night lighting within the streetscape would also increase in brightness and frequency during the construction period, with construction activity for the cable bridge lit also. The changes in lighting would be seen from close proximity at residential houses closest to the bridge.

Overall Assessment	The visual impact would be High.
Operation	
Changes to the View	A new cable bridge would be seen from this location, viewed adjacent to the existing road bridge (refer to **Figure 6-68**). Potential markers of the transmission cable circuit may remain but would not be visually prominent.
Sensitivity of Receptors	The sensitivity of the receptors remains High.
Magnitude of Visual Impacts	The magnitude of change during operation would be High, given: • the cable bridge (with its cage structure) would be a new element seen from the residential houses along Edgeware Road; • some vegetation may have been removed during construction which may open up views seen from Edgeware Road to the rail corridor and the southern portions of the proposed cable bridge as it passes over the rail corridor; and • the cable bridge would also be a new element seen by travellers on Bedwin Road and the view along the rail corridor to the east would be seen through (and potentially partly obscured) by the cage structure. However, the cage structure would only be seen by traffic on the bridge over the rail corridor, and not on the bridge over Edgeware Road.
Overall Assessment	The visual impact would be High.

6.3.25 Observer Location 25: Camdenville Park, St Peters

Location description

Camdenville Park is a large park in St Peters, bounded by a rail corridor to the north, Bedwin Road to the west, May Street to the south and Council Street to the east. The eastern side of the park contains a sports field, walking track, amenities building and parking on Council Street. The sports field within the park is sunken below street level, with earthen berms or batters on all sides and thick vegetation along the northern boundary, adjacent to the rail corridor. The western side of the park is not publicly accessible and comprises a stormwater detention area (at the corner of May Street and Bedwin Road). A row of terrace houses lies between the sports field and the detention basin on May Street and a small playground is positioned near the corner of May and Council Streets. To the north is an area currently being used as a construction compound for the WestConnex New M5 project (proposed for use until 2019).

At this location, there would be three sources of visual impact due to the project: construction activity at the western end of the park between the stormwater detention basin and the earthen berm west of the sports field, then along the southern boundary of the park along May Street associated with the transmission cable route, the construction of a cable bridge along Bedwin Road over the rail corridor, and the use of the north western corner of the park as a construction laydown area.

Receptors

OL 25 represents the view to the project seen by:

- residents on Council Street;
- residents and commercial businesses on May Street;
- travellers (vehicles, pedestrians and cyclists) on May Street, Bedwin Road and Council Street; and
- recreational users of Camdenville Park.

A number of upgrades to the park to improve its recreational use and ecological function are proposed as part of the Camdenville Park Master Plan outlined in the Urban Design and Landscape Plan for the

New M5 project (Hassell, 2017). Should these plans be realised, the number of recreational users of the park would increase.

Existing views

This OL is located within Camdenville Park, however, views from the park boundaries are also discussed.

Views from outside Camdenville Park are predominantly seen from the eastern and southern boundaries by residents on May and Council streets, and travellers along the busy May Street. Views to and from the rail and road corridors from the sports field are screened by vegetated earth berms (refer to **Figure 6-70**). Views within Camdenville Park are predominantly seen by receptors using the sports field, walking around the park, or using the playground at the south eastern corner.

Figure 6-70 The existing view from the earthen berm on the western side of the park, looking southeast towards May Street, with the brick chimneys in Sydney Park visible on the left

Views from the sports field to the west and northwest include views to the Bedwin Road rail bridge, which spans Edgeware Road and the rail corridor. In the foreground of the view, the New M5 construction compound is currently visible, adjacent to the stormwater detention basin (refer to **Figure 6-71** and **Figure 6-72**).

Figure 6-71 The view to the northwest from the earthen berm on the western boundary of Camdenville Park to the New M5 construction compound, stormwater detention basin and the Bedwin Road rail bridge in the background

Terrace housing along Council Street predominantly fronts streets perpendicular to Council Street (i.e. Goodsell Street and May Street), however, nine terrace houses at the southern end of Council Street front this street and therefore have views to Camdenville Park from their front yards and front rooms. Residents in these homes would see views to the west which comprise Council Street in the foreground and Camdenville Park in the middle ground. The Camdenville Park sports field is viewed through a number of mature trees in the south eastern corner of the park. Where views through the trees to the background are seen, the southern-most extent of the Bedwin Road rail bridge is seen between the vegetated berm on the southern abutment of the bridge and a thick band of trees situated on the southern edge of the rail corridor. This view would be seen from upper windows of the residences and as residents enter and leave their homes through their front doors.

At the south western corner of the park, a number of heritage-listed terraces fronting May Street back onto the park. These may receive views into the park and towards the rail bridge from upper storey, rear-facing windows, however, these views would be predominantly screened by mature trees along the northern boundary of the properties and within their rear yards.

Should Camdenville Park be upgraded in line with the proposed New M5 master plan, receptors within the park would have views to the Bedwin Road rail bridge (including the cable bridge) from a closer location within the ‘new’ section of the park currently utilised by the New M5 construction compound, and in more detail than currently. However, tree and shrub plantings proposed along the northern boundary adjacent to the rail corridor may help to screen this view.

Currently, Camdenville Park is lit along the eastern and southern boundaries. It is illuminated further by light spill from street lighting along adjacent streets.

Figure 6-72 View from Camdenville Park to the existing Bedwin Road rail bridge in the background

Figure 6-73 Visual simulation showing the view from Camdenville Park to the cable bridge over the Bedwin Road rail corridor

Figure 6-74 Close up visualisation of the cable bridge with cage structure

Visual impact assessment

The visual impact for OL 25 is assessed in **Table 6-29**.

Table 6-29 Visual impact assessment, Observer Location 25: Camdenville Park, St Peters

Construction	
Changes to the View	Changes at this location include: • construction activity associated with trenching and conduit installation within the western section of the park and along May Street. These elements and activities may include tents or demountable buildings over joint bays, tree removal, establishing work sites and traffic management measures within the road reserve; • establishment and use of a construction laydown area in the north western corner of the park for the duration of the construction period (up to two years); and • construction activity (including some clearing of vegetation) associated with the construction of a cable bridge crossing on Bedwin Road, over the rail corridor and Edgeware Road. The construction laydown area would be floodlit at night during the construction period, as described in **Section 3.3.1**. Further additional night lighting would be seen in the road reserve due to night construction activity along May Street, and at Bedwin Road, due to works associated with the construction of the cable bridge over the rail corridor.
Sensitivity of Receptors	The sensitivity of the receptors at this location is High due to the following: • residents are typically a sensitive viewer group, given that they have a proprietary interest in the views from their homes and properties, although only a moderate to low number of receptors would see views to the project from this location; • residents would see views to the project for moderate periods of time from within their homes and properties, and from close proximity, but views would be partially screened by mature trees surrounding the park; • recreational users of Camdenville Park would receive views to the project from close proximity, particularly as portions of the park would be used as a construction laydown area for the duration of construction. The number of recreational receptors would increase from the current situation should the New M5 master plan for the park be realised; and

	• the sports field is used intermittently, with players focussed on the activity they are engaged in rather than views to the surrounding landscape.
Magnitude of Visual Impacts	The magnitude of change during construction would be High, given that receptors at this location would be viewing not only construction activity within the park and road reserve, but also the activity associated with the construction laydown area within the park. The construction laydown area would be lit and further additional night lighting would be seen at the bridge location and within the road reserve. These changes would be seen by the surrounding residents and road users rather than recreational park users, as the receptor numbers in the park would be low.
Overall Assessment	The visual impact would be High.
Operation	
Changes to the View	The cable bridge along Bedwin Road would be visible from the western end of the park, but from a reasonable distance (refer to **Figure 6-73** and **Figure 6-74**). Potential markers of the transmission cable circuit may remain but would not be visually prominent.
Sensitivity of Receptors	The sensitivity of the receptors remains High.
Magnitude of Visual Impacts	The magnitude of change during operation would be Moderate. The distance of the view to the cable bridge from the sports field, coupled with the utilitarian character of the rail corridor, would make the change to the view difficult to see. It is unlikely that the changes would be seen from residences surrounding Camdenville Park due to the distance of viewing (residences on Council Street) and vegetative screening surrounding properties (residences on May Street). However, should the proposed master plan for the park upgrade be implemented, the surrounding landscape would become less 'utilitarian' in character and the cable bridge would potentially be seen in more detail and from closer proximity. There would be no changes to night lighting during operation.
Overall Assessment	The visual impact would be High to Moderate.

6.3.26 Observer Location 26: 53 Barwon Park Road, St Peters

Location description

OL 26 has been chosen to assess the changes within Sydney Park due to the elements of the project seen from residential housing along Barwon Park Road, St Peters. Barwon Park Road has predominantly residential apartment buildings lining the western verge between Campbell Road and the Princes Highway, which overlook Sydney Park on the eastern side of the road. A council depot lies within Sydney Park on Barwon Park Road approximately 100 metres north of Campbell Road. There are a couple of small commercial properties between the residential apartment buildings on Barwon Park Road, clustered near the council depot.

The transmission cable route would be positioned along or parallel to Barwon Park Road between the Princes Highway and Campbell Road. From where the project area narrows in front of the council depot, the transmission cable route may be within the park, along the western boundary. Between the council depot and Campbell Road, it would skirt along the boundary of the orchards of City Farm. No trees would be removed within the parklands of Sydney Park, with the exception of some trees within the Barwon Park Road car park at the intersection with the Princes Highway.

The apartments at 53 Barwon Road at the southern end of the road (refer to **Figure 6-75**) were chosen as OL 26 as they would potentially have the 'worst case' views to the project. This view would include both construction views along the transmission cable route within Sydney Park adjacent to Campbell Road, and views to the existing construction activity within the road reserve for the New M5 project.

Figure 6-75 Apartments at 53 Barwon Park Road, with construction activity seen to the south of the apartments (to the left of frame) associated with the New M5 project

Receptors

OL 26 represents the view to the project seen by:

- residents at 53 Barwon Park Road; and
- travellers on Barwon Park Road.

Note: Some recreational users within Sydney Park (including those visiting City Farm) would also see the changes at or near this location, but these have been assessed separately in OL 27.

Existing views

This OL is located on the eastern side of Barwon Park Road, near the intersection with Campbell Road. The view from this location is dominated by the road reserve (Barwon Park Road and Campbell Road), with Sydney Park seen directly opposite the apartments. The view to the south is to a construction site (for the New M5 project) on Campbell Road and the site of the future WestConnex St Peters Interchange beyond the road reserve. Barwon Park Road is lined with mature Paperbark trees, which visually soften the view.

From within the apartments (which face southeast towards Sydney Park), the view to the park would be the most prominent element seen due to screening within the architecture of the building (refer to **Figure 6-75**). This view would comprise a lush, green outlook fringed with mature native trees and glimpse views of green lawn areas. The City Farm orchard site would be seen from these apartments as a darker green field within the fringing bands of mature native trees and shrubs (refer to **Figure 6-76** to the left of frame).

From the upper apartments a ‘gun-barrel’ view along the proposed transmission cable route within Sydney Park adjacent to Campbell Road would be visible, partially screened by fringing vegetation on Barwon Park Road (refer to **Figure 6-77**) and a clump of shrubby vegetation in a localised drainage area at the north western end of this strip of land (near the corner of Barwon Park Road and Campbell Road, refer to **Figure 6-76**).

Figure 6-76 The view from within Sydney Park, directly in front of 53 Barwon Park Road, showing the City Farm orchard to the left of the frame and a clump of vegetation blocking the view along the transmission cable route to the centre (note the construction on Campbell Road to the right of frame)

Figure 6-77 The view from approximately 200 metres southeast of the apartments at 53 Barwon Park Road, showing the land within Sydney Park where the construction of the transmission cable route would take place. The apartments are seen in the centre of the photo, partially screened by vegetation

Visual impact assessment

The visual impact for OL 26 is assessed in **Table 6-30**.

Table 6-30 Visual impact assessment, Observer Location 26: 53 Barwon Park Road, St Peters

Construction	
Changes to the View	During construction the project would introduce the following visual elements: • construction plant and equipment, including heavy and light vehicles and traffic management equipment; • construction materials, including conduits and cable drums; • trenches; • tents or demountable buildings over joint bays; and • potential tree removal along Barwon Park Road to facilitate trenching and conduit installation, but not within Sydney Park. The construction works may be lit at night, as described in **Section 3.3.1**.
Sensitivity of Receptors	The sensitivity of the receptors at this location is High due to the following: • residents are typically a sensitive viewer group, given that they have a proprietary interest in the views from their homes and properties; • a moderate number of receptors would see views to the project from this location given that this property is a three storey high apartment block; • residents would see views to the project for moderate periods of time from within their homes, and from close proximity, but views would be partially screened by mature street trees on the eastern verge of the road and from other taller vegetation within Sydney Park; and • views into Sydney Park have high scenic value, although at this location the current construction activity along Campbell Road would temporarily reduce the quality of the view from this location.
Magnitude of Visual Impacts	The magnitude of change during construction would be High, given the construction activity would be seen within the park, an area with high scenic value.
Overall Assessment	The visual impact would be High.
Operation	
Changes to the	The potential loss of trees along the road would be the greatest ongoing

View	change due to the project. The road and park would be returned to its pre-construction state on completion of the project (or as otherwise agreed with the relevant authorities). There would be no change to the provision of street lighting along the road. Potential markers of the transmission cable circuit may remain but would not be visually prominent.
Sensitivity of Receptors	The sensitivity of the receptors remains High.
Magnitude of Visual Impacts	The magnitude of change during operation would be Moderate due to the potential loss of trees on Barwon Park Road. However, over time this change could reduce if trees were replanted. Due to the maturity of some of these trees, it would take a long time for replanted trees to effectively replace any trees removed. The possible removal of street trees would also potentially allow street lighting to illuminate greater distances along the street, particularly where mature trees with large canopies have been removed. OL 26 has been assessed as Moderate rather than High at this location as views into the green space of the park are not severely impacted due to no removal of trees within the parklands of Sydney Park.
Overall Assessment	The visual impact would be High to Moderate but reducing over time if street trees are replanted in the area.

6.3.27 Observer Location 27: Sydney Park

Location description

Sydney Park is a large, regional parkland in Alexandria, bounded by Sydney Park Road to the north, Euston Road to the east, Campbell Road to the south and the Princes Highway and Barwon Park Road to the west. The park was previously a landfill site, which has left the park with many undulating hillsides and localised valleys, many of which contain wetlands. The park is very popular, particularly with dog walkers and families. It contains off-leash areas and a large playground.

At this location the transmission cable route travels within the park along the western boundary, south of the council depot, past the City Farm and then eastwards within the park, parallel to Campbell Road (behind a row of terrace housing on Campbell Road). The transmission cable route eventually exits via Euston Road. While the transmission cable route passes adjacent to the City Farm orchard site, it would not be visible from within City Farm due to the dense band of vegetation that lies between the farm and the project. There is an orchard site which lies to the west of City Farm (directly adjacent to the project area with no screening to the orchard site), but this area is not yet operational. For this reason, the City Farm has not been selected as an OL within this assessment.

Figure 6-78 The pathway within Sydney Park overlooking the largest of the wetlands with seating placed along it. This OL lies directly north of the terrace housing fronting Campbell Road

Receptors

OL 27 represents the view to the project seen from within Sydney Park adjacent to one of the wetlands. The receptors would include some recreational users of the park, including receptors engaged in active recreation like cycling, walking or jogging (with or without dogs), or for passive recreation activities such as picnicking or resting at one of the benches supplied.

Existing views

Within Sydney Park, OL 27 is positioned on the pedestrian/cyclist path adjacent to the bioretention basins surrounding the largest wetland in the park. This path has a number of seats lining it in this location, with opportunities for visitors to rest and enjoy the view to the wetlands.

The view from OL 27 comprises the path winding through the parkland between the wetland/bioretention system and the lawn areas with intermittent trees. Looking east and west along the path, the wetland to the north is fringed with bands of indigenous vegetation, including juvenile trees and mature shrubs (refer to **Figure 6-79**). Mature trees surround OL 27, limiting views out of the park to glimpses near the park boundaries. Views from this location to the terrace housing on Campbell Road are predominantly screened by trees planted between OL 27 and the houses.

Sydney Park does have intermittent night lighting for safety, particularly along the pedestrian pathways, but the majority of the park is unlit. Adjacent roads surrounding the park are lit by typical street lighting, but due to the dense screening vegetation along the park boundaries, light spill from these roads are typically not seen within the park due to mature fringing vegetation surrounding the park.

Figure 6-79 The view to the east along the path from OL 27 comprises the path in the foreground with the wetland and bioretention system to the north (left of frame) and lawn areas with intermittent trees to the south (right of frame)

Visual impact assessment

The visual impact for OL 27 is assessed in **Table 6-31**.

Table 6-31 Visual impact assessment, Observer Location 27: Sydney Park

Construction	
Changes to the View	Changes at this location include: • construction activity along the transmission cable route including: - trenching and conduit installation; - establishment of fenced work sites along the transmission cable route through the park; - tents or demountable buildings over joint bays; - access by plant, vehicles and personnel; and • night lighting to facilitate construction of the project.
Sensitivity of Receptors	The sensitivity of the receptors at this location is High due to the following: • recreational park users, including pedestrians and cyclists using the internal path network, would be the receptor group with the clearest views to the project, and would see the project at close proximity; • recreational users of public open spaces are a sensitive receptor group, as they would be expected to have their attention focussed on the landscape; • high numbers of recreational park users visit the park on a daily basis; and • receptors using the park would have views to the project for reasonable periods of time while within the park and would see the project from close proximity.
Magnitude of Visual Impacts	The magnitude of change during construction would be High, given that receptors at this location would be viewing construction activity uncharacteristic for this setting within a park of high scenic value. However, these changes would be seen for a short period of time, during the construction of the project.

Overall Assessment	The visual impact would be High.
Operation	
Changes to the View	The park would be returned to its pre-construction state on completion of the project (or as agreed with the relevant authorities). There would be no change to the provision of street lighting within the park. Potential markers of the transmission cable circuit may remain but would not be visually prominent.
Sensitivity of Receptors	The sensitivity of the receptors remains High.
Magnitude of Visual Impacts	The magnitude of change during operation would be Negligible, as the park would be returned to its pre-construction condition.
Overall Assessment	The visual impact would be Negligible.

6.3.28 Observer Location 28: 2-34 Campbell Road, St Peters

Location description

Campbell Road is a northwest to southeast orientated road that runs along the southern edge of Sydney Park. Sixteen double storey terrace houses, which are listed as local heritage items, front Campbell Road (refer to **Figure 6-80**), with their rear access via a narrow gravel laneway off Harber Street, adjacent to Sydney Park (refer to **Figure 6-81**).

At this location the transmission cable route travels within the park along the western boundary, south of the council depot, past the City Farm and then eastwards within the park, parallel to Campbell Road (behind a row of terrace housing on Campbell Road). The transmission cable route eventually exits via Euston Road.

Figure 6-80 The view looking northwest along the pedestrian path on Campbell Road, with the construction site for the New M5 project to the left of frame and the terrace houses to the right of frame

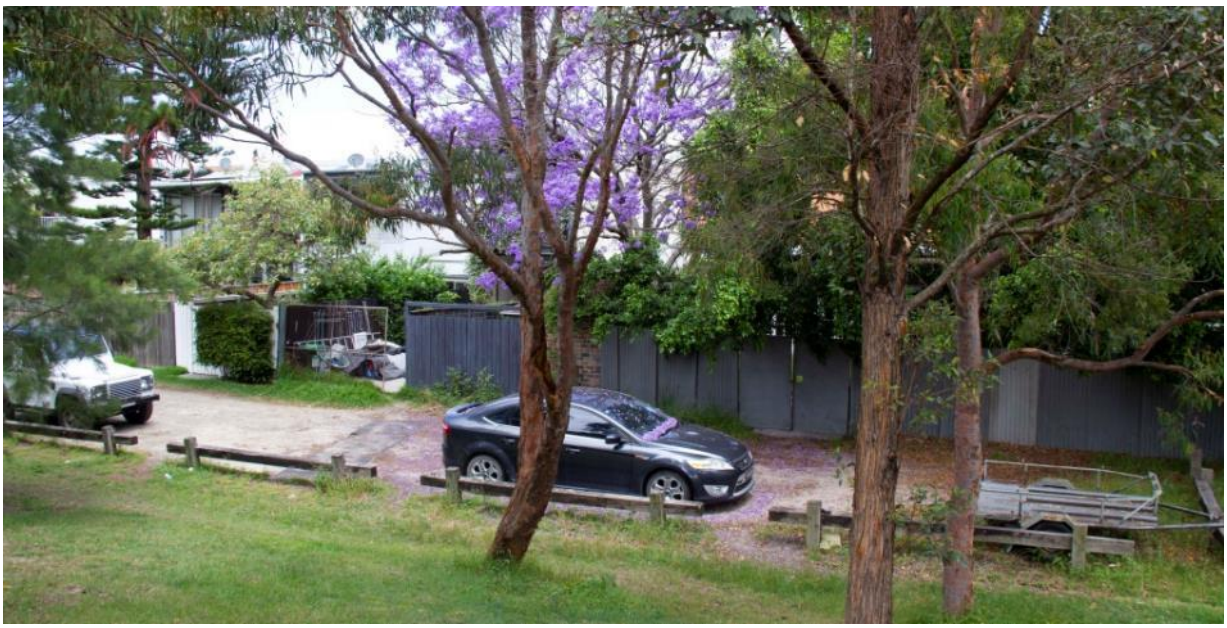

Figure 6-81 Rear access to the properties is via a laneway between the properties and Sydney Park

Receptors

OL 28 represents the views of the residents from the terrace houses at 2-34 Campbell Road, St Peters. The receptors would include the residents of the terrace houses and any visitors the residents might have. These receptors would view the project from the rear areas within their houses and from their back yards.

Existing views

This OL is positioned to the rear of the terraces on Campbell Road, within Sydney Park. The view from the rear of these properties would comprise predominantly the mature tree canopy within Sydney Park, with potential glimpse views into the park between the canopies. These views would most likely be seen from second storey rooms within the terrace houses, given that many have solid, tall fences surrounding their yards, some of which also have mature trees within them. Additionally, the views from the terrace houses into the park are also limited by a tall earthen berm between the rear laneway and the wetlands which gives the mature trees a higher elevation and further restricts the view into Sydney Park (refer to **Figure 6-82**).

Figure 6-82 The view seen from the gravel laneway behind the terrace houses looking towards Sydney Park, with the wetlands and internal path network screened by an earthen berm and mature trees

As there is no localised lighting along the adjacent walking/cycling path within Sydney Park near the houses, it is assumed that residents would have no view into the park at night.

Visual impact assessment

The visual impact for OL 28 is assessed in **Table 6-32**.

Table 6-32 Visual impact assessment, Observer Location 28: 2-34 Campbell Road, St Peters

Construction	
Changes to the View	Changes at this location include: • construction activity along the transmission cable route including: - trenching and conduit installation; - establishment of fenced work sites along the transmission cable route through the park; - tents or demountable buildings over joint bays; - access by plant, vehicles and personnel; and • night lighting to facilitate construction of the project.
Sensitivity of Receptors	The sensitivity of the receptors is High due to the following: • residents are a typically sensitive viewer group with a vested interest in the views from their homes and properties; • residents would see the construction works for moderate periods of time within their houses and from the rear gardens of their property; and • the residents of the terrace group being between construction activity on Campbell Road due to the New M5 project, and construction for the project within Sydney Park to the rear of their properties.
Magnitude of Visual Impacts	The magnitude of change during construction would be High. The construction activity would only be a short-term change, but it would be visible from the homes and be a change from the existing view. These changes would be compounded with the effects of the construction activity on Campbell Road for the New M5 project. The project may be lit at night if night work is required which would be in contrast to the exiting situation (i.e. there is no lighting currently in the park

	adjacent to these properties).
Overall Assessment	The visual impact would be High.
Operation	
Changes to the View	The park would be returned to its pre-construction state on completion of construction. Potential markers of the transmission cable circuit may remain but would not be visually prominent.
Sensitivity of Receptors	The sensitivity of these receptors remains High.
Magnitude of Visual Impacts	The magnitude of change during operation would be Negligible, as the park would be returned to its pre-construction state.
Overall Assessment	The visual impact would be Negligible.

6.3.29 Observer Location 29: Driveway on Euston Road, St Peters

Location description

The transmission cable route runs along a driveway within 202-212 Euston Road, Alexandria. The driveway accesses an industrial property with some on-site parking.

Receptors

OL 29 represents the view to the project seen by:

- travellers (vehicles, pedestrians and cyclists) on Euston Road; and
- visitors to and workers in the industrial complex accessed by the driveway on Euston Road.

Existing views

This OL is located on the southern side of Euston Road at the driveway to the industrial complex through which the transmission cable route would travel. The built form of the commercial complex accessed via the Euston Road driveway comprises attached, two storey buildings with large, storage areas opening onto the driveway, as well as doorways accessing the administrative offices associated with these businesses.

Euston Road is subject to a fair amount of construction activity as part of the New M5 project, which includes traffic slowing measures and removal of parking along the road reserve (refer to **Figure 6-83**).

Figure 6-83 The view across Euston Road with the industrial sites in the background

Night lighting on Euston Road includes typical street lighting, but also night lighting to construction activities (when required) associated with the New M5 project.

Visual impact assessment

The visual impact for OL 29 is assessed in **Table 6-33**.

Table 6-33 Visual impact assessment, Observer Location 29: Driveway on Euston Road, St Peters

Construction	
Changes to the View	Changes at this location would include: • construction plant and equipment, including heavy and light vehicles and traffic management equipment; • construction materials, including conduits and cable drums; • trenches; • tents or demountable buildings over joint bays; • clearing and reinstatement (where feasible) of a small number of trees near the entry to the Euston Road driveway; and • the construction works within the road reserve may be lit at night, as described in **Section 3.3.1**.
Sensitivity of Receptors	The sensitivity of the receptors is Moderate. Although the surrounding area is industrial with low scenic value and ongoing construction for the New M5 project, receptors would have views of the project changes from close proximity (their places of work) and daytime construction activities would change the way they access their places of work. Due to the open 'warehouse' arrangement of many of these businesses, workers and visitors would see the construction activity for prolonged periods of time and from close proximity. However, activity associated with the project would be short-term.
Magnitude of Visual Impacts	The magnitude of change during construction would be High given that the construction activity would be located very close to the workplace of many people and viewed at close proximity.
Overall Assessment	The visual impact would be High to Moderate.

Operation	
Changes to the View	No changes to Euston Road would be experienced during operation as trenched areas would be reinstated. Potential markers of the transmission cable circuit may remain but would not be visually prominent.
Sensitivity of Receptors	The sensitivity of the receptors remains Moderate.
Magnitude of Visual Impacts	The magnitude of change during operation would be Negligible. There would be no visible changes at this location during operation.
Overall Assessment	The visual impact would be Negligible.

6.3.30 Observer Location 30: The entry to Beaconsfield West substation, Alexandria

Location description

The Beaconsfield West substation is situated on Burrows Road at St Peters and backs onto the Alexandra Canal. Burrows Road has many mature trees adjacent to the substation. Potential tree removal would occur unless access via the existing driveway is utilised.

Receptors

OL 30 represents the view to the project seen by:

- travellers (vehicles, pedestrians and cyclists) on Burrows Road; and
- visitors to and workers in the industrial complexes on Burrows Road opposite the substation and from the eastern side of the Alexandra Canal.

Existing views

This OL is located on Burrows Road adjacent to the Beaconsfield West substation. Views to the Beaconsfield West substation would be seen either from the west of the substation on Burrows Road, or from east of the substation, from the opposite bank of the Alexandra Canal.

From Burrows Road the substation is viewed as a large industrial facility, with utilitarian built structures, electrical infrastructure, and partially demolished walls/fencing (refer to **Figure 6-84**). Potential entry points to the substation are protected by looped razor wire and fencing. At the time of writing this report, construction activity due to the removal of an existing substation building could be seen within the substation from Burrows Road above the new hoarding.

The substation has a very long road frontage (approximately 240 metres) but the site is unified by the reoccurring design of the facades of some buildings, with cladding panels in various shades of yellow, and tall, metal, safety fencing topped with spikes and razor wire (refer to **Figure 6-85**).

Views north and south along Burrows Road also include a number of industrial complexes, many mature street trees, and a high volume of traffic, including large trucks. There is parallel parking on either side of the road for most of its length.

The substation would be seen from properties on the eastern side of the Alexandra Canal. Views from these industrial properties would comprise of fencing along the boundaries of these industrial properties in the foreground, the Alexandra Canal in the middle ground, and the substation in the background. Views to the substation would be similar to those seen on Burrows Road but seen from a greater distance and with more of the detailed electrical equipment seen behind fencing. This view would be seen from carparks and from behind industrial complexes fronting Bourke Road at St Peters.

Burrows Road is lit with typical street lighting. While the substation contains some lighting for safety, much of the facility is unlit at night.

Figure 6-84 The substation visually comprises large, utilitarian built forms and electrical infrastructure, with ongoing works to the complex seemingly unfinished, as seen with this demolished brick wall of a building and razor wire to prevent unauthorised access

Figure 6-85 Cladding design featuring yellow panels of differing shades, and tall, metal fencing unify the long street frontage of the substation

Visual impact assessment

The visual impact for OL 30 is assessed in **Table 6-34**.

Table 6-34 Visual impact assessment, Observer Locations 30: The entry to Beaconsfield West substation, Alexandria

Construction	
Changes to the View	Changes seen on Burrows Road from the road itself or from properties along Burrows Road at this location would include: • construction plant and equipment, including heavy and light vehicles and traffic management equipment; • construction materials, including conduits and cable drums; • trenches; • tents or demountable buildings over joint bays; • stockpiling and additional truck movements to move spoil; • night lighting within the road reserve to facilitate construction out of regular business hours; and • clearing and reinstatement (where feasible) of a minimal amount of vegetation near the Euston Road driveway may be required. Some light spill from inside the substation may be seen, but typically direct views to the work would not be seen.
Sensitivity of Receptors	The sensitivity of the receptors is Low. The surrounding area is industrial, with low scenic value. Although receptors would have views of the project changes from close proximity (their places of work), the construction activities would probably not change the way they access their places of work, as many of the industrial complexes front driveways that connect Burrows Road to Euston Road. This would mean workers and visitors could access these properties from Euston Road and potentially avoid views of the project. The works within the substation may be viewed from the industrial complexes on the eastern side of the Alexandra Canal, but the changes viewed from these locations would be contained within an already utilitarian environment. Activity associated with the project would be short-term.
Magnitude of Visual Impacts	The magnitude of change during construction would be Low given that: • there is already construction activity within the substation; • works within the substation itself would only be seen above hoardings from the road reserve and other locations; and • the changes would be contained within a utilitarian infrastructure site with low scenic value. However, construction activity within the road reserve would be located very close to the workplace of many people and viewed at close proximity. Although additional truck movements would be seen as an increase in movement on the road, this would not change the character of the road considering the high number of construction vehicles already using Burrows Road due to surrounding construction activity and the industrial nature of the surrounding environment. Night lighting to illuminate construction activity within the road reserve would be brighter and more frequent where used and would be a change to existing conditions.
Overall Assessment	The visual impact would be Low.
Operation	
Changes to the View	Limited changes to the view would be experienced during operation. No views of the changes inside the substation would be seen from publicly accessible locations. Where feasible, juvenile trees or vegetation would replace the trees removed. No changes to night lighting would be seen during operation. Potential markers of the transmission cable circuit may remain but would not be visually prominent.

Sensitivity of Receptors	The sensitivity of the receptors remains Low.
Magnitude of Visual Impacts	The magnitude of change during operation would be Low due to the removal of the trees within the street, however, over time this change would be Negligible if trees were replanted.
Overall Assessment	The visual impact would be Low but could be reduced to Negligible over time if trees and landscaping are replaced.

6.4 Summary of visual impacts

The visual impacts of the project are summarised in **Table 6-35**.

Table 6-35 Visual impact summary table

Observer Location	Sensitivity	Construction		Operation	
		Magnitude	Rating	Magnitude	Rating
OL 1: Rookwood Road substation, Rookwood	Low	Moderate	**Moderate to Low**	Low	**Low**
OL 2: Muir Road Rail Overpass, Potts Hill	Low	Moderate	**Moderate to Low**	Moderate	**Moderate to Low**
OL 3: Muir Road construction laydown area, Chullora	Low	Moderate	**Moderate to Low**	Low	**Low**
OL 4: Allum Park, Greenacre	High	High	**High**	Low	**Moderate**
OL 5: Lakemba Mosque, Lakemba	High	High	**High**	Low	**Moderate**
OL 6: Yangoora Road, Lakemba	High	High	**High**	Low	**Moderate**
OL 7: Carter Street, Belfield	High	High	**High**	Low	**Moderate**
OL 8: Cooke Park, Belfield	High	High	**High**	Negligible	**Negligible**
OL 9: Rudd Park, Belfield	High	High	**High**	Low	**Moderate**
OL 10: Cowper Street Playground, Campsie -All transmission route options	High	High	**High**	Low	**Moderate**
OL 11A: Croydon Avenue, Croydon Park	High	High	**High**	Low	**Moderate**
OL 11B: Lindsay Street, Campsie – All transmission route options, underbore crossing option	High	High	**High**	Low	**Moderate**
OL 11B: Lindsay Street, Campsie – cable bridge crossing option	High	High	**High**	Moderate	**High to Moderate**
OL 12: Harmony Street Playground, Croydon Park – all transmission route options	High	High	**High**	Low	**Moderate**
OL 13: Cheviot Street, Ashbury	High	High	**High**	Moderate	**High to Moderate**
OL 14: Second Street, Ashbury	High	High	**High**	Moderate	**High to Moderate**

Observer Location	Sensitivity	Construction		Operation	
		Magnitude	Rating	Magnitude	Rating
OL 15: Peace Park construction laydown area, Ashbury	High	High	**High**	Negligible	**Negligible**
OL 16: Old Canterbury Road, Hurlstone Park	High	High	**High**	Low	**Moderate**
OL 17: Sideways Deli Café, Dulwich Hill	High	High	**High**	Low	**Moderate**
OL 18A: Terry Road, Dulwich Hill	High	High	**High**	Low	**Moderate**
OL 18B: Arlington Light Rail Station, Dulwich Hill	High	High	**High**	Low	**Moderate**
OL 19: 370 New Canterbury Road, Dulwich Hill	High	Moderate	**Moderate to High**	Negligible	**Negligible**
OL 20: Marrickville High School, Marrickville	High	High	**High**	Low	**Moderate**
OL 21: Amy Street Playground, Marrickville	High	High	**High**	Negligible	**Negligible**
OL 22: Charles Street, Marrickville	High	High	**High**	Low	**Moderate**
OL 23: Enmore Park, Enmore	High	Moderate	**Moderate to High**	Low	**Moderate**
OL 24: Edgeware Road, St Peters	High	High	**High**	High	**High**
OL 25: Camdenville Park, St Peters	High	High	**High**	Moderate	**Moderate to High**
OL 26: 53 Barwon Park Road, St Peters	High	High	**High**	Moderate	**Moderate to High**
OL 27: Sydney Park, Alexandria	High	High	**High**	Negligible	**Negligible**
OL 28: 2-34 Campbell Road, St Peters	High	High	**High**	Negligible	**Negligible**
OL 29: Driveway, Euston Road, Alexandria	Moderate	High	**Moderate to High**	Negligible	**Negligible**
OL 30: Beaconsfield West substation, Alexandria	Low	Low	**Low**	Negligible to Low	**Negligible to Low**

The proposed transmission cable route is located predominantly within the road reserve, with potentially three cable bridge crossings required. The visibility of the construction activity within the road reserve would generally be localised, with views to the works limited to the built form on either side of the road, and along the road itself. The roads within the project area are predominantly flat to gently undulating, with no areas where significant views to the surrounding landscape (or views back from the surrounding landscape) are seen from a vantage point.

Built form within the project area predominantly comprises low density residential housing (both attached and detached) with some industrial complexes to the west and some higher residential apartment blocks scattered along the route. There are few areas where views to the road are not contained by the built form on either side of the roadways, for example where the transmission cable route passes open spaces.

The transmission cable route runs outside the road reserve in a few locations, in particular where it crosses Lees Park, Camdenville Park and at Sydney Park. At Lees Park construction of the project would be seen from within the park itself and from the surrounding road reserve, with Hay and Harmony streets fringed with residential development. Camdenville Park is similar situation, with the project visible from within the park itself and from the surrounding road reserve, May and Council streets fringed with residential development. Within Sydney Park, the project would be viewed from within the park by park users and from surroundings (including residential receptors). Both receptor groups would be sensitive considering the high scenic quality of these settings.

Visibility of the proposed cable bridges located adjacent to existing bridges varies with each location. Views to bridges are sometimes limited by the visual containment of the crossing point, for example where a road bridge crosses a rail corridor the bridge deck is visible to traffic passing over it. However, views to the bridge from below (i.e. from within the rail corridor) are limited by the difference in grade between the rail corridor and the surrounding landscape, and from alongside by fringing vegetation along the rail corridor which screens views into the corridor. Cable bridges have the greatest potential to affect the views to and from OLs where they are situated within public open space (for example at the Cooks River and cycleway in Precinct 3) or where they are close to residential properties (for example at the Bedwin Road rail bridge in Precinct 4).

The construction laydown areas are visible from the surrounding landscape to varying degrees. The Rookwood Road and Beaconsfield West substations are also visible from the surrounding landscape to varying degrees but the proposed changes (both during construction and at operation) to the substations would occur within the substations, limiting the changes to visual amenity from surrounding areas.

Overall, the most sensitive OLs are those that are associated with public open space, i.e. public parks and reserves. The magnitude of change to views within and from these areas would be most affected when a construction laydown area is positioned within a park, as the character, land use and change in view to and within the park would be significantly different. However, as per the assessment of landscape character, the changes during the construction phase of the project are short-term, and in most cases the visual impact rating is reduced during operation, in many cases to Low.

The most sensitive residential OLs are located within those areas in or adjacent to HCAs, which are often listed due to the street trees within the streetscapes. Removal of trees within these areas would have a higher visual impact due to the reliance on these trees for streetscape character and aesthetic quality of the areas. Typically, street trees in these areas are mature, and replacement trees would take longer periods of time to visually replace those removed.

The greatest potential operational impacts on views are due to the possible removal of street trees during construction and the installation of cable bridges. Where tree removal is required, this would affect views in almost all streets the transmission cable route passes, with the character of the streetscape of some streets with mature street trees or within HCAs more significantly affected than others (as described above). Opportunities to retain trees would be investigated during detailed design and construction. Tree replacement and augmentation planting within affected road reserve (where feasible) may, over time, reduce the visual impact of tree removal, although the speed at which the view would be improved depends on the growth rate of the tree species and the maturity (pot size) of the street trees replanted.

7.0 Potential cumulative impacts

This section provides a description and assessment of the potential cumulative visual impacts associated with the project. Refer **Chapter 22 Cumulative impacts** of the EIS for a further assessment of potential cumulative impacts of the project. Potential cumulative impacts of the project would be affected by the impacts of other developments within the project area, including the:

- WestConnex New M5, including a new interchange at St Peters;
- WestConnex M4-M5 Link;
- Sydney Metro City and Southwest including the Sydenham to Bankstown Upgrade;
- St Peters Concrete Plant and Materials Handling Facility;
- University of Sydney Camperdown Campus Health Precinct Stage 1 Building; and
- construction of medium and high density residential and commercial development along the transmission cable route.

The greatest visual impacts for the project are expected during construction, therefore this qualitative cumulative impact assessment primarily addresses construction impacts. During operation, the small contribution of permanent infrastructure by the project (the cable bridges) is not expected to significantly change the landscape character of the study area as this infrastructure would be adjacent to existing bridges. In regard to substations the works would occur within existing substations and therefore the project is not expected to significantly change the landscape character of the substations during operation.

Where the above developments are likely to interact with the project, the visual impact is discussed within **Table 7-1**.

The New M5 project area is located adjacent to Sydney Park in Precinct 5. The New M5 project will comprise twin underground tunnels from Kingsgrove to the new St Peters Interchange. The interchange will include a multi-level structure at the site of the old Alexandria landfill facility, adjoining the southern side of Sydney Park and bounded by Campbell Road, Canal Road, the Princes Highway and Burrows Road. The interchange will provide road connections from the tunnels to Campbell and Euston roads, which will also undergo road upgrades. Construction has commenced and is expected to be completed in early 2020, and therefore may overlap with the timing of the construction work for the transmission cable project.

The M4-M5 Link footprint is located adjacent to Sydney Park in Precinct 5. This project will comprise tunnels connecting the New M5 tunnels at the St Peters Interchange with the M4 East tunnels at Haberfield. Construction is planned to start in 2019 and therefore is likely to overlap with the timing of the construction work for the transmission cable project. A construction ancillary facility for the M4-M5 Link project is planned at the St Peters interchange.

The Sydney Metro City and Southwest will include construction of tunnels between Chatswood and Sydenham and conversion of the existing rail line between Sydenham and Bankstown. A dive site is located to the north of Sydenham Station, on the southern side of Edinburgh Road near Camdenville Park and bounded by Railway Parade (adjoining Bedwin Road), and the Bankstown Rail Line. Works are planned to commence in late 2018 and opening in 2024. It is therefore likely to coincide with the timing of the proposed construction work for the transmission cable project.

The Enfield Intermodal Logistics Centre is located at Strathfield South, on the northern side of the section of Punchbowl Road in Precinct 2. Some development has occurred on the site since it was originally approved for an intermodal logistics centre in 2007. Construction activity is expected to be ongoing and may overlap with the timing of construction work for the project. It is noted that primary vehicle access to the site is generally from the Hume Highway and Norfolk Road rather than Punchbowl Road, due to heavy vehicle turning restrictions. This would result in a majority of the construction traffic for the Enfield Intermodal Logistics Centre being focussed away from the project.

A proposal to modify the existing St Peters Concrete Plant and Materials Handling Facility includes increasing the production and materials throughput at the site. The site is located at 25 Burrows Road South, St Peters, about 500 metres south of the project in Precinct 5. If the modification is approved,

construction of the upgraded facility is likely to overlap with the timing of the construction work for the project.

The University of Sydney Camperdown Campus Health Precinct Stage 1 Building is located on the main University campus site at Camperdown. The project includes demolition works and construction. Although works may overlap with the timing of the construction work for the project, it is noted that the site is approximately 2 kilometres north of Sydney Park.

Various new medium and high density commercial and residential development projects are, or are likely, to be underway when the project is under construction. This includes land near the boundary of Precinct 3, adjoining land fronting Old Canterbury Road and close to the Dulwich Hill light rail line. This is a former industrial area which is being redeveloped for high density mixed use development. Other redevelopment sites along the transmission cable route may be approved and commence construction along the transmission cable route while the project is under construction.

For the above projects, the potential cumulative visual impacts during construction would generally result from:

- the establishment and use of multiple construction laydown areas and work sites;
- removal of vegetation and street trees;
- change to visual character of sensitive areas such as HCAs and public open space; and
- the addition of heavy vehicles to the local road network.

A summary of cumulative impacts from the project are presented in **Chapter 22 Cumulative impacts** of the EIS including suggested mitigation measures. **Table 7-1** provides an outline of where the above developments will directly overlap with the project and the potential visual impacts.

Table 7-1 Summary of projects with potential cumulative impacts with the project

Other development projects	Project precinct	Potential impacts
WestConnex New M5, including a new interchange at St Peters; WestConnex M4-M5 Link	5	Immediately south of Campbell Road in Precinct 5 is a large construction compound at the St Peters Interchange which is expected to be in use until the works are completed in 2023. Additional construction activity is also planned in the surrounding road reserve, including Campbell Road and Euston Road. Additional construction visual impacts due to the project would potentially be seen in conjunction with the WestConnex works. The project works would include the transmission cable route construction exiting Sydney Park near Euston Road, and surrounding receptors would potentially be impacted by construction from these projects, including the terraces on Campbell Road. The project and the WestConnex developments are surrounded predominantly by industrial premises with utilitarian character, although these projects are also adjacent to other areas, including Sydney Park. The additional construction activity due to the project (which is much smaller in scale to the WestConnex projects, and a lot shorter in timeframe) is not considered to be detrimental to the overall visual quality of the surrounding area, particularly due to the short timeframe and relative containment of the construction activity.
Sydney Metro City and Southwest including the Sydenham to Bankstown Upgrade	4 and 5	A dive site for the Sydney Metro development is located immediately to the west of Bedwin Road and Railway Parade, on the western side of the Bankstown rail line. This site could be in use until 2024. There is also a construction compound associated with the New M5 project within Camdenville Park. Additional visual impacts during the construction phase of the project may be experienced as construction for the project would potentially be seen in conjunction with these other development works from

Other development projects	Project precinct	Potential impacts
		some locations. OL 21 and OL 22 may potential experience views to construction of both projects. From these OLs, receptors would see construction activity associated with Sydney Metro City and Southwest, as well as activity due to the transmission cable route and construction of the cable bridge over Bedwin Road. The receptors include residents surrounding Camdenville Park and on Edgeware Road. The visual quality of both projects is similar: one of construction activity surrounded by a mix of industrial premises (typically with utilitarian character) and residential premises. Camdenville Park has a higher scenic quality and may be subject to upgrade works post the demobilisation of the New M5 construction compound. The additional construction activity due to the project (which is much smaller in scale to the Sydney Metro projects and a lot shorter in timeframe) is not considered to be detrimental to the overall visual quality of the surrounding area, particularly due to the short timeframe and relative containment of the construction activity.
St Peters Concrete Plant and Materials Handling Facility	5	This site is located further south of the New M5 construction site, south of Campbell Road and about 0.5 kilometres to the south of Sydney Park. This is an existing concrete batching plant. It is unlikely that this development would be seen in conjunction with construction activity for the project.
University of Sydney Camperdown Campus Health Precinct Stage 1 Building	5	As this site is located approximately 2 kilometres north of the project, and outside the study area, these works are not considered to result in any noticeable cumulative impacts with the project, due to the distance to the site.

Overall, the construction activity associated with the project may be seen in conjunction with construction activities for three other developments. This would result in an overall increase in construction activity seen at several locations in the project area, as the projects are viewed in conjunction with one another. However, the construction activity within the transmission cable route and at the cable bridges is minimal in comparison to the large scale construction activity associated with these other developments, particularly the WestConnex developments and the Sydney Metro development. The project also has a short construction timeframe in comparison with these other developments. The impacts associated with the project would not significantly increase the overall cumulative visual impact from these projects seen from the one location.

8.0 Environmental management and mitigation measures

8.1 Management objectives

Objectives for the management of project impacts would continue to be investigated throughout the development of the project design to identity further opportunities to minimise any adverse impacts generated by the project.

Management objectives for landscape character and visual impacts include:

- maintain or improve the landscape character and visual amenity of HCAs and public open space;
- minimise tree removal;
- select designs and materials for temporary or permanent infrastructure that integrate with the surrounding landscape; and
- restore areas to their previous condition where feasible.

8.2 Environmental management and mitigation measures

Table 8-1 outlines a number of mitigation measures to reduce the impact of the project construction and operation on the landscape character and visual amenity of the project area.

Table 8-1 Environmental management and mitigation measures

No.	Issue/impact	Environmental management and mitigation measures	Timing
LV1	Design of construction laydown areas and work sites	Fencing around construction laydown areas and work sites and hoardings (where required) will take into consideration the landscape character of the local environment and proximity of sensitive receptors in selecting suitable materials and designs. Fencing around laydown areas within Heritage Conservation Areas (HCAs) and public open space will prevent visibility of the internal works area.	Detailed design and construction
LV2	Night lighting to construction laydown areas	Night lighting to construction laydown areas will be minimised adjacent to residential properties. Where lighting is required, and a construction laydown area is positioned close to residences, lighting will be directed away from residential properties to avoid light spill into properties at night.	Detailed design and construction
LV3	Cable bridge design	Design principles for the final cable bridge designs will include integration of the structures into the surrounding landscape while meeting safety, technical and operational requirements. Bridges will be designed to reduce visual prominence, including surface treatment which avoids reflective materials.	Detailed design
LV4	Landscaping and rehabilitation	Ground stabilisation, landscaping and rehabilitation at cable bridge crossings will be undertaken once installation of the cable bridge is complete and will be monitored for a period of at least six months.	Construction and operation
LV5	Tree removal and replanting	The project will avoid the removal of trees wherever possible. Where avoidance is not possible, a tree replanting strategy/landscape plan will be agreed with the relevant local council. To mitigate the visual impact of tree removal, similar species of trees will be replanted, where feasible. Where this is not possible, suitable trees for specific local conditions will be determined. The suitability of the	Construction and operation

No.	Issue/impact	Environmental management and mitigation measures	Timing
		replacement trees will be confirmed by a qualified arborist.	
LV6	Sydney Park impacts	The final transmission cable route will follow Barwon Park Road and existing stormwater infrastructure to avoid impacting established trees within or adjacent to Sydney Park.	Detailed design and construction

9.0 Conclusion

Overall, the project would have the greatest potential impact on landscape character and visual impact during the construction period, as much of the construction activity is uncharacteristic within the LCZs and at the OLs. However, the changes during the construction phase of the project are short-term for the transmission cable route, and up to two years for the construction laydown areas. In most cases the impact on landscape character and visual amenity would be reduced during operation and in some cases the impact would be reduced to Negligible.

The greatest potential impacts on views would arise from the potential removal of street trees and the introduction of cable bridges. If required, tree removal would affect views in almost all streets which the transmission cable route passes, with the character of the streetscape of some streets (for example those with more mature street trees or that are within heritage conservation zones) being affected to a higher degree. Tree replacement and augmentation planting within affected road reserve (where feasible) may, over time, reduce the visual impacts of tree removal, although the speed at which the view would be improved depends on the maturity of the street trees removed, and the growth rate and mature height of the replacement tree species.

Cable bridges would most impact views to and from OLs where they are situated within public open space (for example at the Cooks River and cycleway in Precinct 3) or where they are close to residential properties (for example at the Bedwin Road rail bridge in Precinct 5).

The mitigation of landscape character and visual impacts is somewhat dependent on the quality and overall design (including the quantity of planting and size of species selected) of replacement landscaping along the transmission cable route. With careful and considered transmission cable route placement (particularly to preserve large existing street trees) and appropriate replacement of removed trees (where feasible), the impact of the project on landscape character and visual impact could be mitigated at certain locations to a point where the impact would be reduced, in some cases to a negligible change.

10.0 References

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