TransGrid

Powering Sydney's Future

Potts Hill to Alexandria transmission cable project

Submissions Report

February 2020

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Submissions Report

Client: TransGrid

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Prepared by

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Executive summary

TransGrid is the manager and operator of the major high-voltage electricity transmission network in New South Wales (NSW) and the Australian Capital Territory. 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 is needed to address existing issues in the electricity supply network for inner Sydney. A reliable, affordable and sustainable electricity supply is essential for our way of life and a secure electricity network is critical to support the growth of Sydney.

Background to the EIS

An Environmental Impact Statement (EIS) for the project was prepared to address the Planning Secretary's Environmental Assessment Requirements (SEARs). The EIS was exhibited by the Department of Planning, Industry and Environment (DPIE) for six weeks from 11 October to 22 November 2019. Public exhibition of the EIS provided the community, interested parties and key stakeholders (including government agencies and councils) with an understanding of the project and provided the opportunity to make a submission on the EIS.

Consultation activities undertaken during exhibition of the EIS included a number of EIS briefings to key stakeholders and five community information sessions to provide community members an opportunity to discuss the EIS with the project team. The EIS was available to view and download from the DPIE Major Projects website and hardcopies were made available to the public at four locations. A Community Guide to the EIS was also distributed and available on the TransGrid website. The guide provided a high-level summary of the EIS, details on how and where to access the EIS and information on how to make a submission.

Submissions Report

This Submissions Report outlines TransGrid's response to submissions received on the EIS during the public exhibition period. Submissions have been summarised and grouped under themes that largely correlate with the technical issues assessed in the EIS, for example, traffic and transport.

A total of 21 submissions were received by DPIE. This included seven submissions from members of the public. The remainder were from key stakeholders including government agencies, councils, private organisations and special interest groups.

The main issues raised in key stakeholder submissions included:

- traffic and access, including on-road parking and road restoration;
- noise impacts, especially at night-time;
- street tree preservation; and
- impacts on utilities and services.

The main issues raised in community submissions included:

- electric and magnetic fields (EMF) – basis of assessment;
- project development and alternatives – route selection; and
- land use and property – construction impacts.

The Submissions Report sets out the following information:

- an introduction to the project and background to the EIS is provided in **Section 1.0**;
- previous and future community and stakeholder consultation is outlined in **Section 2.0**;

- clarifications for minor errors or discrepancies noted in the EIS are provided in **Section 3.0**;
- issues raised in key stakeholder submissions are addressed in **Section 4.0**;
- issues raised in community submissions are addressed in **Section 5.0**;
- the environmental management and mitigation measures for the project, including any changes, is provided in **Section 6.0**;
- conclusions and next steps are summarised in **Section 7.0**;
- references are provided in **Section 8.0**; and
- appendices, including a register of submitters who provided submissions.

All submissions on the EIS are available to view and download on the DPIE Major Projects website[1].

Amendment Report

An Amendment Report has been prepared for the project and is also available for viewing on the DPIE Major Projects website. The report describes project refinements that have occurred subsequent to the exhibition of the EIS, and includes:

- identifying a preferred option (Option 1b) as the preferred route and special crossing option at the Cooks River in Croydon Park/Campsie. This option involves underboring the Cooks River from the cul-de-sac at the end of Lindsay Street into Lees Park before the cable route continues on to Harmony Street, Ashbury;
- removing the proposed construction laydown area at Cooke Park in Belfield, within the Strathfield Local Government Area (LGA), as it is no longer required to support construction of the project; and
- identifying potential additional circumstances along the route where the transmission cable circuit could be constructed via underboring methods rather than trenching to minimise potential impacts on existing infrastructure, State and regional roads and/or sensitive receivers.

These project refinements are based on additional engineering and technical information and on feedback from key stakeholders and the community. These refinements would result in a reduction of potential impacts to the environment and community. Refer to the Amendment Report for further details.

Ongoing consultation with the community and stakeholders

TransGrid will engage a contractor to carry out the detailed design and construction of the project. Both TransGrid and the contractor will be responsible for ongoing consultation with the community and key stakeholders during future stages of the project, should it be approved.

Future consultation activities are described in **Section 2.3**.

Way forward

This Submissions Report has been submitted to DPIE for consideration. Once DPIE has completed its assessment of the project, a draft Environmental Assessment Report will be prepared for the Planning Secretary of DPIE, which may include recommended conditions of consent.

The Environmental Assessment Report will be provided to the NSW Minister for Planning and Public Spaces who will then make a determination on the project. If the project is approved, it is expected that construction would commence by mid-2020.

[1] https://www.planningportal.nsw.gov.au/major-projects/project/9956

Glossary, acronyms and abbreviations

Glossary

Term	Definition
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. All construction laydown areas would also be used for stockpiling.
Day	The period from 7:00 am to 6:00 pm Monday to Saturday and 8:00 am to 6:00 pm Sundays and public holidays.
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.
Impact	Influence or effect exerted by a project or other activity on the natural, built and community environment.
Joint bay	An enlarged section of excavated trench in which cables are joined together.
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 waterbody; • substation sites requiring upgrades (noting that all works would be contained within the existing site boundaries); and • construction laydown areas.
Proponent	The person or organisation that proposes to carry out the project or activity. For the purpose of the project, the proponent is TransGrid.
Feasible and reasonable	Consideration of best practice taking into account the benefit of proposed measures and their technological and associated operational application in the NSW and Australian context. 'Feasible' relates to engineering considerations and what is practical to build. 'Reasonable' relates to the application of judgement in arriving at a decision, taking into account mitigation benefits and cost of mitigation versus benefits provided, community expectations and nature and extent of potential improvements.
Road reserve	The area comprising roads, footpaths, nature strips and public transport infrastructure (including indented bus bays, bus shelters and bus stop signage).
Secretary's Environmental Assessment Requirements (SEARs)	Requirements and specifications for an environmental assessment prepared by the Planning Secretary of the Department of Planning, Industry and Environment under section 5.16 of the *Environmental Planning and Assessment Act 1979* (NSW).

Term	Definition
Sensitive receiver/receptor	Includes residences, educational institutions (including preschools, schools, universities, TAFE colleges), health care facilities (including nursing homes, hospitals), religious facilities (including churches), child care centres, passive recreation areas (including outdoor grounds used for teaching), active recreation areas (including parks and sports grounds), commercial premises (including film and television studios, research facilities, entertainment spaces, temporary accommodation such as caravan parks and camping grounds, restaurants, office premises, retail spaces and industrial premises).
Submission	A formal response from an individual or organisation, including a government agency, that is submitted to the Department of Planning, Industry and Environment, during the public exhibition of a State significant project.
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.

Abbreviations and acronyms

Abbreviation/ Acronym	Definition
ACM	Asbestos Containing Materials
AMP	Asbestos Management Plan
ANZECC	Australian and New Zealand Environment and Conservation Council
ARMCANZ	Agriculture and Resource Management Council of Australia and New Zealand
ARPANSA	Australian Radiation Protection and Nuclear Safety Agency
ASSMP	Acid Sulfate Soil Management Plan
BCD	Biodiversity Conservation Division
BDAR	Biodiversity Development Assessment Report
CBD	Central Business District
CCF	Community Consultation Framework
CEMP	Construction Environmental Management Plan
CHMP	Cultural Heritage Management Plan
CNVIA	Construction Noise and Vibration Impact Assessment
CNVMP	Construction Noise and Vibration Management Plan
CSEP	Community and Stakeholder Engagement Strategy and Plan
CSRG	Community and Stakeholder Reference Group
CSWMP	Construction Soil and Water Management Plan
CTMP	Construction Traffic Management Plan
DBYD	Dial-Before-You-Dig
DCP	Development Control Plan
DPIE	NSW Department of Planning, Industry and Environment
EEC	Endangered ecological community
EIS	Environmental Impact Statement
ELF	Extremely low frequency
EMF	Electric and magnetic fields
EMM	Environmental management and mitigation measure

Abbreviation/ Acronym	Definition
ENA	Energy Networks Association
EP&A Act	*Environmental Planning and Assessment Act 1979*
EPA	Environment Protection Authority
FMP	Flood Management Plan
IACA	Institute of Australian Consulting Arboriculturists
ICNG	Interim Construction Noise Guideline
ICNIRP	International Commission on Non-Ionizing Radiation Protection
IWEG	Inner West Environmental Group
kV	kilovolt
LGA	Local Government Area
NSW RFS	NSW Rural Fire Service
PASS	Potential acid sulfate soil
PCT	Plant Community Type
RBL	Rating background level
SEARs	Planning Secretary's Environmental Assessment Requirements
SHR	State Heritage Register
SSI	State Significant Infrastructure
STA	State Transit Authority
STARS	Significance of a Tree, Assessment Rating System
STIF	Sydney Turpentine-Ironbark Forest
TCP	Traffic Control Plans
TEC	Threatened ecological community
TWA	Time weighted average
TfNSW	Transport for New South Wales
WSUD	Water sensitive urban design

1.0 Introduction

1.1 Background

TransGrid is the manager and operator of the major high-voltage electricity transmission network in New South Wales (NSW) and the Australian Capital Territory. 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).

In 2012, recognising the deterioration and upcoming retirement of a number of transmission cables, TransGrid commenced a series of studies to investigate improvements to the transmission network across the inner Sydney area. A route selection study was completed in 2017 to identify a preferred route option for the Rookwood Road substation to Beaconsfield West substation network connection.

The project was identified as the solution to address existing issues in the electricity supply network for inner Sydney. A reliable, affordable and sustainable electricity supply is essential for our way of life and a secure electricity network is critical to support the growth of Sydney.

The environmental impact assessment process commenced in 2017 to evaluate the potential impacts of the identified route. A number of route refinements have since occurred due to various constraints and potential impacts, identified during the environmental assessment and informed by community and stakeholder feedback.

The Environmental Impact Statement (EIS) (AECOM, 2019a) was placed on public exhibition for six weeks from 11 October to 22 November 2019. A total of 21 submissions were received from key stakeholders (including government agencies, councils) and from the community. This is described in further detail in **Section 2.0**.

1.2 The project

The project is State Significant Infrastructure (SSI) under clause 14 of *State Environmental Planning Policy (State and Regional Development) 2011.* The transmission cable route would be around 20 kilometres long, would have a cable life of about 40 years and would be constructed primarily by trenching.

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.

The project is located in the following local government areas (LGAs):

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

The project would be located primarily within road reserves, at existing electrical infrastructure sites, within public open space and on previously disturbed areas. Key components of the project include:

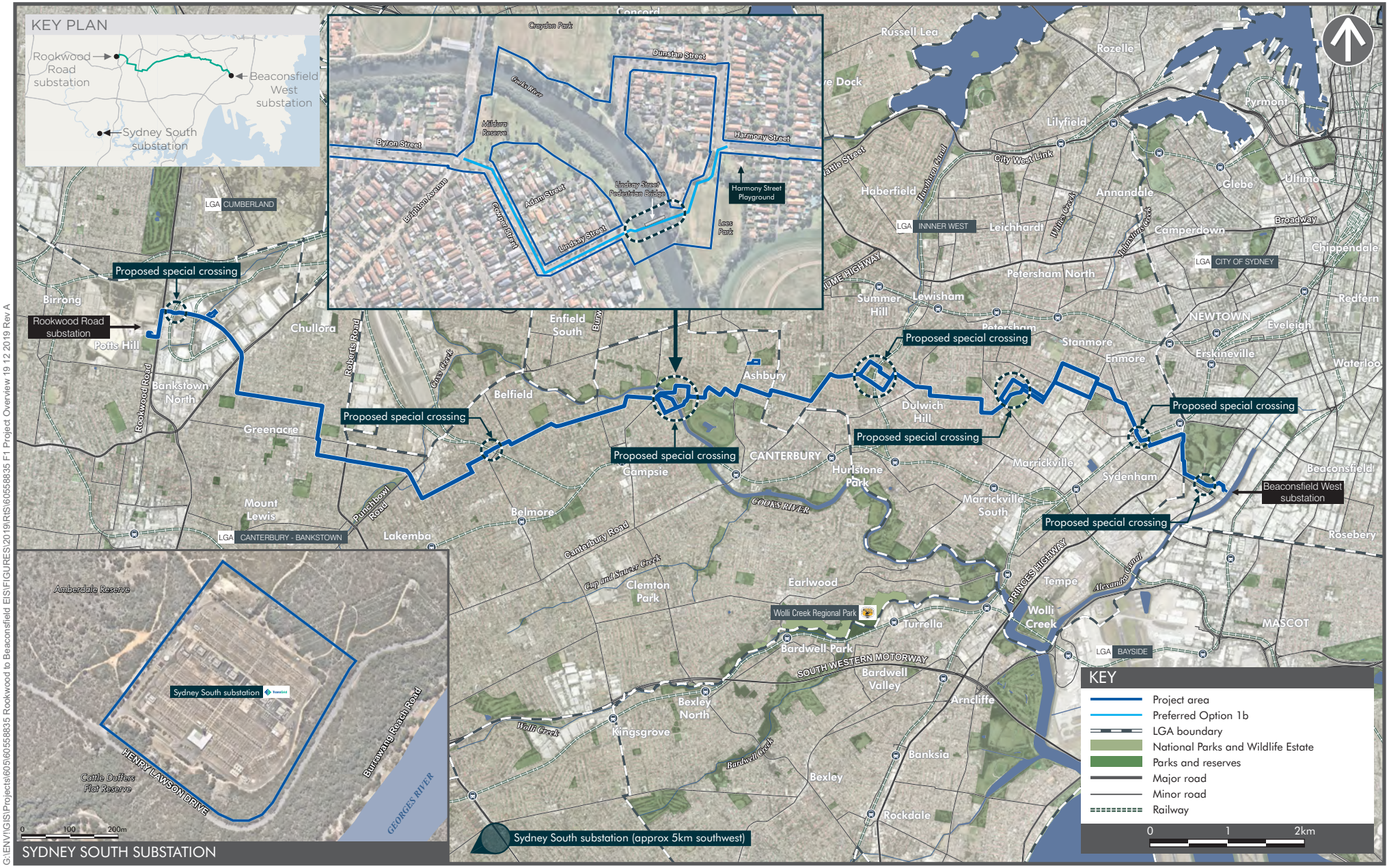
- cable works connecting Rookwood Road substation with the Beaconsfield West substation comprising:
    - a 330 kV underground transmission cable circuit comprising three cables installed in three conduits;
    - another set of three conduits for a possible future 330 kV transmission cable circuit if 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;
- seven special crossings of infrastructure or watercourses including two rail lines (at Chullora and St Peters), one freight rail line (Enfield Intermodal rail line at 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
- four temporary construction laydown areas to facilitate construction of the project.

The project does not include the cable pulling and jointing works for a 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. Subsequent to the EIS going on public exhibition, three refinements have been made to the project. This includes confirmation of a preferred option for the route and construction method at the Cooks River crossing in Croydon Park/Campsie, consideration of additional circumstances along the route where the transmission cable circuit could be constructed via underboring methods rather than trenching and removing the need for the Cooke Park construction laydown area in Belfield. These changes are described in detail in the Amendment Report for the project (AECOM, 2019b).

An overview of the project, showing the confirmed Cooks River crossing (Option 1b) and the removal of the Cooke Park construction laydown area, is shown in **Figure 1-1**.



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TransGrid

AMENDED 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

1.3 Purpose of this document

The Planning Secretary of the NSW Department of Planning, Industry and Environment (DPIE) provided copies of the submissions on the EIS to TransGrid. In accordance with section 5.17(6) of the EP&A Act, the Planning Secretary requested TransGrid to provide a response to the issues raised in those submissions. This Submissions Report identifies the issues raised during exhibition of the EIS and provides responses to those issues (refer to **Section 4.0** for responses to key stakeholder submissions and **Section 5.0** for responses to community submissions).

1.4 Summary of submissions

A summary of the composition of submissions made during the EIS exhibition period is provided in **Table 1-1**. A total of 21 submissions were received. Of that, 14 submissions were received from key stakeholders including NSW government agencies, local councils, private organisations and special interest groups, and seven submissions were received from community members. Five of the community submitters objected to the project. The remaining submitters provided comments for consideration.

DPIE assigned each submitter a unique submitter identification number (Submitter ID) – refer to **Appendix A**. Copies of the full submissions can be viewed or downloaded from the DPIE Major Projects website[2].

Submissions were provided by the following agencies and organisations:

- NSW Department of Primary Industries;
- NSW Environment Protection Authority;
- Transport for NSW;
- State Transit Authority;
- Heritage Council of NSW;
- NSW Rural Fire Service;
- Sydney Water;
- City of Canterbury Bankstown;
- Inner West Council;
- City of Sydney;
- Ausgrid;
- Caltex;
- Inner West Environment Group; and
- Biodiversity Conservation Division.

Table 1-1 Summary of submissions received

Submitter type	Total submitters
NSW government agencies	8
Local councils	3
Other organisations	2
Special interest groups	1
Community	7
Total	**21**

The following issue categories and sub-categories were most commonly raised in the community submissions received:

- electric and magnetic fields (EMF) - basis of assessment;
- project development and alternatives – route selection; and
- land use and property – construction impacts.

[2] https://www.planningportal.nsw.gov.au/major-projects/project/9956

The issues raised in the community submissions are presented graphically in **Figure 1-2**.

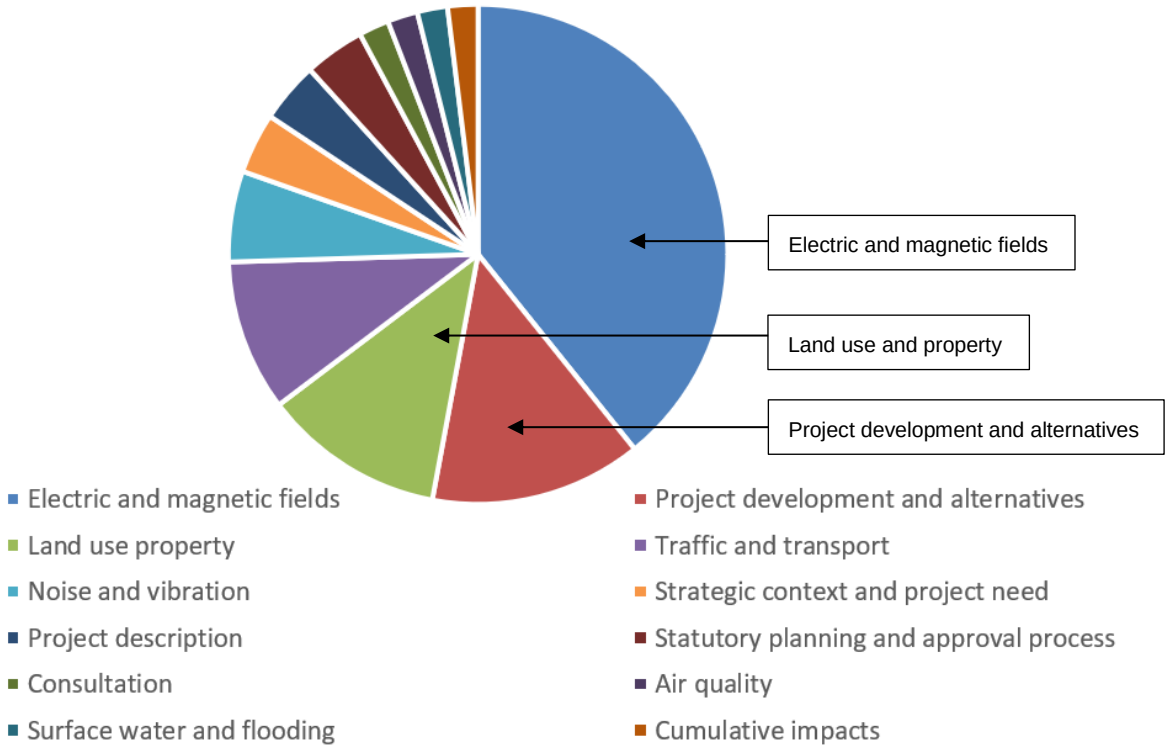

Figure 1-2 Issues raised in community submissions

2.0 Community and stakeholder consultation

2.1 Consultation overview

As described in Chapter 6 Consultation of the EIS, consultation for the project began in late 2016 with the route selection study. TransGrid has been consulting with the community and key stakeholders (including government agencies, councils, utility/service providers and special interest groups) about the project and seeking input for the development of the EIS since early 2018. During EIS preparation, consultation activities included:

- distributing project updates within the project area;
- door knocking residences, businesses and religious institutions;
- hosting community information sessions;
- meeting with key stakeholders, local businesses, schools and child care centres; and
- enabling the community and key stakeholders to provide feedback via the online management tool *Social Pinpoint*.

Community and key stakeholder feedback gathered during development of the EIS was used to inform project refinements and development of mitigation measures.

2.2 Consultation during EIS exhibition

The EIS was placed on public exhibition by DPIE for six weeks from Friday 11 October to Friday 22 November 2019. During this period, stakeholders and the community were able to view a hardcopy of the EIS at the following locations:

- City of Canterbury Bankstown offices at Bankstown and Campsie;
- Emanuel Tsardoulias Community Library, Dulwich Hill;
- Inner West Council Petersham Service Centre, Petersham; and
- Green Square Library, Zetland.

Electronic copies of the EIS were also available to be viewed and downloaded from the DPIE Major Projects website and USB copies of the EIS were provided on request.

TransGrid continued to consult with the community and key stakeholders during this period, including:

- distributing the Community Guide to the EIS;
- providing EIS briefings to City of Canterbury Bankstown, Inner West Council, City of Sydney and Trinity Grammar School;
- door knocking schools, child care centres and businesses;
- providing an online interactive map on the project website; and
- hosting five community information sessions at:
    - Chullora Marketplace, Chullora - Thursday 24 October 2019, 4pm to 7pm;
    - Campsie Centre, Campsite - Saturday 26 October 2019, 10am to 1pm;
    - Woolworths Canterbury Plaza, Canterbury - Thursday 31 October 2019, 4pm to 7pm;
    - Emanuel Tsardoulias Community Library, Dulwich Hill - Saturday 2 November 2019, 10am to 1pm; and
    - Marrickville Markets, Marrickville - Sunday 3 November 2019, 9am to 12pm.

During these sessions, community members had the opportunity to discuss the EIS with members of the project team. Forty-five people attended the information sessions.

2.3 Future consultation

Should the project be approved, TransGrid will continue community and stakeholder consultation to ensure the community and stakeholders are informed about the project and have opportunities to provide feedback to the project team during detailed design and construction. TransGrid recognises the importance of ongoing consultation for the smooth delivery of the project.

Ongoing consultation will be carried out during:

- detailed design, from early 2020; and
- construction, from mid-2020 to 2022.

2.3.1 Approach

An overarching Community and Stakeholder Engagement Strategy and Plan (CSEP) will be prepared by TransGrid during detailed design. The CSEP will ensure the commitments outlined in the Community Consultation Framework (CCF), included in Appendix C of the EIS, are met. The CSEP will in turn be supported by a Community Liaison Plan prepared by the appointed contractor.

Furthermore, a Community and Stakeholder Reference Group (CSRG) will be established prior to construction commencing. The CSRG will be comprised of local businesses, residents and council representatives. The purpose of the CSRG will be to provide advice on the management and mitigation of issues related to the construction of the project, and the management of complaints.

The project determination will be communicated to all stakeholders on the project database.

2.3.2 Detailed design

Once the detailed design is progressed sufficiently by the appointed contractor to confirm the cable alignment, impacted underground services, location of trees likely to be removed, road access needs and electrical design requirements, the relevant key stakeholders will be informed.

Councils will also be provided with the Construction Traffic Management Plan (CTMP) for their information. The requirement for key stakeholder input or consultation on the Construction Environmental Management Plan (CEMP) and any sub-plans will be determined by the conditions of consent for the project.

2.3.3 Construction

During construction, TransGrid has the following roles and responsibilities for ongoing consultation:

- keeping stakeholders (as identified in the CCF and CSEP) informed on construction timing and progress;
- run the CSRG with support from the contractor;
- support the contractor in its dealings with the community;
- act as an escalation point for complaints management; and
- publish information on progress and location of construction activities on the project website.

It is expected that key stakeholder briefings will be held by TransGrid as required, based on project milestones, to provide updates on construction progress.

During construction, the contractor has the following roles and responsibilities for ongoing consultation:

- manage day-to-day interactions with residents, local businesses and community groups;
- manage day-to-day interactions with councils and road authorities;
- notify the community about upcoming construction activities through distribution of notifications, door knocking and phone calls;
- drafting and distribution of newsletters;
- respond to enquiries and complaints;

- provide input to the project website, as required, on construction progress and upcoming work locations; and
- support TransGrid as needed in its consultation with key stakeholders.

Newsletters, with relevant project information, would be distributed to properties within 200 metres of the transmission cable route prior to construction and then every six months during construction.

Notifications to properties directly impacted by construction activities (such as changes to access) would be provided at least seven days prior to works commencing.

2.3.4 Operation

During operation, impacted stakeholders will be notified about any routine maintenance where impacts such as access restrictions, temporary closures, or significant traffic changes would take place.

3.0 Clarifications

This section identifies general clarifications, minor errors and discrepancies identified in the EIS for the project. These errors or discrepancies have been identified through the submissions received or by the project team.

Table 3-1 lists the relevant section of the EIS chapter or appendix, states the error or discrepancy and provides relevant clarification.

Table 3-1 Clarifications on the EIS

EIS chapter/appendix reference	Error/discrepancy	Clarification
Executive summary	The estimated spoil volume in Table 1 of the Executive Summary is inconsistent with spoil volume references elsewhere in the EIS.	The Executive Summary incorrectly states the spoil volume as 225,000 cubic metres. It should be 115,000 cubic metres as stated in Chapter 4 Project description and Chapter 19 Waste management of the EIS. This minor error does not change the outcomes of the EIS.
Chapter 3 Project development and alternatives	The EIS has incorrectly documented that the 'Cooks River Corridor' is also known as 'The Greenway'. These are two different corridors with the Greenway running in a north-south direction and links the Cooks River Corridor to Iron Cove.	It is acknowledged that the Cooks River Corridor and the Greenway are two separate corridors. Both corridors are correctly referenced in Chapter 8 Traffic and transport of the EIS. This minor error in the text does not change the outcomes of the EIS.
Chapter 4 Project description	In Table 4-4, Peace Park is incorrectly documented as being in the Inner West LGA. Peace Park is in the City of Canterbury Bankstown LGA.	This is an error. It is acknowledged that Peace Park is located in the Canterbury Bankstown Local Government Area. This minor error in the text does not change the outcomes of the EIS.
Appendix E Construction Noise and Vibration Impact Assessment	Typographical error in Table A-4 Unattended noise measurement results in dB(A) – NCA 4, states 337, but should be 37. Inconsistent meteorological data for the noise monitoring locations between the report and Annexure A. The report incorrectly stated that all meteorological data was taken from Canterbury weather station.	The correct LA90 level is 37 dB(A). This level (37 dB(A)) has been included in the calculation of the rating background level (RBL), therefore the RBL is correct. The report incorrectly stated that all meteorological data was taken from Canterbury weather station. Data was taken from Canterbury weather station for the following logging locations: • Yangoora Road, Lakemba; • Byron Street, Campsie; • Pile Street, Dulwich Hill; • Brown Street, St Peters; and • Claverdon Avenue, Picnic Point. While data was taken from Bankstown weather station for the following logging locations: • Boardman street, Yagoona; and • Merrett Crescent, Greenacre. These minor discrepancies in the Construction Noise and Vibration Impact Assessment report do not change the outcomes of the EIS.

EIS chapter/appendix reference	Error/discrepancy	Clarification
Appendix E Construction Noise and Vibration Impact Assessment – Annexure A (Noise logging results)	Table notes 2 and 3 from Table A-7 have been omitted.	The omitted table notes from Table A-7 should read as follows: • Note 2 - Where measured Evening RBLs are higher than Day time RBLs, Evening RBLs are adjusted to the same as the Day time RBL in accordance with the *Noise Policy for Industry*. Where Night-time RBLs are higher than Evening RBLs, Night-time RBLs are adjusted to be the same as the Evening RBL in accordance with the Policy. • Note 3 - Where the rating background level is found to be less than 30 dB(A), then it is set to 30 dB(A) in accordance with the *Noise Policy for Industry*. These notes were however included below Table 4-3 in the main part of the report. This omission does not change the outcome of the noise assessment in the EIS.
Appendix H Biodiversity Development Assessment Report (BDAR)	Validated vegetation map 20 in Appendix H shows the presence of 'Potential Habitat Bearing Trees' at Scouller Street and Juliett Street. The meaning of this is unclear.	This is a labelling error - the map legend should read 'Potential hollow bearing tree'. This minor error in the text does not change the outcomes of the EIS.
	It is unclear whether the reference to bushcare sites (Inner West Environmental Group, 2019) is referencing the IWEG (Inner West Environmental Group) website or a document.	The reference to bushcare sites in Section 1.1.3 of Appendix H is incorrect and should instead cite Inner West Council. This is correctly captured in Chapter 3 References of Appendix H. To confirm, the website is (https://www.greenway.org.au/biodiversity/bushcare/bushcare-sites).

4.0 Response to key stakeholder submissions

The following section summarises the submissions received from key stakeholders and provides responses to the issues raised. Submissions have been grouped under issue categories or themes that largely correlate with the technical issues assessed in the EIS.

Full details of the issues raised are provided in the complete submissions, available on the DPIE Major Projects website.

References to EMMs refers to environmental management and mitigation measures, as presented in **Section 6.0**.

4.1 Department of Primary Industries

Table 4-1 outlines the issues raised by Department of Primary Industries and TransGrid's responses.

Table 4-1 Issues raised by Department of Primary Industries

Issue description	Response
Project options	
Department of Primary Industries has a strong preference for the underboring method when crossing the Cooks River at Croydon Park/Campsie to minimise impacts to key fish habitat.	As outlined in the Amendment Report (AECOM, 2019b), Option 1b has been confirmed as the preferred route and special crossing option for the Cooks River in Croydon Park/Campsie. This option involves underboring the Cooks River from the cul-de-sac at the end of Lindsay Street into Lees Park before the cable route continues on to Harmony Street, Ashbury. The underboring method option would minimise impacts on key fish habitat as mangrove removal along the Cooks River would not be required.

4.2 NSW Environment Protection Authority

Table 4-2 outlines the issues raised by NSW Environment Protection Authority (EPA) and TransGrid's responses.

Table 4-2 Issues raised by NSW Environment Protection Authority

Issue description	Response
Noise impacts	
The EPA is of the opinion that community consultation will be key to managing the impacts on sensitive receivers and identifying appropriate feasible and reasonable noise mitigation, including staging of work to minimise prolonged impacts, and ensuring there are appropriate periods of respite.	TransGrid recognises ongoing community consultation during construction is integral to the management of potential impacts. As described in EMM NV2, residents and other sensitive receivers impacted by noise and/or vibration from proposed works which are expected to exceed the Noise Management Level (NML) and/or vibration criteria identified for the project, will be notified at least seven days prior to the commencement of the particular activity. Furthermore, EMM NV5 and NV6 commit to consideration of respite periods during standard construction hours and outside of standard construction hours respectively.
There are a significant number of sensitive receivers across the study area that are predicted to be highly noise affected and night-time works will result in exceedances of the	TransGrid and the appointed contractor would continue community and stakeholder consultation to ensure the community and stakeholders are informed about the project

Issue description	Response
NMLs by greater than 20 dBA. The EPA is concerned that noise impacts identified in the EIS may be underestimated.	and have opportunities to provide feedback to the project team during detailed design and construction. The Construction Noise and Vibration Impact Assessment was undertaken in accordance with the SEARs and the Interim Construction Noise Guideline (ICNG). The scenarios modelled in the assessment represent 'reasonable worst case scenarios', based on the assumed location of plant and the number of plant operating concurrently. A conservative approach was adopted where more out-of-hours works was modelled than is likely to be required, therefore, the number of actual affected receivers is expected to be lower than those predicted. While construction noise levels would exceed the noise management levels at a significant number of receivers, with many receivers being considered 'highly noise affected', the works program would be progressive, resulting in each receiver only being affected for a limited period of time.
There is insufficient measurement data in Tables A-6 and A-7 of the Noise Impact Assessment to derive rating background levels in accordance with the ICNG.	Regarding Table A-6, it is acknowledged that there are few valid night-time background levels for L06[3], however the RBL of 35dB(A) is considered to be conservative. AECOM has previously measured background noise levels at nearby locations in 2015. This showed that the night-time RBLs are 6-7dB(A) less than the evening RBLs. Regarding Table A-7, for this location, it is noted that minimum RBLs were used, therefore the measurement data is, to some extent, irrelevant. While this is generally in accordance with the ICNG, it is noted that the Industrial Noise Policy (referenced in the ICNG) has been superseded by the Noise Policy for Industry (2017) – the latter sets 'minimum' rating background noise levels, therefore if measured rating background noise levels are below these minimum levels, then the minimum levels are used. This is to prevent the noise limits being too restrictive. Please also refer to the clarifications in **Section 3.0** for further explanation of missing table notes for Table A-7.
The assumption that equipment such as backhoes and excavators operate 33-50% of the time in a fifteen minute period is not considered representative of how equipment is likely to operate in practice. Further justification should be provided regarding this assumption, or the calculation should be amended.	The backhoe and the excavator are not the loudest pieces of equipment in any construction scenario. If they were to be in operation for 100% of a 15-minute period, the overall sound power level for the scenario would not be increased[4]. Therefore, the assessment is considered representative.

[3] All of the logged noise level data was reviewed and those data affected by adverse weather were excluded. In Annexure A (of Appendix E of the EIS) data excluded due to rainfall is shaded blue. Where the windspeed is shown to be higher than 5mm/s, the data has also been excluded. In addition, where ambient noise levels are deemed to be affected by extraneous noise, (i.e. sharp increases and decreases in the LA90 noise levels) these are also excluded and are denoted by grey shading in Annexure A.

[4] Note that the addition of sound power/pressure levels is logarithmic and not additive, therefore even if the backhoe and excavator are in operation 100% of the time, the overall sound power level of the construction activity would not increase.

Issue description	Response
Predicted construction noise levels have not included noise from heavy vehicles which are expected to be at work sites for spoil loading and disposal.	Heavy vehicles (dump trucks) have been included in each construction activity scenario as appropriate, including site preparation, trenching and excavation, excavation and construction of joint bays and special crossings (underboring).
It is not clear if a 5dB(A) penalty has been applied to the predicted noise levels to account for annoying activities such as jackhammering, reversing alarms, power saws, as described in the ICNG.	A 5 dB(A) penalty has not be applied to activities with annoying characteristics (such as jackhammering and diamond sawing). However, the contractor may choose to select the use of temporary noise barriers to offset this penalty. It is noted that the construction noise calculations are conservative, based on assumptions that: • all equipment is operating at the same time (unless otherwise noted under Table 6-2 of Appendix E of the EIS); • all equipment is located as close as possible to every receiver; and • no shielding is provided by other pieces of construction equipment at any one worksite. Regarding reversing alarms, plant and equipment will be fitted with non-tonal reversing beepers (or an equivalent mechanism) as described in EMM NV9. Non-tonal reversing beepers do not require a 5dB penalty to be added as they are not deemed to be 'annoying' as per the ICNG.
The use of 'awakenings' as described in the NSW Road Noise Policy to determine the potential for sleep disturbance is not appropriate. The ICNG states that the analysis should cover the maximum noise level, and the extent and number of times that the maximum noise level exceeds the rating background level.	At this early stage in the project, exceedances of the sleep disturbance screening level as well as the awakening reaction level have been calculated as an assessment of potential sleep disturbance. An Out-of-hours Protocol will be prepared as part of the CNVMP (refer to EMM NV1 and NV4). This will evaluate the potential noise impacts of specific out-of-hours works and recommend appropriate mitigation measures. Receivers potentially affected by sleep disturbance impacts are the same receivers where night-time impacts have been predicted.
The EPA is aware of large infrastructure construction projects in the vicinity of the proposed work sites for this project. The cumulative impacts of this project combined with other construction projects in vicinity has not been addressed.	Chapter 22 Cumulative impacts of the EIS explains the approach to the cumulative impact assessment for the project and the rationale for projects that were included in the assessment. Assuming that the noisiest stages of any other project construction were to coincide with the construction of the transmission cable project, the greatest increase in noise levels from either project would be a maximum of 3 dB(A) on the levels presented in this assessment, where the transmission cable project is the dominant source. Where receivers are impacted to a greater extent by other projects, then overall construction noise levels at any receiver could be increased by as much as 3 dB(A) from those projects' noise levels. In the case of construction traffic, a maximum noise level increase of 3 dB(A) is also predicted. The cumulative noise impacts of nearby major projects would be further considered by the contractor when a detailed construction schedule becomes available for the project. Consultation would be undertaken with other

Issue description	Response
	stakeholders including proponents of other developments to manage cumulative impacts on sensitive receivers in proximity to the project (refer to EMM CE4). Feasible and reasonable mitigation measures will be detailed in the CNVMP.
The wind speeds shown in the logger graphs at times exceed 5m/s, yet the data is not shaded to indicate it has been excluded from the analysis, in accordance with the ICNG/Noise Policy for Industry.	Where wind speeds exceed 5 m/s the data are not included in the calculations. While the data is not shaded on the logger graphs, it can be seen from the wind speed plot on the logger graphs that the speed has exceeded 5 m/s.
Conditions of consent	
The EPA has recommended several standard conditions of approval consistent with those previously developed by the EPA for other major infrastructure projects. These conditions relate to construction noise impacts, cumulative impacts, air quality, water quality, contamination and waste. The EPA also states that the project requires an Asbestos Management Plan to be compliant with the SEARs.	The conditions of consent recommended by the EPA are noted. The conditions of consent for the project are a matter for DPIE to consider during its assessment. Should the project be approved, TransGrid and its contractor(s) must comply with all requirements of the conditions of consent. The project has also committed to a range of environmental management and mitigation measures which are detailed in **Section 6.0**. While these measures and the EPAs recommended conditions of consent are largely consistent, the EPA's recommended conditions for 'hours of operation' and 'works outside of standard construction hours – regulatory requirements', are more restrictive than what is proposed for the project. TransGrid will consult with the EPA and other relevant stakeholders, such as Transport for NSW on the proposed noise conditions. Regarding the need for an Asbestos Management Plan, this was included as a commitment in the EIS - refer to EMM CT6.
Errors and inconsistencies in the EIS	
The EPA raised the following errors and inconsistencies in the EIS: • the meteorological conditions during unattended noise monitoring (for all monitoring sites) are said to have been taken from the Bureau of Meteorology's Canterbury weather station (station ID 60901), yet different meteorological conditions appear on the graphs in Annexure A Noise Logging Results at different monitoring locations; and • there appear to be typographical errors in Table A-4 Unattended noise measurement results in dB(A) – NCA 4. For example, the background noise level (LA90	The errors/inconsistencies are acknowledged and are addressed in **Section 3.0**.

Issue description	Response
dB(a)) recorded for Monday 20 May 2019 is '337'. This error is significant as it would (if not corrected) vastly throw out any average calculations for background noise levels in the noise catchment area.	

4.3 Transport for NSW

On 1 December 2019, Roads and Maritime Services and Transport for NSW (TfNSW) joined together to create one integrated TfNSW. References to Roads and Maritime are now automatically taken to mean TfNSW. The TfNSW Transport Cluster includes Roads and Maritime Services, Sydney Metro and Sydney Trains. State Transit Authority (STA) also forms part of the TfNSW Transport Cluster but have provided their own submission - refer to ***Section 4.4****.*

Table 4-3 outlines the issues raised by TfNSW and TransGrid's responses.

Table 4-3 Issues raised by TfNSW

Issue description	Response
General	
Given the proximity of several TfNSW projects, the design and construction of the transmission cable should be undertaken in consultation with TfNSW, and in accordance with the requirements of applicable standards issued by the TfNSW Asset Standards Authority. TfNSW will need to accept the final design and construction methodology. This requirement applies to the transmission cable infrastructure across rail corridors, especially within the future Sydney Metro train operational area and across the Inner West light rail corridor in Dulwich Hill.	TransGrid has been engaging with TfNSW since 2018. TransGrid will continue to consult with TfNSW during detailed design around final project design, construction methodology and applicable requirements/standards.
Impacts on classified roads	
The project has the potential to impact parts of the classified road network, therefore once the project is approved, but before works commence, TransGrid would need to obtain concurrence from Roads and Maritime Services in accordance with the terms of section 138 of the *Roads Act 1993*.	TransGrid will obtain consent of the appropriate roads' authority as per section 138 of the *Roads Act 1993*.
The EIS does not provide details on how construction over the 24 month period will be staged to minimise	Once a contractor has been appointed for the design and construction of the project, further details will be made

Issue description	Response
impacts on the classified road network (including asset condition and operation of the road network). TfNSW has requested that details on how the work will be staged, inclusive of an estimated time frame for each stage, be provided to ensure impacts are minimised. The project would impact a number of existing traffic signals. TfNSW has requested that more detail be provided on specific works at each location, including a new signal at Campbell Road/Euston Road.	available to TfNSW on the construction approach and staging and any additional impact mitigation measures.
TfNSW requires that the transmission cables be located below existing drainage infrastructure within the classified road reserve to avoid reducing the depth of cover over these services. Existing drainage infrastructure will need to be manually located as it is not identified in Dial-Before-You-Dig (DBYD). Existing infrastructure within a classified road reserve that will be impacted by the project must be accurately shown on the plans submitted as part of the approval process under section 138 of the *Roads Act 1993*.	During the detailed design of the cable and trench installation, due consideration will be given to the impact of the proposed cable route on existing and proposed drainage systems.
Any changes to the traffic and transport arrangements that are proposed during the installation of cables should ensure that operations of the road network are prioritised.	As outlined in EMM TT2, more detailed traffic analysis and assessment will be undertaken to inform the preparation of a Construction Traffic Management Plan (CTMP). The plan will outline measures to manage road network performance from lane closures and proposed diversion routes. TransGrid and its contractor will continue to consult with TfNSW on the management of potential impacts to the road network.
TfNSW will advise TransGrid if the project is considered to conflict with construction works for WestConnex (in particular for the New M5 Project) and the future F6/M6 Extension.	Chapter 22 Cumulative impacts of the EIS identified WestConnex as a development with the potential to contribute to cumulative impacts with the project around St Peters/Alexandria. There is a potential for cumulative traffic impacts during construction should project activities overlap. However, TransGrid will plan for and manage potential cumulative impacts from multiple project work sites through consultation and coordination with other proponents and operators, where possible (refer to EMM CE4). The F6 Extension project (now the M6 Extension) was not considered in the cumulative impact assessment as it is predominantly not within proximity to the project.
TfNSW has suggested several conditions of consent relating to classified roads including a requirement to underbore road	The conditions of consent recommended by TfNSW are noted. The conditions of consent for the project are a matter for DPIE to consider during its assessment. Should the project be

Issue description	Response
crossings, obtaining approval under section 138 of the *Roads Act 1993*, applying for road occupancy licences, undertaking detailed traffic assessments of road network performance, minimising heavy vehicle movements during peak periods and preparing a Construction Pedestrian and Traffic Management Plan.	approved, TransGrid and its contractor must comply with all requirements of the conditions of consent. The project has also committed to a range of environmental management measures which are detailed in **Section 6.0**. These measures are largely consistent with the requirements outlined in the recommended conditions of consent by TfNSW. However, the following should be noted: • the preferred construction methodology for the project is trenching. Different trenching configurations will be considered by the appointed contractor in determining the most appropriate solution along the route. It is not proposed to underbore all road crossings/signalised intersections or locations where the transmission cable route interfaces with other infrastructure such as stormwater culverts, however, a number of locations are being considered for underboring as an alternative to trenching. This will be investigated further during detailed design; and • construction will take place during standard construction hours wherever feasible and reasonable. However, it is expected that some works at signalised intersections or along State/regional roads will be required at night-time, therefore construction traffic will not coincide with peak travel times at these locations.
Impacts on heavy rail corridors	
TfNSW note that the project includes a cable bridge crossing over the rail tracks at Muir Road, Chullora. TfNSW is currently developing a project as part of its Digital Systems Program which will use this track as part of a new digital systems technology and testing centre. This will involve upgrades to this track and associated infrastructure, including electrification of the line (i.e. construction and operation of overhead wiring to supply power to the trains) over the next one to two years. TfNSW note that the project includes a cable bridge crossing over the rail corridor at Bedwin Road, St Peters. The More Trains More Services Program is currently investigating infrastructure upgrades to the Sydney Trains network including a feeder route and potential site adjacent to Unwins Bridge Road, which is in the vicinity of the proposed cable bridge near Camdenville Park. St Peters Station, which is in proximity to the project at	TransGrid notes TfNSW plans in the rail corridor at Muir Road. As outlined in EMM TT8, TransGrid will continue to consult with TfNSW during detailed design regarding the potential overlap of construction works for the project and other adjacent projects to ensure that the works are coordinated, where possible. In consultation with TfNSW, works within the rail corridors would be timed with other rail works to limit disruption to freight and/or passenger rail services. Works would be planned, coordinated and executed in close consultation with the relevant rail network authority, with all relevant access and safety requirements met.

Issue description	Response
Camdenville Park, is also planned for upgrades in 2022. This would include a new transformer and associated cabling infrastructure to the station. The heavy rail corridors need to be protected during all stages of the transmission cable project.	
The numerous rail crossings have the potential to impact electrolysis.	TransGrid will prepare an electrolysis report for the rail crossings and provide this to TfNSW prior to construction commencing.
There are inconsistencies in the placement of the conduit for optical fibre identified in the SSI application.	While it is unclear which part of the EIS is being referred to regarding inconsistencies in the placement of optical fibre cables, TransGrid will confirm with TfNSW the position of the optical fibre cables during detailed design.
TfNSW note that the maintenance of assets associated with the project (such as the cable bridges) will be the responsibility of TransGrid.	TransGrid confirms that it will be responsible for the maintenance of all project infrastructure. Access to the cable bridges in rail corridors will be coordinated in consultation with TfNSW.
TfNSW advise that the cable bridges may require the removal of vegetation. The endangered ecological community 'Cooks River Castlereagh Ironbark Forest' is located in the vicinity of the Muir Road crossing. There are also a number of large trees within the rail corridor in Chullora. There are a small number of trees (approximately 4-5) located within the rail corridor in the vicinity of the proposed crossing at Bedwin Road, St Peters.	The biodiversity assessment for the project (refer to Appendix H of the EIS) determined that vegetation within the rail corridor at the Muir Road cable bridge crossing met the definition of 'urban exotic/native' and did not conform to a Plant Community Type or the 'Cooks River Castlereagh Ironbark Forest' endangered ecological community. Further consideration of this issue is provided in the response to the Biodiversity Conservation Division – see **Section 4.8**. Furthermore, TransGrid is committed to avoiding the removal of trees wherever feasible and reasonable. Trees within the project area have been mapped (refer to Appendix O of the EIS, specifically Map 1 for trees near the Muir Road crossing and Map 28 for trees around the Bedwin Road crossing). During detailed design, the contractor will confirm which trees are likely to require removal. TransGrid will develop a tree replanting strategy in consultation with relevant councils for any street trees that are to be removed. Should the trees be within the rail corridor, TransGrid will consult with TfNSW about their removal.
The cable bridge crossings adjacent to rail infrastructure would be appropriate and safe for pedestrian/cycle ways. The future use of the cable bridges should consider pedestrian/cycle movements and the location of stations and other public transport links.	As outlined in EMM SE3, opportunities to enhance pedestrian and cyclist connectivity within the project area will be investigated further during detailed design. TransGrid will continue to consult with TfNSW regarding a possible cycleway at the Bedwin Road cable bridge crossing.
TfNSW would like the opportunity to extend its current operational technology optic fibre network by running its fibre and ducts along the	TransGrid will work with TfNSW to identify opportunities to co-locate their optic fibre network subject to commercial, legal and technical requirements or opportunities for TfNSW to use spare fibres in TransGrid's optical fibre cables.

Issue description	Response
proposed transmission cable route while the trenches are open.	
TfNSW has suggested several conditions of consent relating to heavy rail corridors. This includes general conditions for: the project design being in accordance with relevant rail design and safety standards, aesthetic and security requirements; minimising vegetation/tree removal; minimising maintenance access requirements; notifications for noisy out of hours works. Further to this, TfNSW would only issue a Construction Certificate to TransGrid once final design and construction documentation is provided to TfNSW for approval, a Safety Interface Agreement is entered into and TransGrid provide TfNSW with a maintenance plan for its assets in rail corridors.	The conditions of consent recommended by TfNSW are noted. The conditions of consent for the project are a matter for DPIE to consider during its assessment. Should the project be approved, TransGrid and its contractor must comply with all requirements of the conditions of consent. TransGrid has an existing *Master Access Deed* which sets out the conditions for engaging with Sydney Trains including requirements to submit its designs for approval and to meet the requirements for undertaking construction in the rail corridor. TransGrid will comply fully with the requirements of that deed. The project has also committed to a range of environmental management measures which are detailed in **Section 6.0**. The majority of TfNSW's recommended conditions for the heavy rail corridor pertain to the design of the project. TransGrid and its contractor will consult with TfNSW during the detailed design, construction and operation of the project on requirements for works within the heavy rail corridor. TransGrid notes that a Construction Certificate will not be required for the project as the project is State Significant Infrastructure
Impacts on the Sydney Metro corridor	
TransGrid would need to coordinate project construction activities with Sydney Metro (who are currently constructing a new track below Bedwin Road for the Sydney Metro City and Southwest project) to avoid conflicting activities. The metro project works will be ongoing until 2024.	Chapter 22 Cumulative impacts of the EIS identified Sydney Metro as a development with the potential to contribute to cumulative impacts with the project. Consultation regarding the potential overlap of construction works for the project and other adjacent projects will be undertaken during detailed design to ensure that the works are coordinated, where possible (refer to EMM TT9 and CE4).
The proposed project infrastructure at Bedwin Road also has the potential to negatively impact on flooding in the area.	Chapter 17 Surface water and flooding of the EIS identifies that at Camdenville Park there is an existing flood detention basin. Depending on the final project design including choice of backfill materials and cable alignment, the construction of the transmission cable circuit could compromise the integrity of the embankment wall of the flood detention basin unless suitable measures are implemented. That is, the integrity of the flood detention basin would need to be considered during detailed design to prevent potential damage. Measures outlined in EMM FF1 and FF2 provide details on the management of works within flood prone or flood affected land. It includes a Flood Mitigation Strategy, Flood Management Plans and identifies that the design of the transmission cable route through Camdenville Park will consider the integrity and functionality of the existing flood detention basin.

Issue description	Response
TfNSW suggested several conditions of consent relating to the Sydney Metro corridor including requirements prior to the issue of a Construction Certificate such as entering into relevant property and operational agreements, undertaking flood modelling for infrastructure at Bedwin Road and demonstrating compliance with relevant Sydney Metro guidelines.	The conditions of consent recommended by TfNSW are noted. The conditions of consent for the project are a matter for DPIE to consider during its assessment. Should the project be approved, TransGrid and its contractor must comply with all requirements of the conditions of consent. The project has also committed to a range of environmental management measures which are detailed in **Section 6.0**. TfNSW's recommended conditions mainly pertain to the design of the project. TransGrid and its contractor will consult with TfNSW during the detailed design, construction and operation of the project regarding works that may interface with the Sydney Metro project.
Impacts on the Inner West light rail corridor	
Sydney Light Rail assets and the operation of the light rail during construction and operation of the project needs to be protected.	As outlined in Chapter 4 Project description of the EIS, the two options assessed for the transmission cable route crossing of the Dulwich Hill light rail corridor both involve underboring the light rail corridor, with work sites outside the corridor. There would be no operational infrastructure above ground within the light rail corridor, therefore, no disruption to light rail services during construction or operation of the project is expected.
TfNSW suggested several of conditions of consent relating to the Inner West Light Rail corridor including the need for a Construction Certificate, compliance with light rail operator requirements and relevant standards, not impeding light rail operations and patrons, maintaining safety, minimising vegetation/tree removal, provision of final design drawings, construction methodologies and technical reports, execution of a Safety Interface Agreement, pollution prevention, noise and vibration impact mitigation, and pre- and post-dilapidation surveys.	The conditions of consent recommended by TfNSW are noted. The conditions of consent for the project are a matter for DPIE to consider during its assessment. Should the project be approved, TransGrid and its contractor must comply with all requirements of the conditions of consent. The project has also committed to a range of environmental management measures which are detailed in **Section 6.0**. TransGrid and its contractor will consult with TfNSW and the light rail operator during the detailed design, construction and operation of the project regarding works within or near the light rail corridor.
Impacts on bus services corridors	
TfNSW advised that: • bus operators should be consulted for their approval of any proposed diversion of bus routes and bus stop relocations; • all diverted bus routes should maintain 3.5 metre lane widths at all time; and • any changes to bus stops and bus routes needs to be agreed by the Local Traffic Committee.	Temporary relocation of bus stop facilities and diversions of bus routes will be undertaken in consultation with the relevant road authority, bus operators and TfNSW prior to the traffic management approach being finalised (refer to EMM TT9). TransGrid will comply with section 138 of the *Roads Act 1993* regarding consent from the relevant roads authority for works in a public road. The *NSW State Transit Bus Infrastructure Guide* (NSW Government, 2011) states that along bus routes, the minimum desirable travel lane width for a bus is 3.5 metres on one-way or one-lane sections of road and that on roads with more than one lane, the minimum desirable lane width for a bus is 3.2

Issue description	Response
	metres. The majority of the roads along the transmission cable route will either require a single traffic lane past the work site or are wide enough to accommodate multiple lanes. Appropriate lane width distances for bus movements would be maintained and outlined in the Construction Traffic Management Plan that will be prepared in accordance with the relevant conditions of consent, the requirements of the *Roads Act 1993* and in consultation with relevant key stakeholders.
TfNSW requested that further information be provided to TfNSW and bus operators on where bus routes will be diverted and bus stops relocated too and how patrons will be affected (i.e. walking distance, signage, control measures, communications with transit authorities).	As outlined in EMM TT2, more detailed traffic analysis and assessment will be undertaken to inform the preparation of a CTMP. The plan will outline measures to manage road network performance from lane closures and proposed diversion routes. TransGrid and its contractor will continue to consult with TfNSW on the management of potential impacts to the road network. The CTMP will be supported by Traffic Control Plans (TCPs). The CTMP will also be provided to relevant councils.
TfNSW suggested a condition of consent relating to bus service corridors. This involves consultation with relevant bus operators to get agreement on bus route diversions and bus stop relocations prior to the issue of a Construction Certificate.	The condition of consent recommended by TfNSW is noted. The conditions of consent for the project are a matter for DPIE to consider during its assessment. Should the project be approved, TransGrid and its contractor must comply with all requirements of the conditions of consent. The project has also committed to a range of environmental management measures which are detailed in **Section 6.0**, including EMM TT9, regarding consultation and agreement with TfNSW and bus operators on bus route diversions. This consultation will occur during the detailed design and construction of the project. TransGrid notes that a Construction Certificate will not be required for the project as the project is State Significant Infrastructure
Traffic management measures	
TfNSW raised the following issues related to traffic management measures: • appropriate safety measures need to be considered for construction workers on site. Certain circumstances may require heavier barriers than traffic cones; • the section 138 application must include a detailed Construction and Pedestrian Traffic Management Plan and TCPs. Roadworks and traffic control facilities must be undertaken by a pre-qualified TfNSW contractor; and • the traffic management plan must include details of the location and duration of any road	As outlined in EMM TT2 and TT3, a CTMP will be prepared for the project, supported by a number of TCPs. The management plan will describe the likely diversion routes, proposed lane closures, scheduling of works, and resultant impacts on the road network while the TCPs will graphically show the changes to existing roads and any required diversions. TCPs will be prepared for each work site in accordance with the *Traffic control at work sites manual* (Roads and Maritime, 2018) and will comply with the requirements of AS1743.3 *Roads Signs - Specifications*.

Issue description	Response
diversions, including likely diversion routes and impacts of the diversion on road users. For roads where traffic flow is maintained, the management plan must detail changes to the existing road layout (such as changes to the number of lanes, turning lanes, parking), duration of changes and impacts on road users.	

4.4 State Transit Authority

Table 4-4 outlines the issues raised by State Transit Authority (STA) and TransGrid's responses.

Table 4-4 Issues raised by State Transit Authority

Issue description	Response
Impacts to bus services	
STA recognises that the project may impact bus services around St Peters and Marrickville and requires that: • the minimum lane width for passing buses is 3.25 metres (3.5 metres preferred); • any bus stops temporarily relocated should be done so with the assistance of traffic controllers to assist bus customers. Kerbside meterage also needs to be maintained at the temporary locations as well as removing any street parking; and • bus movements be prioritised.	As outlined in Appendix D of the EIS, the traffic assessment has assumed that on roads that contain bus routes, the adopted traffic lane width required for buses to pass a work site is 3.5 metres. Additional width may be required on curved sections of roads. On roads with more than one lane, the minimum desirable lane width for a bus is 3.2 metres. It is expected that the majority of the bus routes would continue to operate uninterrupted with minor temporary amendments to the location of bus stops when the construction works are near a bus stop. However, some bus routes may need to be diverted due to instances where roads are too narrow for a bus to pass when construction works are in progress.
Should a diversion around a roadway be required due to the above conditions being unable to be met, STA would require six weeks' notice in order to alter scheduling and passenger information data.	TransGrid will work with TfNSW and bus operators to ensure that sufficient lead time and comprehensive public notification is provided, regarding changes to bus stops and services and that alternative arrangements are in place to minimise disruption during road changes. All diversions of bus routes will be agreed with bus operators prior to the traffic management approach being finalised; and will consider acceptable routes based on the turning paths of these vehicles (refer to EMM TT9). Relocated bus stops will be reinstated at their original location as construction works are completed in each location. As outlined in EMM TT2, a CTMP will be prepared to detail the management of road diversions and will be supported by TCPs for each work site (refer to EMM TT3). Each TCP will be prepared in accordance with the Traffic control at work sites manual (Roads and Maritime, 2018) and will comply with the requirements of AS1743.3 Roads Signs - Specifications.

4.5 Heritage Council of NSW

Table 4-5 outlines the issues raised by Heritage Council of NSW and TransGrid's responses.

Table 4-5 Issues raised by Heritage Council of NSW

Issue description	Response
Heritage and urban design	
The two State Heritage Register (SHR) listed items (Potts Hill Reservoirs 1 and 2 and the Alexandra Canal) may be indirectly affected from vibration and temporary change of views due to construction activities.	As described in EMM NAH5, indirect vibration impacts would be mitigated by minimum work distances from heritage items for the use of equipment such as jack hammers and hydraulic hammers. If minimum working distances cannot be maintained during construction, a CHMP will be developed that includes building condition surveys and/or vibration monitoring.
Recommended consultation with relevant local councils and state agencies (Sydney Water) to mitigate impacts to heritage items listed on Local Environmental Plans and the Section 170 register and to improve urban design and visual amenity associated with the project.	Works are not proposed to have direct impacts to the SHR heritage listed items. However, as outlined in EMM NAH6, a CHMP will be prepared to manage any impacts on any identified heritage items.
The Cultural Heritage Management Plan (CHMP) to be prepared for the project must provide clear/specific guidance and details to ensure SHR listed items are adequately protected during site preparation and construction works. During construction works, vibration monitoring, and structural assessments must be carried out to ensure vibration levels remain below appropriate limits for heritage listed buildings and structures located adjacent, and in the vicinity, including the two SHR items. These limits must take into consideration the structural condition and heritage values of these buildings and structures. Minimum working distance and appropriate setbacks must be established from heritage sites including SHR listed curtilage boundaries.	As outlined in EMM NAH6, a CHMP will be produced to manage impacts on identified heritage items. In regard to vibration and structural impacts, the CHMP will define limits to machinery use and construction activity in proximity to heritage structures to avoid vibration impacts and detail where and when monitoring will be undertaken to ensure no vibration or other indirect impacts on identified heritage items. The minimum working distances of vibration intensive equipment from a heritage listed building are outlined in the Construction Noise and Vibration Impact Assessment (CNVIA) (Appendix E of the EIS). At present, no Australian Standards exist for the assessment of building damage caused by vibration and therefore the German Standard (DIN 4150) has been used to identify the minimum working distances. This standard is commonly used to assess potential structural impacts from vibration (and is noted in the SEARs) and provides recommended maximum levels of vibration, which if not breached, reduce the likelihood of building damage caused by vibration for residential, non-residential and heritage structures. As outlined in EMM NV14, if vibration intensive equipment is to be used within the minimum working distances for cosmetic damage, then it is recommended that a different construction method with lower source vibration levels is used where feasible and reasonable. If during detailed design, it is determined that work within the minimum working distances for cosmetic damage is planned to occur: • attended vibration measurements will be undertaken at the work site when work commences, to

Issue description	Response
	determine site specific minimum working distances. As a precaution, where practicable, these measurements will be made at distances outside the minimum working distances to ensure no structural damage occurs and will provide detailed information regarding the transmission of vibration to allow site specific safe working distances to be determined; and • for listed heritage items and houses within heritage conservation areas, building conditions surveys will be undertaken. The survey will document the structural condition of these buildings/structures before construction commences and after construction is complete to identify any impacts on historical buildings/structures as a result of the project construction. Vibration intensive work will not proceed within the minimum working distances (recommended or site specific) unless a permanent vibration monitoring system is installed, to warn operators when vibration levels are approaching the peak particle velocity objectives as outlined in DIN 4150.
Appendix J has not clearly demonstrated the historical development of former industrial heritage sites (e.g. Sydney Park, Henson Park, Peace Park) to justify its conclusions. While the heritage assessment identified that it is unlikely that historical archaeological relics would be present and disturbed by the project, an appropriate strategy to manage the discovery of unexpected historical archaeological 'relics' through appropriate protocols must be outlined in the CHMP, including notification to Heritage Council NSW where relics are detected.	The Historical Heritage Impact Assessment for the project (Appendix J of the EIS) was prepared in accordance with the SEARs and all relevant guidelines including the Archaeological Assessment Guidelines (NSW Heritage Office & NSW Department of Urban Affairs and Planning, 1996). EMM NA7 outlines the procedures for an Unexpected Find including assessment and reporting requirements.

4.6 NSW Rural Fire Service

Table 4-6 outlines the issues raised by NSW Rural Fire Service (NSW RFS) and TransGrid's responses.

Table 4-6 Issues raised by NSW Rural Fire Service

Issue description	Response
Conditions of consent	
NSW RFS provided the following recommended condition of consent: • there shall not be any hot works (such as welding or other activities generating heat or sparks) on days of extreme or catastrophic fire danger ratings, or Total Fire Ban.	Given the geographical spread of the network that TransGrid manages, TransGrid works closely with NSW RFS and have processes in place to manage fire risk work during Total Fire Ban days. The condition of consent recommended by NSW RFS is noted. The conditions of consent for the project are a matter for DPIE to consider during its assessment. Should the project be approved, TransGrid and its contractor(s) must comply with all requirements of the conditions of consent. TransGrid will consult with NSW RFS regarding this recommended condition and will work with NSW RFS to maintain electricity supply during days of high fire danger. TransGrid has an agreement with NSW RFS regarding hot works on days of high risk fire danger ratings. The CEMP for the project will include measures to identify any hot work or fire risk work and controls would be put in place to manage any risks.

4.7 Sydney Water

Table 4-7 outlines the issues raised by Sydney Water and TransGrid's responses.

Table 4-7 Issues raised by Sydney Water

Issue description	Response
Requirements	
TransGrid is required to enter into an Interface Agreement with Sydney Water to manage the impact of the project on Sydney Water's assets. Sydney Water will continue to work closely with the proponent to develop and implement an Interface Agreement. The Interface Agreement will set requirements for both parties during the design, construction, operation and maintenance stages of the project.	TransGrid has been engaging with Sydney Water since 2018. TransGrid does not believe that an Interface Agreement with Sydney Water is warranted. TransGrid will engage the services of a Sydney Water approved Water Servicing Coordinator to provide advice on appropriate protection and/or engineering assessment that may be required around Sydney Water assets to ensure that the statutory requirements specified in the *Water Management Act 2000* have been considered or met. TransGrid will continue to engage with Sydney Water on the form of any agreements required, considering the Water Servicing Coordinator's advice.
Sydney Water assets impacted by the project will require relocation, adjustment, protection and upsizing to accommodate future growth. The project needs to meet Sydney Water's Asset Adjustment Process or other requirements agreed to under the	Where relocation of Sydney Water assets are identified, TransGrid will consult with Sydney Water including funding contribution by Sydney Water for Sydney Water augmentation/upsizing requirements.

Issue description	Response
Sydney Water and TransGrid Interface Agreement.	
If any Sydney Water assets outside of the project boundary require change as a result of the project, TransGrid will need to obtain environmental approval to cover these works.	Where relocation or adjustment for Sydney Water assets are identified outside of the project area, consultation will be undertaken with the relevant utility provider to determine safety and network integrity requirements. Activities proposed outside the project area may be subject to separate assessment and approval as per the requirements of the EP&A Act.
Sydney Water also has assets that may be heritage listed along the route. TransGrid must consult with Sydney Water throughout the project in relation to any works taking place which may impact on listed assets.	TransGrid will engage with Sydney Water regarding the two Section 170 Register items, being the Potts Hill Reservoir 1 and 2 and City Tunnel. Note that the heritage assessment (refer to Appendix J of the EIS) did not determine any direct or permanent impacts on these heritage items.

4.8 Biodiversity Conservation Division

Table 4-8 outlines the issues raised by Biodiversity Conservation Division and TransGrid's responses.

Table 4-8 Issues raised by Biodiversity Conservation Division

Issue description	Response
Wetlands	
Biodiversity Conservation Division (BCD) raised concerns that the BDAR has not considered the waterbody within Sydney Park as a natural wetland. The BCD requests further information about vegetation associated with the Sydney Park waterbody and why the BDAR concludes that this does not conform to a Plant Community Type (PCT).	All vegetation visible and accessible up to and along the edge of the waterbody (ie the southern wetland at Sydney Park that is within the project area) was assessed and determined to consist of 'urban exotic/native' vegetation. No aquatic survey was undertaken at the waterbody as it is proposed to underbore the waterbody. While the details of the boring method are not yet determined, it is expected that the proposed launch and receive work sites would occur away from the water's edge and the conduits would be underbored at a depth well below the bottom of the waterbody. As such, no impact on the aquatic environment or vegetation along the banks of the waterbody are expected.
Native vegetation	
BCD raised the following issues regarding the vegetation along the freight rail infrastructure on the south side of Muir Road, Chullora: • the vegetation at this location overlaps with a native vegetation community mapped as 'Castlereagh Ironbark Forest' which is consistent with the 'Cooks River/Castlereagh Ironbark Forest' endangered ecological community (EEC);	The vegetation at this section of the project area consists of street trees (as identified in the AIA) and vegetation within the rail corridor, as assessed within the BDAR. Street trees on the southern corner of the roundabout on Muir Road (tree #54 and #55 on Map 1 of the AIA) consist of two planted *Eucalyptus fibrosa* (Red Ironbark) – see **Figure 4-1**. Groundcover species at the base of the street trees include *Paspalum dilatatum* (Paspalum) and *Eragrostis curvula* (African Lovegrass). No mid-storey species were present within the streetscape. Vegetation within the rail corridor near the proposed Muir Road cable bridge crossing was assessed as consisting of exotic species including *Lantana camara* (Lantana), *Rubus*

Issue description	Response
• the Arboricultural Impact Assessment (AIA) only identifies two trees (#54, #55) at this location. However, recent aerial images (see Map 1) of the AIA shows the project area include more than two trees at this location; and • the BDAR (see Figure 12) indicates the vegetation at this location has been classified as 'urban exotic/native', however evidence to support the difference in classification to the mapped EEC vegetation is not provided. BCD recommends the extent and classification of vegetation and the number of trees within the project area as documented in the BDAR and AIA be clarified.	*fruticosus agg.* (Blackberry) and *Cortaderia selloana* (Pampas Grass). Vegetation within the rail corridor or along the street was therefore considered to meet the definition of 'urban exotic/native', rather than a PCT or EEC.  **Figure 4-1 Street trees #54 and #55 on Muir Road**
Threatened ecological communities	
BCD raised concerns that the area of native vegetation within the project area at Johnson Park within the Dulwich Hill light rail corridor has been established over 19 years of bushcare work by the Inner West Environment Group to revegetate the site using species found in Sydney Turpentine-Ironbark Forest (STIF) critically endangered ecological community. While this vegetation is assigned to PCT 1281 'Sydney Turpentine-Grey Ironbark Open Forest on shale in the lower Blue Mountains and Sydney Basin Bioregion (unvalidated)' as a best fit PCT, the BDAR considers it unlikely that the vegetation would meet the threatened ecological communities (TEC) STIF criteria, as the vegetation consists of planted rather than remnant vegetation and lacks a canopy. It is noted the assessment of this area was based on distant visual and desktop assessment of plant listings of the Johnson Park bushcare site and not quantitative survey because the site could not be accessed during the survey. This is despite more than 18 months	Sydney Turpentine-Ironbark Forest (STIF) typically has the structural form of Open Forest (sensu Specht 1970) with a tree canopy ranging in height from the mid to upper range for this form (10-30 metres) and with projected foliage cover at the mid to lower end of the range (30-50%) (Tozer et al. 2010). Remnants with a history of logging or other anthropogenic disturbance may resemble woodland or open woodland, with a sparser tree cover associated with lower tree densities and/or the selective removal of larger trees. Examples of STIF undergoing regrowth following tree removal may have higher densities of younger trees, and projected foliage cover at the high end of, or exceeding, the range given above. STIF is frequently characterised by a stratum of smaller trees which, in addition to saplings of the species listed above, is dominated by species such as *Pittosporum undulatum*, *Acacia parramattensis*, *Allocasuarina torulosa* and *Elaeocarpus reticulatus* (Tozer et al. 2010). The understorey may be either shrubby or grassy (Benson and Howell 1994). While the Johnston Park bushcare site has been planted with species from the STIF EEC, this has been limited to groundcover and understorey species. The above description of the EEC, taken from the NSW Threatened Species Scientific Committee Final Determination for STIF, does not consider planted vegetation without a canopy cover as conforming to the definition of STIF. As no project works are proposed within the bushcare site, the results of a BAM plot would not alter the outcome of the

Issue description	Response
between the first vegetation surveys and finalisation of the BDAR. The BCD is not aware of any criteria that would preclude such vegetation being classified as a TEC and does not concur with the rationale for not assigning this area of PCT 1281 vegetation as a threatened ecological community. BCD raised concerns that the BDAR states that vegetation at the Johnson Park bushcare site does not require assessment as it will not be impacted by the underboring of the special crossing. However, details of the proposed underboring are not described, nor are any indirect impacts considered in the assessment. BCD recommends the potential impacts of the proposed underboring on this PCT vegetation be further assessed.	findings in the BDAR relating to the vegetation in the bushcare site. The project would involve underboring the light rail corridor, which includes the bushcare site (if the Terry Road option is selected – Option 4a). Work sites are proposed in the adjacent road reserve therefore no direct or indirect impact is expected on vegetation within the bushcare site.
Fauna habitat	
BCD acknowledges the BDAR's calculations of 9.9 hectares of 'urban exotic/native' vegetation and an additional 0.76 hectares of 'mangrove forest' vegetation within the project area are considered foraging resource for Grey-headed Flying-fox. BCD also considers planted street trees important foraging habitat (because of the range of species and diversity in timing of flowering, especially of winter-flowering species) and that they also provide foraging resources and/or roosting habitat for threatened migrating birds (such as Swift Parrot and Regent Honeyeater) and microbats (such as Eastern Bentwing-bat) and their insectivorous prey.	The BDAR identified that around 9.9 hectares of urban exotic/native vegetation within the project area (which includes street trees) would be removed as a worst case. This is because the project area includes multiple route and special crossing options, all of which would not be progressed in the final design. Based on advice from the Commonwealth Department of the Environment, this vegetation is considered sub-optimal as potential foraging and/or roosting habitat for Swift Parrot, Regent Honeyeater and Eastern Bentwing-bat[5]. Potential impact on roosting habitat for the Eastern Bentwing-bat has been considered in the BDAR under prescribed biodiversity impacts, as roosting habitat for this species is associated with caves and human-made structures, rather than vegetation. Furthermore, there is about 95.2 ha of foraging habitat for Grey-headed Flying Fox within the BDAR assessment area (i.e. the project area plus a 1,500 metre buffer). The worst case scenario removal of urban exotic/native vegetation is still negligible compared to the large areas of higher quality foraging habitat, including native vegetation, within the Sydney Basin Bioregion within the range of this species. Therefore, the proposed vegetation removal for the project is not considered to have a significant impact on the species described above in the local area or within the bioregion.

[5] http://www.environment.gov.au/biodiversity/threatened/species/pubs/82338-conservation-advice.pdf; http://www.environment.gov.au/biodiversity/threatened/species/pubs/744-conservation-advice-05052016.pdf

4.9 City of Canterbury Bankstown

Table 4-9 outlines the issues raised by City of Canterbury Bankstown and TransGrid's responses.

Table 4-9 Issues raised by City of Canterbury Bankstown

Issue description	Response
Consultation	
As there are many households within the LGA that would be affected by the project, Council wanted to keep the community fully informed therefore information about the project was made available on the Council website during EIS exhibition.	TransGrid acknowledges Council's assistance in sharing information about the project with the community.
Traffic and transport	
Council requires that road works on local roads comply with statutory regulations including obtaining required permits and approvals, with partial and full road closures being approved by the Local Traffic Committee. Applications need to be submitted in a timely manner with sufficient supporting information.	As outlined in EMM TT8, TransGrid will engage with local councils and other relevant stakeholders regarding potential traffic and access impacts and management options, in accordance with the Community Consultation Framework (CCF). TransGrid will work with TfNSW and bus operators to ensure that sufficient lead time and comprehensive public notification is provided, regarding changes to bus stops and services and that alternative arrangements are in place to minimise disruption during road changes.
Council requests that traffic disruptions be minimised by keeping one traffic lane open at all times, where possible.	The need for full road closures will depend on the final alignment of the cable within the roadway, the width of the roadway, and the size of the work site required to maintain safety for workers and the public. In the event that a road closure is required, diversion routes will be provided which will be documented in the CTMP - refer to EMM TT2 and TT4.
Council requests that access for pedestrians, people with disabilities and emergency vehicles be maintained at all times.	Access for emergency services vehicles will be maintained at all times. Where feasible, reasonable and safe, impacts on active transport (walking and cycling) modes and routes will be minimised by maintaining access around work sites or providing diversion routes - refer to EMM TT5 and TT7.
Council suggests sufficient notification be provided to residents prior to works taking place in front of their properties, with restriction of access to private properties being minimised.	As outlined in EMM LP2 and TT6, affected landowners/occupants will be provided with advance notification of project construction schedules and changes to access arrangements or traffic disruptions.
Council suggests that work around schools and dense residential areas should take place during school holiday periods.	As outlined in EMM NV4, construction will be carried out during standard construction hours where feasible and reasonable. Some works will be required to be undertaken outside of standard construction hours, however, an 'Out-of-hours Protocol' will be prepared as part of the CNVMP. TransGrid will continue to consult with nearby schools to minimise potential impacts.

Issue description	Response
Council requests that any traffic device impacted by the transmission cables be fully reinstated to the current standard. If necessary, Council would complete a site-specific design and assessment to enable the replacement of assets, such as islands, to the current standard.	In the event that damage occurs to Council's assets or property as a result of the construction of the project, the damage will be appropriately rectified by TransGrid, in consultation with Council. Rectification works will be considered on a site-specific basis.
Parks and trees	
Council considers all street trees that do not display any significant signs of pests, disease, defects or structural weakness that may pose a threat to persons or property to be of high retention value, including the Muir Road Fig trees. This should be considered during the detailed design and construction phase of the project.	TransGrid is committed to avoiding the removal of trees wherever feasible and reasonable. The Arboricultural Impact Assessment in the EIS identifies the retention value of trees in the project area in accordance with the Institute of Australian Consulting Arboriculturists Significance of a Tree, Assessment Rating System (STARS), which is a recognised approach.
Council requires a 3:1 tree replacement ratio rather than the 1:1 ratio outlined in Section 4.4 of the Arboricultural Impact Assessment of the EIS. Council requests a final detailed report identifying all tree removal be provided to Council for confirmation prior to the start of the works and to ensure that there are no other conditions pertaining to the retention of specific trees.	A tree replanting strategy/landscape plan will be developed in consultation with Council. This will consider the appropriate tree replanting ratio, species and location for replanting.
Council does not accept or approve of the proposed transmission cable to be installed within close proximity of the 45 *Ficus macrocarpa car. Hillii* (Weeping Hills Fig) trees planted within the wide median of Muir Road. This species has an invasive and robust root system that may damage nearby infrastructure over time (such as the transmission cable). The project is inconsistent with recent Council approvals for a Vegetation Management Strategy and a local Development Application that has conditions of consent relating to the embellishment of the Muir Road median strip and associated vegetation.	Once the final transmission cable alignment is confirmed, a detailed Arboricultural Impact Assessment will be undertaken to confirm the location of trees to be removed and any specific mitigation measures. The removal of high and medium retention value trees will be avoided where possible. This information will be provided to Council. There is currently no proposal to remove the newly planted fig trees along Muir Road. If the cable trench is located in the tree protection zone, an independent, qualified arborist would be engaged to inform the detailed design, before construction starts, and will work with TransGrid to ensure the long-term health of the trees. TransGrid has been working with City of Canterbury Bankstown for more than two years and will continue to work with the Council throughout the project on this issue.
Council believes that that the Muir Road Fig trees would likely adversely	Route options between the Rookwood Road substation in Potts Hill and the Beaconsfield West substation in

Issue description	Response
impact underground infrastructure located in the median strip in the future and that if damage occurs, TransGrid will remove the fig trees. Council suggests that the transmission cable at Muir Road is located in the Muir Road parking lane (further away from the Ficus Trees), or down Rookwood Road, Brunker Road or Rawson Road.	Alexandria were developed with the aim of minimising environmental, land use, social and community impacts, and engineering constraints, while taking into account high-level cost considerations and avoiding sensitive areas. Brunker Road was investigated as a potential route, however, was ruled out due to engineering constraints. Refer to Chapter 3 Project development and alternatives of the EIS for more information.
Cooks River crossing	
Council does not support the option of an above ground crossing of the Cooks River, such as a cable bridge. Council's preferred option is a below ground crossing of the river, with the route south of the river restricted to road reserves and not to traverse Mildura Reserve (due to Sydney Water's proposed Waterway Health Improvement Project at this location), or the Cooks River foreshore, upstream of Lindsay Street.	As outlined in the Amendment Report, Option 1b has been selected as the preferred route and special crossing option for the Cooks River in Croydon Park/Campsie. This option involves underboring the Cooks River from the cul-de-sac at the end of Lindsay Street into Lees Park before the cable route continues on to Harmony Street, Ashbury. This design refinement is based on additional engineering and technical information becoming available and on feedback from key stakeholders. This preferred option does not traverse Mildura Reserve.
Council requests that the route on the north side of the Cooks River be in accordance with Council requirements for existing and future drainage augmentations in Lees Park, Hay Street and Harmony Street.	As outlined in EMM LP6, where existing services need to be disrupted or utilities relocated, relevant stakeholders will be consulted during detailed design and construction. TransGrid will continue to liaise with Council about future drainage infrastructure works in the project area.
Due to high community interest in the Cooks River and surroundings, Council requests that all works in the vicinity of the Cooks River should be aesthetically appropriate and not affect the amenity of the area.	The preferred option at the Cooks River is to underbore the conduits, therefore there would be no significant permanent infrastructure visible once construction is completed. Underboring would also not require vegetation removal along the Cooks River.
Restoration of road pavements	
Council has made the following requests: • that the cable trench be positioned within the full width of a traffic lane, rather than to be spread partially across two lanes, wherever practical; • that road restoration includes the repair of the full width of the traffic lane pavement, even if the lane pavement is only partially affected; • further consultation with TransGrid regarding potential	The final position of the transmission cables is subject to detailed design and will depend on the location of existing utilities and services within the road reserve. Permanent road restoration is included as part of the construction activity of the project and would be determined in consultation with Council, for local roads. The restored road surface would match what was there previously i.e. an asphalt or concrete roadway, or as otherwise agreed with the relevant roads' authority. TransGrid will have ongoing consultation with Roads and Maritime Services and local councils to ensure the requirements for road reinstatement are met.

Issue description	Response
monetary contributions for Council to complete permanent restoration on some of the impacted roads. If a contribution agreement is not established, TransGrid would need to organise the permanent restoration to be completed; • that pavement reinstatement be carried out in accordance with Council standards and include inspection by Council Restoration Officers to ensure compliance; • semi-permanent and permanent pavement restorations should be as indicated in the drawings in their submission; • a specific design for impacted concrete roads be provided, including prior approval of restoration plans, a minimum of four weeks prior to the section of trench being restored; and • an independent dilapidation report be prepared for all roads that will be used for heavy vehicle access or construction and that this be submitted to Council prior to the commencement of construction.	A road dilapidation report will be prepared and submitted to Council prior to the commencement of construction.
Drainage infrastructure impacts	
The installation of the transmission cable in the road reserve will limit the capacity of the road reserve to accommodate future service upgrades, particularly for drainage augmentation. Council requests further consultation regarding the proposed location of the works, both horizontally and vertically, to ensure the proposed works do not sterilise the road reserve from future drainage upgrades. This consultation/coordination should be undertaken a minimum of three months prior to construction commencement.	TransGrid will maintain ongoing consultation with Council regarding current and planned drainage works.
Underboring would maximise the capacity of the road reserve to accommodate the drainage network and that the trench depths can be	The construction method for the installation of the transmission cable circuit in the road reserve would be via trenching. Trenching could be up to 3 metres wide and up to 1.6 metres deep depending on the presence of utilities. Underboring is only being considered at locations where the

Issue description	Response
lowered to avoid collision with drainage pipes.	transmission cable circuit intersects State or regional roads, infrastructure (such as rail lines or stormwater culverts) or water courses.
Council suggests that flood prone areas (subject to significant overland flows from local catchments) be identified and flood management measures be proposed to prevent overland flow redirections, increased flood affectation and water pollution/erosion due to works or stored materials and equipment.	As outlined in EMM FF2, Flood Management Plans (FMPs) will be developed as part of the Construction Soil and Water Management Plan (CSWMP) for works within flood prone or flood affected land within the project area. The FMPs will detail measures to manage potential flood and water flow impacts.

4.10 Inner West Council

Table 4-10 outlines the issues raised by Inner West Council and TransGrid's responses.

Table 4-10 Issues raised by Inner West Council

Issue description	Response
Traffic and transport	
During construction, vehicle access to properties is to be retained all the time, obstruction to driveways is to be avoided, minimise temporary loss of on-street parking, impacts on road network performance and delays in travel times.	CTMP will be prepared (refer to EMM TT2) which will address measures for property access, on-street parking and road network performance including road/lane closures and traffic diversions. Furthermore, as outlined in EMM TT6 and LP3, vehicle access to residential and business properties will be maintained at all times, where possible. Where restricting access to properties is required to enable construction works, vehicle access will be restored as soon as possible. Where access to a property cannot be maintained, affected owners/occupants will be informed and feasible and reasonable solutions for access to their specific location discussed.
The traffic assessment is comprehensive and considers all the main traffic/transport issues. Consideration of traffic/transport for the project should reflect Council's transport priorities as per Council's draft Integrated Transport Strategy which prioritises active and public transport over private vehicle use.	EMM SE3 states that opportunities to enhance pedestrian and cyclist connectivity within the local study area, including design of cable bridges to accommodate pedestrian and cyclist movements will be investigated during detailed design, in consultation with relevant stakeholders. In addition, the construction workforce will be encouraged to travel to and from work sites via public transport rather than by private vehicles.
Any temporary walking route created for construction should be safe (i.e. separated from moving vehicles) involve minimum diversions, be wheelchair accessible and be of adequate width. Similarly, any temporary marked or separated cycleway diversions created for construction should be safe, involve minimum diversions and be of adequate width. Wherever bicycles	As outlined in EMM TT5, where feasible, reasonable and safe, impacts on active transport (walking and cycling) modes and routes will be minimised by maintaining access around work sites or providing diversion routes. Diversions for pedestrians and cyclists will be managed through the CTMP and relevant TCPs prepared to safely allow pedestrians and cyclists to pass the work site.

Issue description	Response
are in a mixed traffic situation, posted traffic speeds should be appropriately reduced.	
Impacts on bus services should be minimised.	As outlined in EMM TT8, impacts to bus services will be minimised by undertaking consultation with relevant stakeholders to ensure that sufficient lead time and comprehensive public notification is provided regarding changes to bus stops and services. All diversions of bus routes will be agreed with TfNSW and bus operators prior to the traffic management approach being finalised. Temporary relocation of bus stop facilities will be undertaken in consultation with the relevant road authority, bus operators and TfNSW. The relocated bus stops will be reinstated at their original location as construction works are completed in each location (as per EMM SE3).
Engagement with Council, residents and business is required to manage the loss of kerbside parking. Measures should be implemented to manage the impact of project workers taking up local parking, especially in areas with already high parking demand. Council notes that significant impacts from project worker parking demand are not anticipated.	To minimise impacts to parking, as outlined in EMM TT11, workers will be encouraged to travel to the work sites using public/active transport where possible. However, some on-road parking may be required at work sites. The CTMP will detail measures to minimise parking impacts to surrounding receivers as far as possible (e.g. not parking near schools/child care centres during drop off and pick up times or not parking close to sensitive land uses with high on-road parking demand, such as hospitals) - refer to EMM TT2.
Council supports opportunities for the project to go beyond a 'make good' standard to bring about a significant community benefit, for e.g. the creation of a stand-alone cycle bridge adjacent to Bedwin Road bridge as part of the proposed cable bridge construction for the project. Council would like Transgrid and/or Roads and Maritime Services to design and construct infrastructure necessary to connect this bridge to the surrounding bicycle network.	TransGrid will continue to consult with Council and Roads and Maritime Services (now TfNSW) to discuss the works for the cycle bridge on Bedwin Road.
Consultation	
Council has made the following requests: • regular project interface meetings; • representation on relevant working groups; and • the project's complaints procedures (including direct points of contact to project staff) to be effective and not rely on Council input.	TransGrid is committed to ongoing consultation with stakeholders during construction. This will include meetings with councils, as required. Council will also have the opportunity to be part of the CSRG. The Construction Environmental Management Plan for the project will describe the details of stakeholder and community consultation and complaints handling process including project contact details for the community to use to make a complaint or reach the project team. Procedures for resolving stakeholder and community enquiries and complaints would be aligned with TransGrid's overarching Complaints and Enquiries Management

Issue description	Response
	System, which is described in the CCF in Appendix C of the EIS.
Reinstatement	
The project is to make good all affected areas to a high standard, with a process of 'signoff' of all works by Council and other relevant parties.	Reinstatement works will be undertaken in consultation with Council.
Construction noise management	
Wherever night works are proposed, advanced notice should be given to affected residents and a generous approach to mitigation should be adopted, e.g. offer of alternative accommodation.	As required by EMM NV2, residents impacted by noise from the proposed works which is expected to exceed the NML will be notified at least seven days prior to the commencement of the particular activity. An Out-of-hours Protocol will also be prepared to evaluate the potential noise impacts of specific out-of-hours works and recommend appropriate mitigations measures such as: • community consultation with highly noise affected receivers; • procedures to determine negotiated outcomes in consultation with affected receivers (e.g. construction scheduling during sensitive periods such as exams where construction is in the vicinity of schools); • specific mitigation measures such as respite periods; and • a monitoring program.
Project workers should be encouraged to be considerate of residents and business owners, e.g. during toolbox talks, discourage workers from idling their vehicles or making other noise in residential streets, particularly in the early morning period.	As proposed in EMM NV3, all project personnel, contractors and subcontractors will undergo an environmental induction which will include behavioural practices such as limiting loud noises.
Construction methodology	
Council would prefer the project use the trefoil trench configuration for the two circuits to minimise disruption to traffic during future construction and to enable Council to undertake future stormwater upgrade works in the vicinity without having to potentially relocate TransGrid cables.	Conduits arranged in a trench will be in a trefoil formation, wherever possible. TransGrid will maintain ongoing consultation regarding current and planned drainage works.
Options	
Route Option 5a in the vicinity of Henson Park is not supported due to potential impacts of underboring on playground equipment, shade structure footings, park surfaces and impacts to the pedestrian path	Council's concern regarding Option 5a at Henson Park and Option 4b at the Dulwich Hill Light Rail corridor is noted. TransGrid's preferred position is to stay within the road reserve and minimise any impacts on parks and vegetation. However, due to existing services at these locations, it is

Issue description	Response
connecting Centenary Street and Amy Street. Council raised concerns regarding Option 4b at Johnson Park due to potential impacts from underboring on play equipment footings and park surfaces.	not possible to confirm the preferred route until detailed design is undertaken. A preferred option at both locations would therefore be subject to further engineering investigation and would be selected based on the following criteria: • location and protection of existing utilities and services; • consultation with relevant stakeholders; • environmental constraints (such as geotechnical conditions or tree roots); and • minimising impacts to the community.
Council raised concerns regarding Option 4a due to its proximity to the Greenway bushcare site.	Council's concern regarding Option 4a being close to the Johnson Park bushcare site, adjacent to the Greenway, is noted. The proposed underboring launch and receive work sites would be outside the bushcare site, therefore there would be no direct impact on this site. TransGrid is committed to avoiding tree removal at the bushcare site in Dulwich Hill, as stated in EMM BD10.
Camdenville Park	
Council supports the laydown area at Camdenville Park pending resolution of conditions of site use. The laydown area will in part support the construction of the Bedwin Road cable bridge and cycleway.	Council's support for the use of Camdenville Park to support project construction is noted.
Council raised concerns that the route through Camdenville Park will potentially constrain future use and development of the park. Council notes ongoing discussions with Transgrid is occurring to ensure planned park upgrade works are accommodated in the detailed design and construction.	TransGrid acknowledges Council's future plans to develop Camdenville Park. Ongoing consultation with Council would continue to ensure that potential impacts from the project on the operational activities and future use of the park are minimised. Specific mitigation measures required to manage these potential impacts would be developed in consultation with Council and outlined in the CEMP.
Details of park pedestrian and vehicle access management and construction and restoration methodology will be required for Council review before construction.	As proposed in EMM SE2, establishment and use of the construction laydown areas (including within Camdenville Park) will consider public safety and maintain safe access to recreational areas. Private and public reserves and parks proposed for the construction laydown areas will be returned to their original or improved condition following construction (or as otherwise agreed with the relevant authority). Access to community facilities along the transmission cable route and in proximity to construction laydown areas will be maintained at all times unless an alternative solution has been negotiated with the landowner/occupier. Access to areas of reserves and parks not utilised for construction laydown areas will be maintained throughout construction.

Issue description	Response
Street trees	
The number of trees to be removed is not quantified in the EIS.	TransGrid will avoid the removal of trees wherever feasible and reasonable. As outlined in Chapter 13 Biodiversity of the EIS, the number of trees to be removed would be identified once a final alignment for the transmission cable route (including special crossings) is determined during detailed design. However, based on the current concept design, it is estimated that between 2 and 5% of the trees within the project area would require removal. Following community feedback on the revised route, TransGrid are committed to avoiding tree removal in the parklands at Sydney Park in Alexandria, along Constitution Road in Dulwich Hill and at the Johnson Park Bushcare site in Dulwich Hill. TransGrid will work with local councils to identify suitable locations for replanting of street trees. The project has been designed to utilise existing utility and services corridors, which are mostly situated within existing road reserves, and public open space consisting of mown lawn areas to minimise community and environmental impacts, including to vegetation and trees. Where tree removal is required, a tree replanting strategy/landscape plan will be developed in consultation with the relevant council. During the detailed design development, trees and roots will be considered in determining the final project alignment. The number of trees to be removed would be identified once a final alignment for the transmission cable route (including special crossings) is determined during detailed design. This information will be shared with Council during detailed design and before construction commences.
The arborist assessment not does not adequately assess trees to be removed but states retention values. An Arboricultural Impact Assessment must be prepared by a suitably qualified expert that assesses the impacts on trees, identifies trees to be removed and includes appropriate tree protection measures. The EIS should be supported by a revised Arborist assessment which clearly outlined number of trees to be removed, retained, transplanted or pruned.	Once the final alignment is confirmed, a detailed Arboricultural Impact Assessment will be undertaken to confirm the location of trees to be removed and any specific mitigation measures. High and medium retention value trees will be avoided where possible. Appropriate tree replacement locations/species/ratios will be agreed in consultation with Council.
If the proposed works would cause unreasonable impact to the existing tree(s) that cannot be managed, the applicant will need to submit to Council a suitable tree replacement strategy with advanced containerised trees and 12 month establishment and maintenance program. A replacement ratio of 2:1 should be adopted to compensate for lost	As outlined in EMM BD10 and LV5, the project will avoid the removal of trees wherever feasible and reasonable. Trees will be removed at the time of construction if trenching activities impact tree roots to a point where the tree is no longer viable (as determined by the project arborist). Where avoidance is not possible, a tree replanting strategy/landscape plan will be developed in consultation with the relevant council. To minimise 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

Issue description	Response
mature canopy in lieu of small replacement planting.	the replacement trees will be confirmed by a qualified arborist, in consultation with TransGrid's cable specialists.
Council requests that the community are consulted with on the proposed tree removals and an outline of the proposed consultation methods be provided to Council.	TransGrid will provide the community with prior notification about tree removal in their street. Any relevant communication material will be shared with Council.
Biodiversity	
It should be noted that the Johnson Park bushcare site is now managed by Inner West Council with volunteer support from Inner West Environment Group and the general community.	It is noted that the Johnson Park bushcare site is now managed by Inner West Council with volunteer support from Inner West Environment Group and the general community. The Inner West Environment Group has provided a submission on the EIS regarding potential impacts to the bushcare site (see **Section 4.14**). The submission is generally supportive of the project. TransGrid is committed to avoiding tree removal in the bushcare site in Dulwich Hill.
Council notes that while no Threatened Ecological Communities or Commonwealth listed species were recorded within the project area, the remaining vegetation remnants, exotics and weeds still play an important role in providing habitat to many species including threatened species and shouldn't be undervalued.	The project has been located and designed in a way which avoids and minimises impacts on vegetation, habitat and biodiversity by locating the project area in areas with primarily low biodiversity value such as within road reserves and within public open space consisting of mown grasslands. At the detailed design stage further refinements to the location of project infrastructure would be undertaken to avoid impacting vegetation.
Construction precinct 3 is partly located within the Bandicoot Protection Zone (Marrickville Council Development Control Plan (DCP) 2011).	The project is partly located within the Bandicoot Protection Zone, as listed in the Marrickville Council Development Control Plan (2011). As outlined in the BDAR in Appendix H of the EIS, records of the Long-nosed Bandicoot have been found in proximity to the project area near the Johnson Park Bushcare site and potential foraging and movement habitat is provided by vegetation within the Dulwich Hill light rail corridor. The majority of construction works within the Bandicoot Protection Zone would occur along existing road corridors including at Constitution Road, Windsor Road, Terry Road, Pigott Road, Hill Street, Denison Street and Herbert Street. Additionally, the project includes two options assessed within the BDAR at this location, of which only one will be selected during detailed design. The BDAR has considered potential impacts to the species as prescribed biodiversity impacts and determined that no impact is expected on the vegetation of the Johnson Park Bushcare site as this area will be underbored, with the launch and receive work sites being located fully within the adjacent road reserves. TransGrid made a commitment in the EIS to avoid tree removal within the bushcare site (see EMM BD10).
The Marrickville DCP 2011 (2.13 including Biodiversity map) and Marrickville Biodiversity Strategy 2011-2021 should both be	The Marrickville Council Biodiversity Strategy 2011–2021 outlines Marrickville Council's commitment and actions to guide biodiversity management within the Council area. It identifies priority biodiversity areas, which includes the

Issue description	Response
referenced and included in the sources of information used (section 1.1.3 –Appendix H). These documents are still in use until Inner West Council DCP and Biodiversity Strategies are completed.	Greenway along the Inner West Light Rail corridor, which is partly within the project area where it crosses the light rail corridor, with crossing options at Terry Road or Constitution Road. Section 5.22 of the EP&A Act provides that environmental planning instruments (such as local planning documents) do not apply to State Significant Infrastructure projects. However, consistent with good environmental assessment practice, the BDAR has assessed impacts on biodiversity within the priority biodiversity area. At the Terry Road crossing, the Johnson Park Bushcare site was identified to contain PCT 1281 'Sydney Turpentine-Grey Ironbark Open Forest, as well as potential bandicoot habitat. However, no impact is expected on the vegetation of the Johnson Park Bushcare site as this area will be underbored, with the launch and receive work sites being located fully within the adjacent road reserves. At Constitution Road, vegetation identified consisted of mixed urban/exotics. Mitigation measures proposed include avoiding tree removal along Constitution Road (see EMM BD10).
Potential impact on council infrastructure	
Concern regarding interface with Council's road, traffic, stormwater and water quality infrastructure, as well as flood mitigation works.	The development of the concept design, including the alignment of the transmission cable route, has taken into consideration other existing utilities within the road reserve in order to minimise impacts on these services. Investigations into the exact location of utilities are ongoing along the transmission cable route. TransGrid has undertaken ground penetrating radar testing, potholing and slit trenching, with the results used to inform development of the project design and further investigations would be carried during detailed design. The exact alignment within the road reserve will continue to be refined during detailed design to avoid significant impacts on utilities. Potential construction impacts on the local stormwater system are assessed in Chapter 17 Surface water and flooding of the EIS. TransGrid do not propose to impact Council water quality infrastructure and are committed to ongoing consultation with Council regarding relevant flood mitigation works.
Requested the details of the construction and restoration methodology for review prior to the commencement of construction and to be consulted throughout the design development and construction of the project.	TransGrid will continue to consult with the community and stakeholders, including Inner West Council, during the ongoing refinement of the detailed design and during construction, with a view to further minimising impacts of the project on communities. An outline of future consultation that would be carried out for the project is included in **Section 2.3**. TransGrid will have on-going consultation with Roads and Maritime Services and local councils to ensure the requirements for road reinstatement are met.
Potential impacts on council water sensitive urban design (WSUD) infrastructure and impacts and mitigation has not been identified in	Any impacts on Council's water sensitive urban design (WSUD) infrastructure would be minimised where possible. In the event that damage occurs to Council property or assets as a result of the construction of the project, the

Issue description	Response
the EIS. Commitments for compensation or replacement for any loss or damages to devices should be stated.	damage will be appropriately rectified by TransGrid's contractor.
Potential interface with the existing Council stormwater assets at specific locations. Council requests ongoing consultation with TransGrid to resolve any conflicts between the project and existing stormwater infrastructure.	As per EMM LP7, where works are to be carried out in close proximity to utilities, consultation will be undertaken with the relevant utility owner to determine safety and network integrity requirements. The development of the concept design, including the alignment of the transmission cable route, has taken into consideration other existing utilities within the road reserve in order to minimise impacts on these services. Investigations into the exact location of utilities are ongoing along the transmission cable route. TransGrid has undertaken ground penetrating radar testing, potholing and slit trenching, with the results used to inform development of the project design and further investigations would be carried during detailed design. The exact alignment within the road reserve will continue to be refined during detailed design to avoid significant impacts on utilities. As described in EMM HR7, a DBYD enquiry would be undertaken prior to construction commencing to identify services and utilities. Non-destructive excavation methods would be employed to expose buried services prior to excavation where works are required in close proximity to known or identified utilities and there is a high risk of striking that utility. Where required, utility protection measures would be established prior to any excavation works being undertaken in proximity to the utility.
A qualified water quality expert should undertake testing of groundwater prior to discharge into the Council stormwater system. Discharged water should comply with water quality criteria under ANZECC/ARMCANZ 2000 guidelines and/or endorsed EPA guidelines and recommendations.	As described in EMM GW4, a Construction Soil and Water Management Plan will be prepared as part of the CEMP to document the measures required to manage water quality impacts including: • water collected during dewatering of excavations would be discharged or disposed of in accordance with the *Protection of the Environment Operations Act 1997* and the *ANZECC Water Quality Guidelines* (2000) for 95% protection level for marine ecosystems; and • contaminated groundwater captured during construction will be disposed of at an appropriately licenced facility.
Errors and inconsistencies in the EIS	
Council raised the following errors and inconsistencies in the EIS: • the EIS has incorrectly documented that 'Cooks River Corridor is also known as The Green Way'. These are two different corridors with the Green Way running in a north/south	The errors/inconsistencies are acknowledged and are addressed in **Section 3.0**.

Issue description	Response
direction and links the Cooks River Corridor to Iron Cove; • the EIS has incorrectly documented Peace Park as an Inner West Council Park. Peace Park is located in the Canterbury Bankstown LGA; and • validated vegetation map 20 (Appendix H) shows the presence of Potential Habitat Bearing Trees at Scouller Street and Juliett Street. It should be clearer what make these trees 'Potential habitat bearing tree' or the wording should be changed 'Potential hollow bearing tree'.	

4.11 City of Sydney

Table 4-11 outlines the issues raised by City of Sydney and TransGrid's responses.

Table 4-11 Issues raised by City of Sydney

Issue description	Response
General support	
The City of Sydney generally supports the project as a vital piece of infrastructure that will secure reliable electricity supply to the Sydney CBD for decades.	Council's general support for the project is noted.
Tree protection	
The general route selected by TransGrid takes into account the high value of mature trees along Barwon Park Road and in Sydney Park. When the route is refined during detailed design, tree removal should be avoided, as far as practical, and impacts on trees adjacent to the works should be mitigated.	The Arboricultural Impact Assessment identifies the retention value of trees in the project area, including along Barwon Park Road and within Sydney Park. As outlined in EMM LV5, the project will avoid the removal of trees wherever feasible and reasonable and a tree replanting strategy/landscape plan will be developed in consultation with the relevant council. No trees will be removed within the parklands of Sydney Park in Alexandria.
Council is concerned about the number of trees that have already been removed from the southeast corner of Sydney Park as a result of other projects and strongly support TransGrid's proposal to underbore the wetland in this part of Sydney Park, rather than going around the wetland, which will avoid the need for further tree removal.	Council's support for the construction methodology within Sydney Park is noted. TransGrid is committed to retaining all trees within the parklands of Sydney Park in Alexandria.

Issue description	Response
The protection and retention of all medium and high value trees is a priority for Council, reflecting the value they hold for the community. The City of Sydney Street Tree Master Plan includes general street tree protection measures and conditions that should be followed.	TransGrid is committed to retaining medium and high retention value street trees where feasible. Where tree removal is required, a tree replanting strategy/landscape plan will be developed in consultation with the City of Sydney. Tree protection measures will also be implemented; and the conditions outlined in the technical guidelines of *The City of Sydney Street Tree Master Plan* regarding tree protection are noted.
Existing street trees must be considered during detailed design in accordance with *AS4970-2009 Protection of Trees on Development Sites* and a project Arborist must be engaged to assist with tree management advice during the various stages of the design and construction process.	A suitably qualified arborist in accordance with *AS4970-2009 Protection of Trees on Development Sites* would be engaged to assist with tree management advice during the development of detailed design and through construction of the project. The role and responsibilities of the project arborist are outlined in EMM LV5, BD10, BD11, BD13, BD14 and NAH2.
Biodiversity	
Sydney Park is home to native nocturnal fauna that could be impacted by light spill from night works, such as the Powerful Owl, Eastern Bentwing Bat, and potentially the Large Footed Myotis (another bat species). Measures should include mitigating light spill and timing works appropriately to avoid displacing affected fauna.	The project would be constructed during standard construction hours wherever feasible and reasonable. Potential impacts to fauna from light spill during construction works at night was therefore considered to be minor (refer to Appendix H of the EIS). However, the following additional mitigation measure has been identified for the project - in the event that construction works within or adjacent to the Johnson Park bushcare site, Cooks River and Sydney Park are required to be undertaken at night, project lighting will be directed towards work sites and away from stands of vegetation (refer to EMM BD18).
Heritage and urban design	
Council requests pre-and post-construction dilapidation reports are undertaken and submitted to Council for the row of heritage listed terraces at 2-34 Campbell Road, Alexandria. Council would like the opportunity to provide TransGrid with feedback on the urban design of the upgraded Beaconsfield West substation.	As outlined in EMM NV14, if vibration intensive equipment is to be used within the minimum working distances for cosmetic damage for listed heritage items, building condition surveys will be undertaken to identify any structural impacts as a result of the project construction. Vibration offset distances would be confirmed during detailed design and if building condition surveys are required for the terraces at 2-34 Campbell Road, Alexandria, these reports would be provided to Council as requested. As outlined in Chapter 4 Project description of the EIS, the scope of work proposed within the Beaconsfield West substation includes the installation of new cable sealing ends, modifications to the 330 kV switchgear, installation and modification of control and protection equipment and cabling connections within the substation site. No new building works or changes to the existing building are proposed. There will also be no change to the existing boundary facade of the substation associated with this project, therefore urban design considerations are not relevant.

Issue description	Response
Public domain and construction management	
Any conditions of consent should require CNVMPs and CTMPs to be developed in consultation with Council. The City's Parks Operations Manager is to be contacted prior to finalising the route of the transmission line through Sydney Park and be consulted in the preparation of a construction management plan to maintain access for the community and to protect significant elements of the park.	Council's request to be consulted during development of the management plans is noted. Key stakeholders, including councils, will be consulted on the preparation and implementation of management plans as appropriate and in accordance with the conditions of consent.
Park maintenance – depot operation	
The proposed cable route will have some impact on the operation of the Sydney Park Depot and Nursery and park maintenance generally. The City expects TransGrid's contractor to work with City's Parks Operations Manager to ensure that at all times vehicular access to the depot is maintained and worker and visitor health and safety is not compromised. This may require special measures to control noise, dust and other emissions as well as plant and vehicle movements.	TransGrid and its contractor will engage with the Operations Manager at the depot to ensure they are aware of scheduled construction activities for the project and that any depot operational activities and the health and safety of depot personnel will not be affected.
Council notes a water treatment plant is being developed at the depot with practical completion scheduled for July 2020. Recycled water will be trucked off-site in tankers for watering of street verge plantings and maintenance of this activity is very important during hot, dry periods.	The proposed development of the water treatment plant at the depot is noted. Construction for the transmission cable project is proposed to commence in mid-2020, subject to approval Ongoing consultation and coordination with Council will be undertaken to ensure that potential impacts from the project on the operational activities of the park are minimised.
Environmental risks and management	
Sydney Park is located on a prior landfill site. There is potential for project construction works to release methane gas or cause leachate migration paths even if the works themselves are not located directly over landfill. There is also a risk of creating pathways for surface water to infiltrate the landfill and exacerbate leachate generation. The project development and construction work planning needs to avoid these risks. In addition to landfill capping, control	The potential operational impacts of emissions and migration of landfill gas and migration of leachate in Sydney Park are assessed in Chapter 16 Soils and contamination of the EIS. As outlined in EMM CT9, a site-specific management plan for former landfill sites will be required for excavation works in Sydney Park and approval will be sought from the NSW EPA prior to exhumation of landfill waste at Sydney Park as required in accordance with the *Protection of the Environment Operations Legislation Amendment (Waste) Regulation 2018* (Amendment Regulation). As per EMM CT10, TransGrid will undertake additional investigations at

Issue description	Response
of stormwater and drainage need to be considered.	Sydney Park on leachate and methane risks prior to or during construction and will report these findings to Council. As outlined in EMM CT7, an Acid Sulfate Soil Management Plan (ASSMP) for Sydney Park will be developed based on the results of the pre-construction soil investigations for the site. The ASSMP will detail how leachate water from potential acid sulfate soil (PASS) material will be managed and treated to ensure no acid is released to the environment. Leachate generated during the ASS treatment operations will be captured. Any water potentially affected by leachate collecting within the excavation will be treated with hydrated lime or equivalent prior to discharge. Water potentially affected by leachate accumulating within the work site will not be discharged until it meets acceptable water quality standards or collected and disposed at a licensed liquid waste treatment facility. Excavation works in PASS will be conducted during dry periods (where practical) to minimise the risk of overflow associated with sudden or heavy rain and to allow better control of treated waters for discharge.
Council has some methane and leachate monitoring wells that may be impacted by the project. Any well relocation should be undertaken in consultation with Council.	As part of the consultation with Council, potentially affected existing monitoring wells would be identified and solutions developed to ensure ongoing monitoring.
Site hydrology and water use	
There is a major stormwater culvert in the part of Sydney Park where the cable route runs parallel with Campbell Road. Care is needed if this culvert needs to be relocated or diverted and any disruption should be minimised as this culvert is one of two major sources of stormwater used to replenish water in the park's wetland system.	TransGrid does not intend to relocate or impact the culvert in Sydney Park. As required by EMM HR7, a DBYD enquiry will be undertaken prior to construction commencing to identify services and utilities. Non-destructive excavation methods would be employed to expose buried services prior to excavation where works are required in close proximity to known or identified utilities, such as the culvert, and there is a high risk of striking that utility. As per EMM LP7, where works are to be carried out in close proximity to utilities, consultation will be undertaken with the relevant utility provider to determine safety and network integrity requirements.
Any changes to the proposed route to the north of the wetland would be problematic as excavation in this area would interfere with the wetland water circulation system and recycled water infrastructure, namely a raw water rising main and treated water reticulation pipes.	TransGrid is seeking approval to locate the transmission cable within the project area assessed in the EIS. The project area at Sydney Park is shown in Figure 4-5 of the EIS and does not traverse north of the wetland. The project would involve underboring the wetland.

Issue description	Response
Sydney City Farm	
The City Farm is being developed adjacent to Barwon Park Road south of the park depot. TransGrid should avoid impacts on the farm and farm users. The gap between the farm and the road is narrow. Restoration would be needed for any part of the farm affected by the project and the Council anticipates close liaison with TransGrid to achieve this.	The transmission cable route passes adjacent to the City Farm orchard site. The project would not extend into the farm area. Ongoing consultation with Council would continue during construction within Sydney Park to manage potential impacts on all park users and Council infrastructure or facilities.
Conditions of consent	
Council has recommended several conditions of consent regarding the protection and reinstatement of the public domain including photographic recording of public domain site frontages, redress of damage to footpaths and other road infrastructure, maintenance of permanent survey marks, protection of survey infrastructure and protection of stone kerbs.	The conditions of consent recommended by Council are noted. The conditions of consent for the project are a matter for DPIE to consider during its assessment. Should the project be approved, TransGrid and its contractor(s) must comply with all requirements of the conditions of consent. The project has also committed to a range of environmental management measures which are detailed in **Section 6.0**. The contractor would be responsible for pre- and post-construction photographic recording at work sites and rectifying damage caused by the project as appropriate. Some of Council's recommended conditions are more restrictive than what is proposed for the project. TransGrid will continue to consult with Council on the recommended conditions.

4.12 Ausgrid

Table 4-12 outlines the issues raised by Ausgrid and TransGrid's responses.

Table 4-12 Issues raised by Ausgrid

Issue description	Response
General	
Ausgrid is working closely with TransGrid regarding the project and did not raise any issues in their submission.	TransGrid will continue to consult with Ausgrid during detailed design and construction and aims to minimise potential impacts to Ausgrid assets and services.

4.13 Caltex

Table 4-13 outlines the issues raised by Caltex and TransGrid's responses.

Table 4-13 Issues raised by Caltex

Issue description	Response
General	
The project will cross the Caltex operated Sydney Metropolitan Pipeline at the proposed special	TransGrid will continue to consult with Caltex and Viva Energy during detailed design and construction and aims to minimise potential impacts to their assets and services.

Issue description	Response
crossing of the Cooks River at Croydon Park. The Sydney Metropolitan Pipeline is in the same trench and same easement as the Viva Energy jet fuel pipeline to Sydney Airport. Consultation with Caltex and Viva Energy prior to designing the crossing is required.	

4.14 Inner West Environment Group

Table 4-14 outlines the issues raised by Inner West Environment Group (IWEG) and TransGrid's responses.

Table 4-14 Issues raised by Inner West Environment Group

Issue description	Response
Public amenity and trees	
IWEG is supportive of the project in the area from Old Canterbury Road to New Canterbury Road, Dulwich Hill as long as: • no trees are removed or damaged; • there is no damage to the Greenway; and • the project does not interfere with the construction or expansion of the Greenway in future. IWEG supports the Constitution Road route option in Dulwich Hill as they are concerned the alternative route via Windsor Road and Terry Street would cause disruption and damage to the Greenway.	In principle, tree removal within the project area will be avoided wherever feasible and reasonable. Where tree removal is required, a tree replanting strategy/landscape plan will be developed in consultation with Inner West Council (refer to EMM LV5). TransGrid is committed to avoiding tree removal along Constitution Road and at the Johnson Park Bushcare site in Dulwich Hill, as stated in EMM BD10. As outlined in Chapter 7 Traffic and transport of the EIS, temporary diversion of a small section of the Greenway shared path may be required if the path is operational at the time of project construction. However, all efforts would be made to ensure access is maintained by locating underboring works away from the shared path. Should the Greenway shared path not be operational at the time of project construction in this location, construction works are unlikely to impact users of the existing temporary shared path through Johnson Park. If affected, the shared path would be reinstated after the completion of the construction works. Consultation with Inner West Council would be ongoing during project construction in this location.
IWEG is concerned about damage to the Brush Box trees in Johnson Park during construction and suggests that works be carried out in the roadway other than when crossing the light rail tracks and that contractors be fully briefed, be held accountable and be monitored during their work in the park.	Irrespective of which underboring option is selected at the light rail crossing, construction activities would be carried out in the roadway as far as possible. Should a temporary work site be required within Johnson Park for the underbore equipment, tree protection measures would be put in place, if required, to avoid impacts to existing trees. No tree removal at the work site is anticipated. All construction work would be managed and monitored for compliance with the CEMP.

Issue description	Response
Future infrastructure	
The route option via Windsor Road and Terry Street is located in an area prone to flooding, particularly near the 'Hopper Building'. IWEG is concerned that the project would affect drainage works planned for the Greenway at Terry and Hill streets.	TransGrid will continue to consult with Inner West Council during detailed design and construction regarding any planned Council infrastructure works.

5.0 Response to community submissions

The following section summarises the submissions received from community submitters and provides responses to the issues raised. The full submissions can be accessed on the DPIE Major Projects website. Each community submitter has been allocated an individual submitter ID from DPIE.

Appendix A lists these submitter IDs and provides a reference to where the issues raised are responded to in this report.

References to EMMs refers to environmental management and mitigation measures, as presented in **Section 6.0**.

5.1 Strategic context and project need

5.1.1 Project need and justification

Issue description

Submitter raised concerns regarding rises in electricity prices, that infrastructure development should rather be invested in regional areas to support growth and that the community should not be subject to impacts as a result of poor infrastructure planning.

Response

While transmission is a small component of the electricity bill, around 3-5% for households and businesses, TransGrid does not believe that consumers should pay more than necessary for reliable electricity supply. It is TransGrid's responsibility to ensure that business operations and delivery of the project is carried out as efficiently as possible, to drive down costs and promote strong customer service. The project is needed to secure the future electricity supply for Sydney's CBD and surrounding suburbs and to address the deteriorating condition of ageing cables in this part of the existing network. Planning for the project commenced in 2012 when the need for new transmission infrastructure was identified (refer to Chapter 3 Project development and alternatives of the EIS). The project was also subject to a rigorous regulatory investment test for transmission by the Australian Energy Regulator (AER) and approved by the AER in May 2018.

Issue description

Submitter stated their scepticism about the justification for the project in residential areas, that there does not appear to be genuine consideration of the communities' best interests and that the project is likely to go ahead irrespective of community feedback.

Response

The project is needed to secure the future electricity supply for Sydney's CBD and surrounding suburbs and to address the deteriorating condition of ageing cables in this part of the existing network. Given the developed and urban environment of the project area, potential impacts to residential areas are unavoidable.

TransGrid has engaged with the community and key stakeholders throughout the development of the transmission cable route and the EIS and has taken their feedback on board. The proposed route has been identified on the basis that the new 330kV cables will operate within the International Commission on Non-Ionizing Radiation Protection (ICNIRP) guidelines in the community and this is TransGrid's primary consideration. Some impacts from the project, such as traffic disruption and noise generated during construction, would be unavoidable. The EIS has identified a range of mitigation measures to manage potential impacts to residents and the wider community.

TransGrid will continue to engage with the community and stakeholders to ensure they are informed about project activities during detailed design and construction.

5.2 Project development and alternatives

5.2.1 Route selection

Issue description

Submitters raised concerns regarding:

- the preferred route is mostly through residential areas;
- the project should not be located on narrow residential streets; and
- construction laydown areas are proposed within public spaces.

Response

A route selection study was completed in 2017. In addition to technical, cost and construction considerations, the evaluation of route options also considered environmental and land use implications including number of properties affected, property acquisition, number of infrastructure crossings, proximity to heritage items and extent of potential vegetation clearing, amongst others.

The project route incorporates a mix of State, regional and local roads. Given the developed and urban environment of the project area, particularly the higher urban density at the eastern end of the route, potential impacts to residential areas are unavoidable. The selected project route was based on the lowest overall risk from an environmental, engineering and cost perspective and was considered to be the most time and cost effective route to deliver the project with the least impact on the community. While narrow residential streets and residential areas are unavoidable, management and mitigation measures are proposed to minimise impacts.

As outlined in EMM SE2, construction laydown areas within private and public reserves and parks will be planned to minimise impacts on existing community infrastructure. The establishment and use of these areas will consider public safety and maintain safe access to recreational areas. Access to areas of reserves and parks not utilised for construction laydown areas will be maintained throughout construction. Due to the built-up nature of inner Sydney, the availability of suitable sites for construction laydown areas is limited. Where possible, TransGrid has tried to limit property impacts and use existing infrastructure sites as construction laydown areas, such as the Beaconsfield West substation, or use sites already being used for that purpose, such as Camdenville Park. Although five sites were assessed in the EIS, not all of these may be required to support construction. Subsequent to the EIS going on exhibition, the Cooke Park laydown area in Belfield, has been removed from the project. This is described further in the Amendment Report for the project. The final selection of laydown areas would be determined by the contractor based on their construction approach.

Issue description

Submitter raised concerns regarding the inclusion of options in the EIS and how the preferred options would be selected.

Response

As described in Chapter 4 Project description of the EIS, route options were identified at four locations along the transmission cable route where further design and engineering information is required before a decision can be made on the most feasible option. This decision will be made by TransGrid as the detailed design of the project progresses. Preferred options at each location would be selected based on the following criteria:

- location and protection of existing underground utilities and services;
- feedback gathered from the community and key stakeholders throughout the EIS process;
- construction constraints (such as geotechnical conditions); and
- minimising impacts to the environment and community.

Subsequent to the EIS going on exhibition, TransGrid can confirm that Option 1b is the preferred option for the route and construction method crossing of the Cooks River at Croydon Park/Campsie. This option involves underboring the Cooks River from the cul-de-sac at the end of Lindsay Street into

Lees Park before the cable route continues on to Harmony Street, Ashbury. Further description of this option and justification for its selection is provided in the Amendment Report.

Issue description

Submitter raised concerns that a higher weighting was given to short-term construction impacts (such as night-time construction and the impact on major roads) rather than long-term operational impacts in selecting the revised route in the EIS[6].

Response

The EIS considers both the temporary impacts during construction and the permanent operational impacts of the revised route. The majority of project impacts would occur during construction and would be temporary and progressive in nature as construction moves along the route. During operation, the project is likely to have minimal impacts on the community and environment, with the main operational impact being a loss in visual amenity from removal of street trees and the visual presence of cable bridges. These operational impacts would be managed by implementing a tree replanting strategy and ensuring the cable bridges are designed to integrate into the surrounding landscape.

5.2.2 Infrastructure co-location

Issue description

Submitters raised concerns regarding infrastructure co-location. Concerns included:

- why the route is not through parklands (for example along the Cooks River), similar to existing high voltage towers and cables, rather than through residential areas;
- whether opportunities for co-location with other major linear infrastructure had been considered to minimise disruption to the community, including consultation with Sydney Water about installing water pipes while the trench is open; and
- the inability to co-locate reflects as poor infrastructure planning in Sydney.

Response

Throughout the evolution of route options identification and evaluation, opportunities have been sought to co-locate the proposed transmission cable circuit within other infrastructure corridors such as roads, railway lines or cycleways. TransGrid has reviewed opportunities for co-location with councils, government agencies and development proponents.

The evaluation of route options included consideration of the use of public open space such as the Cooks River corridor and co-location with other major linear infrastructure such Sydney Metro and WestConnex. However, these were not viable when considering all implications.

A key technical and construction consideration for the route is the presence of existing underground utilities and services. This influences the space available to install the transmission cables. Along the Cooks River, there are other major infrastructure present, such as a high-pressure gas and fuel pipelines and water/sewage pipelines that limit the placement of the transmission cables in this location.

Chapter 3 Project development and alternatives of the EIS outlined that co-location within rail corridors presented challenges including:

- insufficient available land to construct and safely operate the transmission cable circuit;
- non-compliance with Sydney Trains safety standards; and

[6] The original route is the refined version of the 'preferred route' identified in the 2017 Route Selection Study. The revised route was then developed in early 2019 and is the route assessed in the EIS. About 40% of the revised route is the same as the original route, mainly at either ends, closest to the substations. The main difference is from around Punchbowl Road in the west to Edgeware Road in the east. Both routes are shown and described further in Chapter 3 Project development and alternatives of the EIS.

- potential interference between the transmission cables and rail signalling and communication systems.

TransGrid also pursued the opportunity to co-locate with WestConnex projects, specifically co-location in the vicinity of Campbell Road, Sydney Park and Beaconsfield West substation.

TransGrid identified an opportunity to co-locate the transmission cable and integrate its installation into the WestConnex road works near Campbell Road. TransGrid engaged with the Sydney Motorway Corporation (SMC), which was established by the NSW Government to deliver the WestConnex project, to discuss the potential for incorporating the transmission cable conduits into the WestConnex design. At that time, SMC had already entered into a contractual agreement to deliver the project. TransGrid coordinated closely with the contractor to develop the designs for the co-location of the transmission cable conduits to examine the feasibility of co-location.

A core requirement of the feasibility assessment was that the conduit co-location should not lead to unacceptable delays to the completion of the WestConnex project. After extensive coordination, an unacceptable potential delay to the WestConnex project completion was identified. In addition to this, the costs quoted for the co-location option would have required a significant increase in the overall cable project budget. As the Powering Sydney's Future project had not yet received regulatory funding and given the then current position of the Australian Energy Regulator that the estimated project budget needed to be reduced, TransGrid would not have been able to commit or justify such funds for the works required for the co-location to proceed.

TransGrid also investigated utilising Campbell Road following the completion of the WestConnex project, however, the design of the WestConnex tunnel works required a bridging structure to be established across Campbell Road. The only feasible method of crossing this structure was to incorporate the transmission cable conduits into a steel beam support system and this level of interfacing could not be undertaken once the WestConnex project was at a later stage. This constraint presented an issue for which no solution could be found to allow co-location in Campbell Road.

TransGrid also investigated an option for co-location with the M4-M5 Link tunnel WestConnex project. This option, which included co-location with the proposed tunnel between Haberfield and St Peters had a number of constraints associated with timing of tunnel construction and completion; and technical integration with the tunnel design and therefore was not feasible.

While co-location with other major infrastructure was not found to be feasible for the project, TransGrid will continue to work with key stakeholders to identify opportunities for infrastructure co-location.

5.3 Project description

5.3.1 Construction approach and methodology

Issue description

Submitters raised the following:

- suggestion that TransGrid liaise with Inner West Council to improve the road profile during pavement reinstatement on Pile Street, Marrickville; and
- concerns about the scale of major project works being undertaken on small streets with a 3-tonne load limit.

Response

TransGrid will work with the relevant roads authority to ensure the requirements for road reinstatement are met.

As outlined in Chapter 7 Traffic and transport of the EIS, heavy vehicles would generally use the arterial road network to travel to/from the work sites and construction laydown areas and would avoid using local residential roads, where possible. While heavy vehicles would follow the routes classified as heavy vehicle routes by Roads and Maritime Services wherever possible, access to local roads will be required during construction. This will however be for short periods of time in any one location. Traffic management and traffic safety procedures and protocols for works on all roads within the project area would form part of the Construction Traffic Management Plan that will be prepared in

accordance with the relevant conditions of consent, the requirements of the *Roads Act 1993* and in consultation with relevant key stakeholders.

5.4 Statutory planning and approval process

5.4.1 Adequacy of assessment

Issue description

Submitters raised the following concerns:

- the EIS is intentionally too long and difficult to read to deter the community from voicing their objections; and
- the EIS is large and complex, not easy to read and not accessible to some people in the community.

Response

The EIS was prepared in accordance with the *Environmental Planning and Assessment Act 1979*, the SEARs and the Environmental Planning and Assessment Regulation 2000. The EIS needs to present adequate information for the NSW Minister for Planning and Public Spaces to make a determination on the project. TransGrid acknowledges that the EIS does contain technical information that is often difficult to translate into lay terms. Therefore, it has supported the development of the EIS with a wide range of community and stakeholder engagement activities to explain the project and the nature of the potential impacts.

The EIS was placed on public exhibition for six weeks, which is longer than the statutory exhibition period of 28 days, to allow more time for the community to read the report and make a submission. During the exhibition of the EIS, a Community Guide to the EIS was also prepared which provided a high-level summary of the EIS and included information on how to make a submission. Hardcopies of the EIS were made available at a range of display locations and USBs were distributed to community members and key stakeholders. TransGrid also provides an interpreter service to interpret questions on the EIS in different languages for community members who speak English as a second language.

TransGrid is committed to ongoing engagement with affected communities and individuals, should the project be approved. The nature and timing of this future engagement is described in **Section 2.0**.

5.5 Consultation

5.5.1 Pre-EIS exhibition

Issue description

Submitter raised concerns that community consultation for the project was not adequate, for example that letter box drops were not effective, particularly in the Croydon Park area, and that property owners should be contacted directly.

Response

Community consultation for the project commenced in late 2016 and is ongoing. During preparation of the EIS and during EIS exhibition, a range of consultation activities were undertaken as described in Chapter 6 Consultation of the EIS and in **Section 2.0** respectively.

In addition to newsletters, postcards, general social media posts and community information sessions, residential properties in Croydon Park were door-knocked on two separate occasions in May and October 2019 and TransGrid ran a geotargeted social media campaign that encompassed the Croydon Park section of the transmission cable route.

5.6 Traffic and transport

5.6.1 Construction impacts

Issue description

Submitter raised concerns about emergency vehicle access during construction.

Response

As outlined in EMM TT7, access for emergency service vehicles would be maintained at all times. Areas of open trench excavation would be temporarily covered with trafficable steel plates in the event emergency access is required.

Issue description

Submitter raised concerns about loss of on-road parking, property access and vehicle access to a local school and child care facility, during construction.

Response

The EIS has considered the potential impacts of loss of on-road parking and property access during construction. The contractor will try to minimise the loss of on-road parking spaces. As outlined in EMM TT2 and TT11, the Construction Traffic Management Plan that will be prepared for the project will detail measures to minimise parking impacts to surrounding receivers as far as possible.

EMMs TT6, LP3 and SE3 also outlines that vehicle access to residential properties will be maintained at all times, where possible. Where restricting access to properties is required to enable construction works, vehicle access will be restored as soon as possible. Where access to a property cannot be maintained, affected owners/occupants will be informed and feasible and reasonable solutions for access to their specific location discussed. TransGrid will continue to consult with educational institutions within the project area about drop-off/pick-up times and how construction in these areas would be managed.

Issue description

Submitter raised concerns about access to the impacted streets by waste collection agencies.

Response

Access for waste collection would be arranged with the local waste collection agency. The contractor will relocate bins to a suitable area for collection that is accessible by the waste collection agency and does not obstruct the work site (refer to Chapter 7 Traffic and transport of the EIS).

Issue description

Submitter raised concerns about disruption of bus services.

Response

The EIS has considered potential disruptions to bus services during construction. As outlined in EMM TT8 and TT9, TransGrid will work with TfNSW and bus operators to ensure that sufficient lead time and comprehensive public notification is provided, regarding changes to bus stops and services, and that alternative arrangements are in place to minimise disruption during road changes. All diversions of bus routes will be agreed with TfNSW and bus operators prior to the traffic management approach being finalised.

Issue description

Submitter raised concerns about reduced vehicle access to sporting fields and reinstatement of public infrastructure (such as roads and footpaths).

Response

Vehicle access to recreational areas, including sporting fields, will be maintained, where possible. Where restricting access is required to enable construction works, this would be for a short duration and vehicle access would be restored as soon as possible.

As outlined in Chapter 4 Project description of the EIS, TransGrid would restore road and footpath surfaces to their pre-existing condition, or as otherwise agreed with the relevant roads authority and/or local council. TransGrid would work with Roads and Maritime Services (now TfNSW) and local councils to ensure the requirements for pavement reinstatement are met.

5.7 Noise and vibration

5.7.1 Construction impacts

Issue description

Submitter raised concerns about potential structural impacts to property from vibration during earthworks.

Response

The potential for vibration during earthworks was considered and assessed in the EIS. The EIS includes measures to ensure no structural damage occurs. Safe working distances for cosmetic damage are outlined in Chapter 8 Noise and vibration of the EIS and vibration offset distances would be confirmed during detailed design. As outlined in EMM NV14, where work within this distance is planned to occur, attended vibration measurements will be undertaken at the work site when work commences, to determine site specific minimum working distances. As a precaution, where practicable, these measurements will be taken at distances outside the minimum working distances to ensure no structural damage occurs and to allow site specific safe working distances to be determined. Vibration intensive work will not proceed within the minimum working distances (recommended or site specific) unless a permanent vibration monitoring system is installed to warn operators when vibration levels are approaching the peak particle velocity objectives as outlined in DIN 4150.

Issue description

Submitter raised concerns about potential noise impacts including:

- sleep disturbance at night;
- from construction activities at night-time, for example, in Marrickville; and
- disturbance to sleeping children during the daytime.

Response

TransGrid acknowledges community concerns regarding potential noise impacts during construction and will continue to consult with the community on noise mitigation measures in accordance with the CSEP.

The EIS has considered the potential impacts of construction noise on residents during the day and night. Construction works would be undertaken during standard construction hours, wherever feasible and reasonable, however some works would be required at night-time due to the requirements of relevant road and rail authorities. Night works would likely be required for works on State and regional roads (such as Edgeware Road and Llewellyn Street), through signalised intersections (such as Enmore Road/Llewellyn Street and Llewellyn Street/Edgeware Road/Alice Street), at special crossings (e.g. Bedwin Road bridge), or for cable jointing works due to safety reasons and/or to limit disruption to road traffic and rail services.

As outlined in EMM NV7, where night works are required in proximity to sensitive receivers, works generating high noise (including the use of rock breakers and diamond saws to cut through pavement) will be scheduled during less sensitive time periods.

An Out-of-hours Protocol will be prepared for the project to evaluate the potential noise impacts of specific out-of-hours works and recommend appropriate mitigations measures and respite periods (refer to EMM NV4 and NV6).

TransGrid will provide prior notice to residents where night works are scheduled and will consult with the community about their specific concerns once the timing and duration of works are confirmed.

EMM NV5 outlines the consideration of respite periods during standard construction hours (i.e. daytime). This will be determined in consultation with affected receivers and may involve amendments to work schedules.

Given the urban context and scale of the project it is unavoidable that receivers in the vicinity of construction activities would experience elevated noise levels. As outlined in EMM NV2, residents and

other sensitive receivers impacted by noise and/or vibration from the proposed works which are expected to exceed the noise management levels (as defined in Chapter 8 Noise and vibration of the EIS) will be notified at least seven days prior to the commencement of the particular activity.

5.8 Air quality

5.8.1 Construction impacts

Issue description

Submitter raised concerns about potential dust impacts from construction at night posing a danger to asthma sufferers.

Response

A number of measures would be implemented to manage potential dust impacts during construction, as outlined in EMM AQ2 to AQ13 (see **Section 6.0**).

The EIS has considered the potential impacts of dust generation from construction activities. Activities with the greatest potential to generate dust include those requiring excavation such as trenching, construction of joint bays and excavating launch and receive pits at underboring locations. The generation of dust depends on local weather conditions, the type of construction activity and the nature of the material to be excavated. The majority of these activities on residential streets would be undertaken during the daytime.

Trenching would occur in a progressive linear manner, with receivers likely exposed for relatively short periods at any given point along the transmission cable route. Spoil would be transported away on covered spoil haulage trucks. Similarly, excavation at joint bays or underboring locations are at discreet locations along the route.

5.9 Electric and magnetic fields

As described in Chapter 10 Electric and magnetic fields of the EIS, the project would include electrical cables primarily buried within roadways and located around 900 millimetres below the ground surface, with the conductor fully contained within a metallic sheath and the electric field component contained within the cable. The electric fields that would be generated by the operation of the transmission cable circuit would therefore be fully shielded and were not considered further in the EMF study for the project. The study therefore focused on the magnetic fields associated with the project. References in responses in this section to EMF should be read as references to magnetic fields only, unless otherwise stated.

5.9.1 Basis of assessment

Issue description

Submitters raised concerns regarding the basis of assessment for EMF, including:

- insufficient information regarding impacts related to long-term exposure to EMF, positioning of the cable circuit in the roadway and how this will affect exposure to EMF, uncertainty of EMF impacts given that the final design is not yet known and will influence the level of EMF exposure and cumulative impacts when the second set of cables is installed in the future;
- reliability of the EMF assessment as there is not adequate historical data to support the findings about personal safety;
- what processes will be put in place to ensure people whose health may be affected in future due to EMF exposure from the project can be suitably compensated;
- concerns that a limited assessment has been undertaken of the different operating scenarios for the cable (such as the maximum rating), which would impact the results of the EMF assessment and could result in exceedances of the recommended exposure levels for the general public in a worst-case scenario;
- the magnetic field levels calculated by the submitter are different (and higher) than what is in the EIS;

- more information should be provided on different potential exposures based on varied operating conditions for the cable and different assessment approaches;
- request for clarification of the term 'temporary exposure' and further assessment of EMF exposure on cyclists (including children) that would frequently use a road containing the cables;
- the EIS does not include specific calculations for EMF exposure at the joint bays;
- clarity requested on how the project can justify that prudent avoidance has been applied when the cable route passes through residential areas and therefore poses a risk to children due to its proximity to residences; and
- questions on whether prudent avoidance has been applied as the location of the cable trench in the middle of a narrow roadway does not allow much distance for EMF reduction.

Response

TransGrid takes the safety of the public and its employees very seriously and acknowledges community concerns regarding the issue of EMF. TransGrid is committed to ensuring the project will operate below the reference levels set by the International Commission on Non-Ionizing Radiation Protection (ICNIRP) of 2,000 mG for general public exposure under all cable operating conditions.

Magnetic Fields and Human Health

Chapter 10 Electric and magnetic fields of the EIS provides a summary of the research conducted for EMF exposure, including that the potential impacts of magnetic field exposure on human health have been the subject of research conducted over the past 40 years. A number of comprehensive reviews of the body of scientific research have been undertaken to assess the potential health effects of exposure to magnetic fields. These reviews include those published by the WHO (2007) and ICNIRP (2010).

World Health Organisation (WHO) guidance confirms no risk to human health has been established from long-term low level magnetic field exposure. The WHO states *"Despite the feeling of some people that more research needs to be done, scientific knowledge in this area is now more extensive than for most chemicals. Based on a recent in-depth review of the scientific literature, the WHO concluded that current evidence does not confirm the existence of any health consequences from exposure to low level electromagnetic fields."* (https://www.who.int/peh-emf/about/WhatisEMF/en/index1.html)

The Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) is a Federal Government body whose responsibilities include protecting the health and safety of people, and the environment, from Extremely Low Frequency (ELF) EMF. ARPANSA have adopted the ICNIRP 2010 *Guidelines for limiting exposure to time-varying electric and magnetic fields (1 Hz to 100 kHz)* for application in Australia.

TransGrid's approach, in addition to ensuring that the magnetic fields are within the ICNIRP reference levels under all cable operating conditions, is in accordance with good industry practice, guidance from the relevant Australian authority ARPANSA, Energy Networks Associations (ENA) and with reference to WHO.

As outlined in Chapter 10 Electric and magnetic fields of the EIS, ARPANSA has stated that:

- *"there is no established evidence that extremely low frequency (ELF) EMF*[7] *is associated with long term health effects"*;
- *"the scientific evidence does not establish that exposure to ELF EMF found around the home, the office or near powerlines and other electrical sources is a hazard to human health"*; and
- *"there is no established evidence that the exposure to magnetic fields from powerlines, substations, transformers or other electrical sources, regardless of the proximity, causes any health effects"*.

[7] References to ELF EMF as quoted from ARPANSA are used interchangeably with the terms 'ELF magnetic fields' or 'magnetic fields'.

Modelling Methodology

The calculation methodology used by EMF subject matter experts to predict magnetic fields from the transmission cable circuit (as shown in the EIS) considers a range of three phase power system factors, such as phase rotation and field cancellation between phases. The calculations have been performed using SES CDEGS, which is considered the most powerful and accurate suite of commercially available grounding (earthing) and electromagnetic analysis software packages on the market.

The calculation methodology used by the submitter to predict magnetic fields cannot be verified and the results are not consistent with the approach and methodology used by the EMF subject matter experts to predict the magnetic fields during operation of the transmission cable circuit.

Predicted Magnetic Fields

The proposed transmission cable circuit would have different trench arrangement and cable configurations along the entire route due to constraints in some sections of the route, such as where space in the roadway is limited by other services and utilities.

EMF for the project has been modelled using a number of cable configurations (i.e flat or trefoil formation) and cable operating scenario being:

- magnetic fields generated during emergency operation (peak loading);
- time weighted average[8] normal operating conditions (as presented in Table 10-2 of Chapter 10 Electric and magnetic fields of the EIS);
- magnetic fields generated at cable bridges;
- magnetic fields generated at joint bays; and
- potential cumulative impacts.

This is consistent with the approach reported by the WHO (2007) to consider peak and time weighted average circuit loadings for multiple transmission cable configurations. The expected peak loading during normal operating conditions would be 480 MVA (or 840 Amps), which is based on the historical peak demand for the inner Sydney area and the forecast for the next 10 years (as outlined in Chapter 2 Strategic context and project need of the EIS).

During rare periods of abnormal system configuration, the cables may need to operate up to their maximum emergency rating of 900 MVA (1,575 Amps) during peak times, for up to three days. This peak value has been used to assess compliance against the ICNIRP (2010) magnetic field reference levels and active implantable medical devices (AIMD) interference level.

The predicted magnetic field levels for the transmission cable circuit for the above cable configurations and operating scenarios, are all within the reference levels of 2,000 mG for the general public and occupational exposure set by the ICNIRP. Further, the cable is not expected to exceed 50% of the ICNIRP public exposure reference levels (ie. levels are expected to be no higher than 1,000 mG).

Exposure to cyclists

Chapter 10 Electric and magnetic fields of the EIS describes instantaneous exposure to magnetic fields being governed by the ICNIRP reference levels. This would include cyclists cycling over the cables in a roadway or at the proposed Bedwin Road cable bridge. Magnetic field exposure to cyclists, be it adults or children, would be below the ICNIRP reference levels for human exposure to magnetic fields.

Joint bays

As outlined in Chapter 10 Electric and magnetic fields of the EIS, preliminary modelling of joint bays was undertaken and showed that although the levels near joint bays would be higher, they would still be below the ICNIRP reference levels. The single circuit flat formation cable configuration has been modelled for the joint bay scenario and the results show that the magnetic field is 50% higher directly

[8] Time weighted average (TWA) considers daily and seasonal variations and TWA is consistent with the approach by the WHO (2007) to assess long-term exposure.

above the joint bay compared to directly over a typical trench. While higher than for the trench, the magnetic field levels in and around joint bays would still be below the ICNIRP reference levels of 2,000 mG for general public exposure and 1,000 mG for older type AIMDs.

The location of joint bays would be determined during detailed design. As outlined in EMM EMF1, a revised EMF calculation will be undertaken once the final cable details (i.e. alignment and configuration) are known, to ensure consistency with the initial assessment undertaken and to confirm that magnetic field levels for the project are still below the ICNIRP reference levels for human exposure. This calculation will cover the entire route including joint bays.

Cumulative Impacts

TransGrid may seek approval in the future to install and operate a second 330kV transmission cable circuit. Preliminary modelling undertaken for when a second 330 kV transmission cable circuit is in operation show that the magnetic field levels are below the ICNIRP reference levels. If a second transmission circuit is required in the future, further assessment of the potential impacts, including potential cumulative EMF impacts, would be undertaken as part of a separate approval.

Prudent Avoidance

Chapter 10 Electric and magnetic fields of the EIS states 'Prudent avoidance' is generally accepted as implementing precautionary measures by adopting practical measures, at modest cost and without undue inconvenience, to reduce people's prolonged exposure to elevated magnetic fields. While no risk to human health has been established from long-term magnetic field exposure, TransGrid has adopted an approach of 'prudent avoidance' for the project in accordance with good industry practice. Taking a prudent avoidance approach has included designing and siting electricity infrastructure to reduce long-term public exposure to EMF. As outlined in EMM EMF2, TransGrid is committed to ensuring the project will operate within the limits set in the ICNIRP Guidelines for limiting exposure to EMF.

5.9.2 Operational impacts

Issue description

Submitter raised concerns about effects of EMF exposure on health and wellbeing including for young children and people with hearing aids due to the location of the cables on narrow residential streets.

Response

The proposed transmission cable route has been identified on the basis that the proposed 330kV transmission cable can be operated within the ICNIRP guidelines in relation to EMF and this is TransGrid's primary consideration. The cable would operate well within the relevant health guidelines, as described in **Section 5.9.1**.

ICNIRP reference levels are relevant to established health effects, independent of the exposure duration. For persons wearing a hearing aid or cochlear implant, there is the standard risk of 50 Hz magnetic field noise occurring, which would not damage the devices or the ear.

While modern AIMDs are expected to be designed with consideration of the current published ICNIRP reference levels for general public exposure, due to differences between manufacturers and countries of origin, it is recommended that any concerned persons consult with their physician. The predicted magnetic fields are also calculated to be below the 1,000mG limit for older AIMDs.

Issue description

Submitter raised concerns that the transmission cables would lead to a significant additional source of EMF in close proximity to people and that the project is not acceptable in a residential area.

Response

The proposed 330kV transmission cable can be operated within the ICNIRP guidelines in relation to EMF as described in **Section 5.9.1**, and this is TransGrid's primary consideration.

Issue description

Submitter is concerned that project cost has been prioritised over community impacts from EMF in determining the preferred cable route.

Response

Route selection and evaluation considers many factors including:

- environmental and land use implications during construction and operation;
- engineering and construction constraints and implications;
- cost implications;
- program implications; and
- potential community and stakeholder impacts, including community concerns about EMF.

Determining the final route balances all these considerations with the aim of selecting an option that presents the least impact overall from a community, environmental, engineering and cost perspective.

5.9.3 Management and mitigation measures

Issue description

Submitters requested the following:

- certainty on what mitigation measures are being committed too;
- that monitoring of EMF be undertaken at residential properties;
- clarity on what actions will be taken if the monitored magnetic field levels are higher than the recommended exposure levels; and
- that EMF monitoring results be made known to residents.

Response

EMM EMF1 to EMF3 are mitigation measures committed to by TransGrid during future stages of the project, should it be approved. This includes ensuring that the magnetic fields generated by the cable during its operation are compliant with the ICNIRP guidelines.

As outlined in EMM EMF3, verification of magnetic fields will be undertaken six months following operations commencing and this information will be provided to the Department of Planning, Industry and Environment. As outlined in EMM SEC6, information about potential EMF levels and the relevant health guidelines will continue to be provided to stakeholders in proximity to the transmission cable route as part of community consultation undertaken for the project.

5.10 Surface water and flooding

5.10.1 Adequacy of assessment

Issue description

Submitter raised concerns that the EIS has not considered the potential impacts of intercepting groundwater on Edgeware Road.

Response

The EIS has considered the potential impacts of intercepting groundwater. Edgeware Road is located over the Botany Sands aquifer. Groundwater levels in this area are between 0.6 and 3 metres below ground level (refer to Chapter 18 Groundwater of the EIS).

In areas where the water table is less than 2 metres below ground level, the trench excavation depth may intercept groundwater and may require temporary dewatering during construction. As outlined in EMM GW1, a Groundwater Management Strategy will be prepared that will outline the requirement for drilling and installation of monitoring wells for baseline groundwater level and water quality monitoring. This additional information will be collected prior to or during detailed design in locations where it is likely that the water table may be intersected. This data will be used to confirm whether and where groundwater control measures or dewatering will be required.

5.11 Land use and property

5.11.1 Construction impacts

Issue description

Submitter raised concerns about lost revenue from short-stay rentals during excavation works as sleep disturbance would make properties unsuitable for renting.

Response

Construction works would be undertaken during standard construction hours, wherever feasible and reasonable, however some works would be required at night-time due to the requirements of relevant road and rail authorities.

While there is the potential for sleep disturbance impacts, trenching and excavation activities will progress relatively quickly along any given street with a typical property is expected to be impacted for about two weeks (refer to Chapter 4 Project description of the EIS).

As outlined in EMM NV4 and NV6, an Out-of-hours Protocol will be prepared for the project to evaluate the potential noise impacts of specific out-of-hours works and to recommend appropriate mitigations measures and respite periods. TransGrid will provide prior notice to residents where night works are scheduled and will consult with the community about their specific concerns once the timing and duration of works are confirmed.

Issue description

Submitters raised the following concerns:

- impacts to buildings from potential soil settlement in future, as a result of the project; and
- potential structural impacts to property due to excavations.

Response

Given the generally shallow nature of trench excavation (up to 1.6 metres deep), the works being largely within the road reserve, and the transmission cables not being underneath residential properties, potential settlement impacts are not anticipated.

Issue description

Submitter queried who would be responsible for compensating property owners for structural damage caused by the project.

Response

The EIS has not identified a risk of structural damage to property from vibration if the construction is undertaken in accordance with the methods and mitigation measures outlined in the EIS. In the event that damage occurs to a property as a result of the construction of the project, the damage will be appropriately rectified. The minimisation and rectification of damage to property during the construction of the project would be the responsibility of the contractor.

Issue description

Submitter raised concern about residents being unable to sell their property during construction and longer-term impacts on property values.

Response

As described in Chapter 4 Project description of the EIS, while the overall construction period is expected to be 24 months, the different construction activities in any one location would be temporary and staged (i.e. not continuous). Areas impacted by construction would be reinstated and/or rehabilitated. Once construction is complete, there would be minimal permanent operational infrastructure that would be visible. It is therefore not expected that the project would have an impact on property values.

5.11.2 Operation impacts

Issue description

Submitter raised concern about their property values, especially as a result of EMF exposure, and considering their location within a heritage conservation area.

Response

Potential impacts to property values are expected to be negligible as the works are short-term with minimal impacts during operation. The non-Aboriginal heritage assessment prepared for the project (refer to Appendix J of the EIS) determined that there are not expected to be any significant impacts on heritage conservation areas.

5.12 Cumulative impacts

5.12.1 Construction impacts

Issue description

Submitter raised concerns about potential cumulative impacts on public space, particularly at construction laydown areas.

Response

The EIS has considered the potential cumulative impacts of the project and other major projects occurring nearby. Significant cumulative impacts with other developments in the vicinity of the project are considered unlikely based on the current understanding of the timing and nature of all the project activities. This would be revisited once the detailed construction program for the project is developed, should it be approved.

Opportunities to further minimise construction impacts from the project would be undertaken during detailed design and construction planning. As outlined in EMM CE2, key stakeholders, including utility operators and developers of projects such as WestConnex and Sydney Metro, will be kept informed of construction progress and scheduling in an effort to minimise cumulative community impacts.

As outlined in EMM SE2, construction laydown areas within private and public reserves and parks will be planned to minimise impacts on existing recreational and sporting infrastructure, including playground equipment, with construction laydown areas located in areas of open space, where possible. Establishment and use of the laydown areas will consider public safety and maintain safe access to recreational areas.

Private and public reserves and parks proposed for construction laydown areas will be returned to their original or improved condition following construction (or as otherwise agreed with the relevant authority).

Access to areas of reserves and parks not utilised for construction laydown areas will be maintained throughout construction.

6.0 Environmental management and mitigation measures

6.1 Updates to the measures presented in the EIS

Chapter 23 Environmental management and mitigation measures of the EIS identified the environmental management measures that would be adopted to avoid, minimise or reduce environmental impacts.

Changes to these measures, as outlined in **Table 6-1**, were made to:

- include a new commitment based on submissions received on the EIS (see new EMM BD18);
- remove commitments (e.g. EMM BD18 and FF2) that are no longer relevant due to a number of proposed project refinements (as described in detail in the Amendment Report); and
- refine commitments to make them relevant to the proposed project refinements (e.g. EMM BD17).

Where new commitments have been added or new text has been added to an existing measure, it appears as bold text. Where a commitment has been deleted or text from the commitment deleted, it appears as strikethrough text.

As one new EMM has been included and two EMMs have been removed, the EMM IDs have been renumbered as outlined in **Table 6-1**.

Table 6-1 Updated environmental management and mitigation measures

Impact	EIS ID	New ID	Measure	Timing
General				
General	GE1	GE1	TransGrid will carry out the construction and operation of the project in accordance with the EIS, Response to Submissions Report ~~(yet to be prepared)~~ and the approval conditions.	Detailed design, construction and operation
CEMP	GE2	GE2	A CEMP will be prepared prior to the commencement of construction. The CEMP will demonstrate an understanding of the environmental objectives and outcomes described within the EIS and the requirements set out in the conditions of approval for the project and any other legislative requirements. It will also document mechanisms for demonstrating compliance with the commitments made in this EIS and the Response to Submissions report ~~(yet to be prepared)~~.	Construction
Environmental Management Representative	GE3	GE3	TransGrid will appoint a suitably qualitied, independent Environmental Management Representative to periodically audit the construction work activities to ensure that all mitigation measures are being effectively applied and that the work is being carried out in accordance with the CEMP and the environmental approval and legislative requirements.	Construction
Training	GE4	GE4	Construction personnel will undergo inductions in accordance with the CEMP and any other training commitments agreed as part of the project approval.	Construction
Approval and permits	GE5	GE5	All necessary approvals, licences and permits will be obtained for the project from the relevant approval authorities.	Detailed design, construction and operation
Traffic and transport				
General traffic impacts	TT1	TT1	Alternative construction methodologies and traffic management approaches will be considered to identify additional measures that may reduce potential impacts.	Detailed design and construction
General traffic impacts	TT2	TT2	A CTMP will be produced for the project that will outline the proposed methodology for managing traffic flow around the work sites, traffic assessment, traffic counts, modelling and/or mid-block capacity assessments to confirm measures to be put in place to manage network performance from lane closures and proposed diversion routes. The CTMP will include effective traffic management measures for the proposed work sites to ensure the construction activities can be undertaken in a safe manner. The CTMP will also consider worker parking requirements and the temporary loss of on-road parking. The CTMP will be supported by TCPs.	Detailed design and construction

Impact	EIS ID	New ID	Measure	Timing
General traffic impacts	TT3	TT3	TCPs will be prepared for each work site. The TCP will graphically show the required traffic control at the work site, which will include, for example, lengths of merge/diverge tapers, location of traffic cones, traffic controllers, warning signage and speed limit sign locations, as required. Each TCP will be prepared by a suitably qualified technician in accordance with the *Traffic control at work sites manual* (Roads and Maritime, 2018) and will comply with the requirements of AS1743.3 *Roads Signs - Specifications*.	Detailed design and construction
Road closures	TT4	TT4	In the event of road closures, diversion routes will be provided along with an assessment of the likely network performance of the proposed diversion. Where required, demand management measures will be considered in consultation with the relevant roads authorities to reduce traffic on key corridors affected by construction activities for the project by directing traffic to other appropriate roads. Diversion routes and demand management measures will be documented in the CTMP.	Detailed design and construction
Active travel impacts	TT5	TT5	Where feasible, reasonable and safe, impacts on active transport (walking and cycling) modes and routes will be minimised by maintaining access around work sites or providing diversion routes.	Construction
Vehicle access	TT6	TT6	Vehicle access to residential and business properties will be maintained at all times, where possible. Where restricting access to properties is required to enable construction works, vehicle access will be restored as soon as possible. Where access to a property cannot be maintained, affected owners/occupants will be informed and feasible and reasonable solutions for access to their specific location discussed.	Construction
Emergency access	TT7	TT7	Access for emergency services vehicles will be maintained at all times.	Construction
Community and stakeholder consultation	TT8	TT8	TransGrid will engage with relevant stakeholders including Roads and Maritime, Transport for NSW (TfNSW), Transport Management Centre (TMC), public transport service providers (e.g. Sydney Trains, Transdev, State Transit Authority), waste collection agencies, local councils and local residents and businesses regarding potential traffic and access impacts and management options, in accordance with the CCF. TransGrid will work with TfNSW and bus operators to ensure that sufficient lead time and comprehensive public notification is provided, regarding changes to bus stops and services and that alternative arrangements are in place to minimise disruption during road changes. Consultation regarding the potential overlap of construction works for the project and other adjacent projects will be undertaken during detailed design to ensure that the works are coordinated, where possible.	Detailed design and construction
Impacts to bus routes	TT9	TT9	All diversions of bus routes will be agreed with TfNSW and bus operators prior to the traffic management approach being finalised; and will consider acceptable routes based on the turning paths of these vehicles.	Detailed design and construction
Construction laydown areas	TT10	TT10	The construction laydown areas will undergo a detailed design to ensure that access/egress is possible for the nominated construction design vehicle, and to ensure that impacts to the road network are mitigated and managed. This design will be presented within the CTMP for the project.	Detailed design and construction

Impact	EIS ID	New ID	Measure	Timing
Parking	TT11	TT11	Workers will be encouraged to travel to the work sites using public/active transport where possible. However, some on-road parking may be required at work sites. The CTMP will detail measures to minimise parking impacts to surrounding receivers as far as possible (e.g. not parking near schools/child care centres during drop off and pick up times or not parking close to sensitive land uses with high on-road parking demand, such as hospitals).	Construction
Noise and vibration				
CNVMP	NV1	NV1	A CNVMP will be developed as part of the CEMP for the project and will include reasonable and feasible safeguards to manage the noise emissions from construction and manage any complaints which may be received. The CNVMP will include the following: • identification of nearby residences and other sensitive land uses; • description of approved hours of work; • description and identification of all construction activities, including construction work sites, equipment and duration; • description of work practices (generic and specific) which will be applied to minimise noise and vibration; • a complaints handling process; • noise and vibration monitoring procedures; • overview of community consultation/notification required (see NV2); and • the Out-of-hours Protocol developed for the project.	Construction
Community consultation/ notification	NV2	NV2	Residents and other sensitive receivers impacted by noise and/or vibration from the proposed works which is expected to exceed the NML (as defined in Table 5-2 and Table 5-3 of Appendix E of the EIS) and/or vibration criteria (as summarised in Table 5-6 and Table 5-7 of Appendix E of the EIS) will be notified at least seven days prior to the commencement of the particular activity. The information provided to the residents and other sensitive receivers impacted will include: • programmed times and locations of construction work; • the hours of proposed works; • construction noise and vibration impact predictions; and • construction noise and vibration mitigation measures to be implemented. Community consultation regarding construction noise and vibration is further detailed in the CCF in Appendix C of the EIS.	Construction
Site inductions	NV3	NV3	All project personnel, contractors and subcontractors will undergo an environmental induction. The induction will at least include: • all project specific and relevant standard noise and vibration mitigation measures; • relevant licence and approval conditions; • permissible hours of work;	Construction

Impact	EIS ID	New ID	Measure	Timing
			• any limitations on high noise generating activities (e.g. use of jack hammering, rock breaking, piling rigs and diamond saws); • locations of nearest sensitive receivers; • construction employee parking areas; • designated loading/unloading areas and procedures; • site opening/closing times (including deliveries); • behavioural practices such as limiting the use of loud stereos/radios on-site and not dropping materials from height or metal items; • public complaints handling procedures; and • environmental incident management procedures.	
Out-of-hours protocol	NV4	NV4	Where feasible and reasonable, construction will be carried out during standard construction hours. However, given that some works will be required to be undertaken outside of standard construction hours, an 'Out-of-hours Protocol' will be prepared as part of the CNVMP. This will evaluate the potential noise impacts of specific out-of-hours works and recommend appropriate mitigations measures such as: • community consultation with highly noise affected receivers; • procedures to determine negotiated outcomes in consultation with affected receivers (e.g. construction scheduling during sensitive periods such as exams where construction is in the vicinity of schools); • specific mitigation measures such as respite periods; and • a monitoring program.	Construction
Respite periods for works during standard construction hours	NV5	NV5	Respite periods during standard construction hours, will be identified in consultation with affected receivers. Respite options will be considered when sensitive receivers are within the minimum working distances for vibration intensive works or are highly noise affected receivers (experiencing noise levels above 75 dB(A)). Respite options will include consideration of amendments to work schedules. Vibration intensive or high noise generating equipment will be used in continuous blocks, not exceeding three hours each, with a minimum respite period of one hour between each block.	Construction
Respite periods for works outside of standard construction hours	NV6	NV6	The need to consider respite periods will be triggered where the $L_{Aeq(15min)}$ noise levels exceed 75 dB(A) at the same receiver after midnight for more than three consecutive nights. Where this level is exceeded, respite periods will be considered in accordance with the Out-of-hours Protocol (refer to NV4).	Construction

Impact	EIS ID	New ID	Measure	Timing
Construction hours and scheduling	NV7	NV7	Where feasible and reasonable, construction will be carried out during standard construction hours. Where required to be completed outside of standard construction hours, in proximity to sensitive receivers, works generating high noise and/or vibration levels (including the use of rock breakers and diamond saws) will be scheduled during less sensitive time periods.	Construction
Noise monitoring	NV8	NV8	A noise monitoring program will be implemented for the duration of the works in accordance with the CNVMP and will focus on the use of high noise generating plant (e.g. jack hammering, rock breaking, piling rigs and diamond saws) and works outside of standard construction hours.	Construction
Equipment selection and placement	NV9	NV9	Equipment selection will consider potential noise and vibration impacts and quieter equipment and/or construction methods will be used where feasible and reasonable. Plant and equipment will: • have an operating sound power level of no more than those listed in the Construction Noise and Vibration Impact Assessment in Appendix E of the EIS; • be maintained and operated in an efficient manner, in accordance with manufacturer's specifications, to reduce the potential for adverse noise and vibration impacts; • be fitted with non-tonal reversing beepers (or an equivalent mechanism); • be throttled down or shut down when not in use; • minimise noise through: - use of residential grade mufflers; - use of damped hammers such as "City" Model Rammer Hammers; and - silencing air parking brakes. High noise generating plant will: • be located so that the offset distance between the plant and adjacent sensitive receivers is maximised as far as possible; and • be directed away from sensitive receivers, where possible to do so.	Detailed design and construction
Construction traffic	NV10	NV10	Potential noise impacts from construction vehicles will be minimised through the following: • traffic flow, parking and loading/unloading areas will be planned to minimise reversing movements within the work sites and at construction laydown areas; • loading and unloading of materials/deliveries will occur as far as possible from sensitive receivers; • shielding loading/unloading areas if close to sensitive receivers, where feasible (i.e. breaking the line of site between the area and the receiver); • fitting delivery vehicles with straps rather than chains for unloading, wherever possible; • selecting construction laydown area access points and roads as far away as possible from sensitive receivers; • locating delivery and haulage routes away from sensitive receivers, where possible; • scheduling deliveries during less sensitive times, where possible;	Construction

Impact	EIS ID	New ID	Measure	Timing
			• limiting the speed of vehicles; • restricting the use of engine compression brakes; and • maximising the storage capacity of construction laydown areas to reduce the need for truck movements during sensitive times (between midnight and 7:00 am).	
Steel road plates	NV11	NV11	The use of road plates will be minimised, where possible. Where required to be used, the plates will be installed in a manner that minimises the potential for displacement by traffic loading and minimises any height difference with the adjacent road surface in order to reduce the potential for impact noise generation from tyres traversing the plates.	Construction
Stationary noise sources	NV12	NV12	Low noise emitting plant and equipment (such as those with built-in shielding and mufflers) will be used wherever possible. Noise generating plant at work sites (such as compressors and generators) will be directed away from and situated furthest away from sensitive receivers, where practicable. Machinery that is not in use will be switched off.	Construction
Shield sensitive receivers	NV13	NV13	Structures will be used to shield residential receivers from noise such as use of hoarding/noise curtains, where practicable, at construction laydown areas and special crossing work sites.	Construction
Building condition surveys and vibration monitoring	NV14	NV14	If vibration intensive equipment is to be used within the minimum working distances for cosmetic damage, then it is recommended that a different construction method with lower source vibration levels is used where feasible and reasonable. Where work within the minimum working distances for cosmetic damage is planned to occur: • attended vibration measurements will be undertaken at the work site when work commences, to determine site specific minimum working distances. As a precaution, where practicable, these measurements will be made at distances outside the minimum working distances to ensure no structural damage occurs and will provide detailed information regarding the transmission of vibration to allow site specific safe working distances to be determined; and • for listed heritage items and houses within Heritage Conservation Areas (HCAs), building conditions surveys will be undertaken. The survey will document the structural condition of these buildings/structures before construction commences and after construction is complete to identify any impacts on historical buildings/structures as a result of the project construction. Building condition surveys will be scheduled in consultation with property owners. Vibration intensive work will not proceed within the minimum working distances (recommended or site specific) unless a permanent vibration monitoring system is installed to warn operators when vibration levels are approaching the peak particle velocity objectives as outlined in DIN 4150. For work scheduled to occur near a building, within the minimum working distance for human comfort but outside the minimum working distance for cosmetic damage, the affected receivers will be notified.	Construction

Impact	EIS ID	New ID	Measure	Timing
Air quality				
General dust and odour impacts	AQ1	AQ1	An Air Quality Management Plan (AQMP) will be prepared for the project as part of the project's CEMP. The AQMP will identify the measures to be undertaken during construction of the project and document the complaints management process.	Construction
Dry surfaces	AQ2	AQ2	Regularly water all exposed surfaces at construction laydown areas (excluding stockpiles) or special crossing work sites when conditions are dry and dusty, through the use of water sprays, sprinkler systems, a water cart or other suitable methods. Frequency would be determined by how quickly the surface dries out again, with higher frequency watering required on hot, dry, windy days.	Construction
Adverse weather	AQ3	AQ3	On days where forecast weather conditions (e.g. high winds) may result in high dust emissions, dust generating work activities may need to be rescheduled or modified. The forecast weather conditions will be included in daily tool box talks and construction planning.	Construction
Stockpiles	AQ4	AQ4	Spoil stockpiles will be covered.	Construction
Drop heights	AQ5	AQ5	Minimise drop heights from excavators when placing spoil into trucks or onto stockpiles to reduce the potential for dust generation.	Construction
Exposed surfaces	AQ6	AQ6	Progressively rehabilitate exposed areas at work sites to limit dust generation.	Construction
Generation of dust from vehicles and plant	AQ7	AQ7	Ensure that all vehicles transporting soils, rock or other materials are covered when entering or exiting the work site.	Construction
Generation of dust from vehicles and plant	AQ8	AQ8	Vehicles and plant will be free of excessive soil, where required, to reduce soil tracking onto public roadways.	Construction
Generation of dust from vehicles and plant	AQ9	AQ9	Provide stabilised site access (where existing site is unsealed), and access points as required.	Construction
Generation of dust from vehicles and plant	AQ10	AQ10	Construction vehicles and mobile plant will use designated haulage and access routes, where practicable, and traffic speeds at work sites will be restricted to limit the generation of dust from vehicle movements.	Construction

Impact	EIS ID	New ID	Measure	Timing
Migration of dust off-site	AQ11	AQ11	If dust is seen to be migrating off-site, the source of the dust will be identified. Additional management and mitigation measures implemented (such as rescheduling the works or water spraying), where required.	Construction
Landfill gas	AQ12	AQ12	Site-specific landfill gas management plans will be prepared for works at locations with landfill gas (including Camdenville Park and Sydney Park) prior to any trenching and excavation. Further site investigations will be undertaken within the project area closest to Arlington Oval and Marrickville Park and where the project traverses Henson Park, in accordance with the *Guidelines for the Assessment and Management of Sites Impacted by Hazardous Ground Gases* (NSW EPA, 2012), to assess the presence and risk of landfill gas. If landfill gas is detected, a site-specific landfill gas management plan will be developed for any excavation works in these areas (also refer to CT9). The plans will be prepared by a suitably qualified landfill gas management specialist. The management plans will include mitigation measures to prevent human health exposure and explosive risks posed by landfill gas and nuisance odours from exposed leachate or landfill wastes. The plans will detail the type and frequency of monitoring required during the works and will outline the triggers that could stop works or require a step up in controls. Controls may include the use of odour suppressant mists and foams and other measures deemed suitable for the local conditions of the site.	Detailed design and construction
Plant exhaust emissions	AQ13	AQ13	Construction vehicles and mobile plant will be maintained in good working condition. Engines will be switched off when not in use.	Construction
Electric and magnetic fields				
Generation of magnetic fields	EMF1	EMF1	A revised EMF calculation will be undertaken once the final cable details are known to ensure consistency with the initial assessment undertaken and to confirm that magnetic field levels for the project are still below the ICNIRP reference levels for human exposure.	Detailed design
Generation of magnetic fields	EMF2	EMF2	The project will operate within the limits set in the *International Commission on Non-Ionizing Radiation Protection (ICNIRP) Guidelines for limiting exposure to EMF* (ICNIRP, 2010).	Operation
Verification of magnetic fields	EMF3	EMF3	Within six months of operations commencing, magnetic field levels will be measured at selected locations near receptors along the transmission cable route to verify that levels are below the ICNIRP reference levels.	Operation
Hazards and risks				
General	HR1	HR1	General hazard and risk management measures for construction of different project components (such as underground cables, special crossings and construction laydown areas) will be included within the CEMP, including: • details of the environmental hazards and risks associated with different construction activities; • procedures to comply with legislative and industry standard requirements; • Work Method Statements;	Construction

Impact	EIS ID	New ID	Measure	Timing
			• emergency procedures for unplanned events; and • training for relevant personnel (including subcontractors) and site inductions.	
Traffic hazards during construction	HR2	HR2	Traffic hazards will be managed through the preparation and implementation of a CTMP. The CTMP will manage access to residences/businesses, the closure of lanes and roads and detours for pedestrians and cyclists. The CTMP will also include measures to make the public aware of changes in road conditions such as erecting warning signs and having traffic controllers on-site. Refer to additional measures in TT1 to TT10.	Construction
Disruption of rail network	HR3	HR3	Construction and maintenance of the cable bridges within heavy rail and light rail corridors will be undertaken during rail possessions planned by the relevant rail network authority or as otherwise agreed with the rail authority.	Construction and operation
Transportation of hazardous materials	HR4	HR4	Hazardous materials will be transported, stored and used in accordance with: • *Work Health and Safety Act 2011* (NSW); • *Dangerous Goods (Road and Rail Transport) Act 2008* (NSW); • Australian Code for the Transport of Dangerous Goods by Road and Rail (National Transport Commission, 2017); and • relevant Australian Standards. Safety Data Sheets will accompany all dangerous goods transported to work sites.	Construction and operation
Spills and leaks of hazardous materials	HR5	HR5	Hazardous material procedures (including procedures for storage, transport and disposal of hazardous materials, spill prevention and management, and the refuelling and maintenance of vehicles/equipment) will be developed and implemented as part of the CEMP, to minimise potential for impacts associated with chemical spills and leaks. Any captured water which is not of a suitable quality for discharge will be disposed of at an appropriately licenced waste facility.	Construction and operation
Unauthorised access	HR6	HR6	All work sites and construction laydown areas will include some form of delineation, barrier/perimeter fencing and signage notifying unauthorised persons not to enter and of the potential hazards at the site.	Construction
Underground utilities	HR7	HR7	Minimise public safety risks such as flooding and fire/explosions from damaging underground utilities by: • undertaking Dial-Before-You-Dig (DBYD) enquiries and consulting with relevant service infrastructure providers, prior to commencement of construction; • undertaking service and utility identification works; • employing non-destructive excavation methods to expose buried services prior to excavation where works are required in close proximity to the utility and there is a high risk of striking that utility; and • protecting utilities prior to any excavation works being undertaken in proximity to the utility where required.	Construction
Bushfire risks	HR8	HR8	Restrict hot works (such as welding or other activities generating heat or sparks) on days of declared catastrophic fire danger **or Total Fire Ban** at the Sydney South substation. **The CEMP for the project will**	Construction

Impact	EIS ID	New ID	Measure	Timing
			include measures to identify any hot work or fire risk work and controls would be put in place to manage any risks.	
Electrical safety	HR9	HR9	During construction, appropriate warning in the form of surface markers and subsurface tape will be installed along the transmission cable route to warn third parties conducting excavations in the area of the presence of the cable circuit. The cable circuit will also be registered on DBYD prior to construction commencing.	Construction
Emergency response	HR10	HR10	If required, the site-specific Emergency Response Manual for the Rookwood Road, Beaconsfield West and Sydney South substations will be updated to reflect the changed conditions and additional requirements that may arise as a result of the project.	Operation
Hazards during operation	HR11	HR11	Maintenance crews will undertake maintenance and repair work in accordance with the requirements of TransGrid's existing Environmental Management System.	Operation
Subsidence and/or frac-out during underboring	HR12	HR12	The risk of subsidence and/or frac-out will be minimised during underboring by: • designing the depth of the underbore around local geotechnical conditions; • appointing a suitably qualified and experienced drilling contractor; and • ensuring contingency plans are in place to deal with drilling fluid in the event of a frac-out.	Detailed design
Frac-out during underboring	HR13	HR13	Modelling of underbores would be undertaken to determine the risk of frac-out. This would include a geotechnical evaluation and construction risk assessment. Proposed construction methods would be evaluated to determine the lowest risk method.	Detailed design
Subsidence during underboring	HR14	HR14	For all rail underbores, a geotechnical settlement analysis is required by the rail authority. This analysis determines the risk of settlement based on the depth of cover of the underbore and the cross sectional area.	Detailed design
Visual amenity				
Design of construction laydown areas and work sites	LV1	LV1	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 HCAs and public open space will prevent visibility of the internal works area.	Detailed design and construction
Night lighting at construction laydown areas	LV2	LV2	Night lighting at 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 adjacent properties at night.	Detailed design and construction
Cable bridge design	LV3	LV3	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

Impact	EIS ID	New ID	Measure	Timing
Landscaping and rehabilitation	LV4	LV4	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
Tree removal and replanting	LV5	LV5	The project will avoid the removal of trees wherever feasible and reasonable. Where avoidance is not possible, a tree replanting strategy/landscape plan will be developed in consultation with the relevant 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 replacement trees will be confirmed by a qualified arborist, in consultation with TransGrid's cable specialists. Trees will be removed at the time of construction if trenching activities impact tree roots to a point where the tree is no longer viable (as determined by the project arborist). No trees will be removed within the parklands of Sydney Park in Alexandria, along Constitution Road in Dulwich Hill and at the Johnson Park Bushcare site in Dulwich Hill (this is consistent with BD~~9~~**10**).	Construction and operation
Sydney Park impacts	LV6	LV6	The final transmission cable circuit will follow Barwon Park Road and existing stormwater infrastructure wherever possible to avoid impacting established trees within or adjacent to Sydney Park.	Detailed design and construction
Biodiversity				
Relocation of resident fauna	BD1	BD1	Pre-clearance survey of trees to be removed will be undertaken by a suitably qualified ecologist to identify/locate active nests in use by native animals. The removal of nest trees will be supervised by a qualified ecologist/licensed wildlife handler. Any fauna that will not disperse independently will be captured and relocated to a suitable location nearby. Prior to any disturbance by construction works, pre-clearance surveys of stormwater culverts and pipes that may be suitable habitat for roosting bats will be undertaken to identify bats for relocation.	Construction
Critical life-cycle events (e.g. breeding or nursing)	BD2	BD2	If active bird nests are identified during the pre-clearance survey, avoidance of vegetation clearing works during late winter/early spring breeding/nesting period will be considered.	Construction
Grey-headed Flying-fox habitat	BD3	BD3	Replanting with potential Grey-headed Flying-fox habitat vegetation will be undertaken within the project area where feasible, and in consultation with local councils.	Construction
Construction footprint	BD4	BD4	No temporary facilities i.e. site offices/toilets/equipment storage will be placed outside of the designated construction laydown areas or work sites. Access tracks to work sites outside of a road reserve will be clearly demarcated.	Construction

Impact	EIS ID	New ID	Measure	Timing
Temporary fencing	BD5	BD5	Work sites outside of the road reserve will be delineated with temporary fencing/barriers along the perimeter to avoid encroachment into vegetated areas.	Construction
Sedimentation of waterways	BD6	BD6	Appropriate controls will be utilised to manage exposed soil surfaces and stockpiles to reduce sediment discharge into waterways, in accordance with the Blue Book (Landcom, 2004). All works within proximity to drainage lines will have adequate sediment and erosion controls. Revegetation of disturbed areas will commence as soon as practicable to reduce the risk of erosion.	Construction
Dust generation	BD7	BD7	Dust suppression measures, as outlined in an AQMP, will be implemented during construction works to limit dust at work sites. Revegetation of disturbed areas will commence as soon as practicable to reduce areas likely to create dust.	Construction
Spread of weeds and pathogens	BD8	BD8	Vehicles, machinery and waste associated with construction will remain within work sites and laydown areas and will not impinge on areas of retained vegetation. Weeds (listed under the NSW *Biosecurity Act 2015*) present within construction laydown areas or work sites will be managed in accordance with the regional priority objectives of the Greater Sydney Regional Strategic Management Plan 2017 – 2022.	Construction
Construction staff training	BD9	BD9	All construction personnel will undertake an environmental induction that will include items such as: • potential or actual presence of threatened species or habitats; • site environmental procedures (vegetation management, sediment and erosion control, exclusion fencing and the prevention of the spread of weeds); • response to environmental emergencies (chemical spills, fire, and injured fauna); and • key environmental project personnel.	Construction
Tree removal and replanting	BD10	BD10	The project will avoid the removal of trees[9] wherever feasible and reasonable. Where avoidance is not possible, a tree replanting strategy/landscape plan will be developed in consultation with the relevant council. 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 replacement trees will be confirmed by a qualified arborist, in consultation with TransGrid's cable specialists. Trees will be removed at the time of construction if trenching activities impact tree roots to a point where the tree is no longer viable (as determined by the project arborist). No trees will be removed within the parklands of Sydney Park in Alexandria, along Constitution Road in Dulwich Hill and at the Johnson Park Bushcare site in Dulwich Hill.	Construction and operation
Cable monitoring for tree impacts	BD11	BD11	Where cable monitoring systems identify a potential impact of tree roots on the operating transmission cable, a qualified arborist will be called on to investigate further. If there is potential for damage to the cables, the tree will need to be removed. Removal will be limited **only** to ~~only~~ trees that are affecting the transmission cable.	Operation

Impact	EIS ID	New ID	Measure	Timing
Tree retention	BD12	BD12	The following will be considered during the detailed design phase to retain trees wherever possible: • review the alignment of the transmission cable circuit to avoid impacting the structural root zone (SRZ) or more than 10% of the tree protection zone (TPZ) where possible, with priority consideration given to heritage areas and high retention value trees; and • locate construction facilities and infrastructure (e.g. site offices, plant/equipment storage) outside of tree protection zones.	Detailed design
Tree protection	B13	B**D**13	The following tree protection measures will be implemented: • all tree pruning must be in accordance with the AS 4373-2007 Pruning of Amenity Trees (Standards Australia 2007) and the Code of Practice for the Amenity Tree Industry (NSW WorkCover, 1998); • all tree work on retained trees is to be carried out by an arborist with a minimum AQF Level 3 qualification in Arboriculture; • trunk, branch and/ or ground protection measures for high retention value trees that extend into or are located in the roadway, will comply with AS 4970-2009 Protection of trees on development sites (Standards Australia, 2009a); and • ground protection will be used within the TPZ and SRZ, where possible, to prevent root damage caused by compaction of the soil and the loss of water infiltration and oxygen to the trees root system. Ground protection may include a permeable membrane such as geotextile fabric beneath a layer of mulch, crushed rock or rumble boards. The location and distribution of roots of trees to be retained will be determined through low or non-destructive excavation methods such as hydro-vacuum excavation (sucker truck), air spade and manual excavation, where required, immediately prior to excavation works commencing.	Construction
Tree monitoring	BD14	BD14	A qualified arborist will be consulted in the event there is a change to the condition of high retention value trees in the project area due to construction activity. A qualified arborist will inspect high retention value trees within the project area for any damage once construction is completed and tree protection measures have been removed.	Construction and operation
Cable installation in key fish habitat	BD15	BD15	DPI Water's *Controlled activities on waterfront land – Guidelines for laying pipes and cables in watercourses on waterfront land* (DPI, 2012) will be used to inform the cable installation at the Cooks River.	Detailed design
Protection of water quality in the Cooks River	BD16	BD16	The following water quality measures will be implemented: • water collected during construction (e.g. during dewatering or surface water inflows to the trench or pits) will be discharged or disposed of in accordance with the *Protection of the Environment Operations Act 1997 and the ANZECC Water Quality Guidelines (2000) for 95% protection level for marine ecosystems;* • the water discharge point will be at a stable point on the bank or across riparian vegetation to allow slowing of water before travelling further downstream. Where feasible, the velocity of downstream flows will not	Detailed design and construction

Impact	EIS ID	New ID	Measure	Timing
			exceed natural seasonal flow velocities. Sediment and erosion mitigation measures will be implemented in accordance with ESCPs; and • contaminated water captured during construction will be disposed of at an appropriately licensed facility.	
~~Habitat restoration and~~ Weed control at the Cooks River	BD17		~~If vegetation is removed along the Cooks River, rehabilitation and revegetation will be undertaken (where not constrained by permanent operational infrastructure) to maintain the connectivity of riparian corridors along the river.~~ Weed control ~~also~~ will be implemented within the project area at the Cooks River, **where required**, to maintain restored areas as weed free.	Construction
~~Offset for mangrove removal~~	~~BD18~~		~~Should any Grey Mangrove at the Cooks River (which constitutes key fish habitat) require removal due to the project, this will be offset in accordance with DPI Fisheries requirements under the *Policy and guidelines for fish habitat conservation and management* (DPI, 2013), to ensure no net loss of key fish habitat~~	~~Construction~~
Light spill impacts on fauna	**N/A**	**BD18**	**In the event that construction works within or adjacent to the Johnson Park bushcare site, Cooks River and Sydney Park are required to be undertaken at night, project lighting will be directed towards work sites and away from stands of vegetation.**	**Construction**
Aboriginal heritage				
Impacts to areas of Aboriginal archaeological sensitivity and/or impacts to Aboriginal sites	AH1	AH1	If impacts to the area of potential Aboriginal archaeological sensitivity at Mildura Reserve, Campsie cannot be avoided, a program of archaeological test excavation will be required to determine the presence or absence of subsurface Aboriginal objects. The methodology for investigating and managing areas of Aboriginal archaeological sensitivity and known Aboriginal sites/objects will be detailed in an Aboriginal Cultural Heritage Management Plan (ACHMP) for the project. The ACHMP will be prepared in consultation with Registered Aboriginal Parties (RAPs) and Department of Planning, Industry and Environment (DPIE). Subject to ACHMP approval by DPIE, this document will guide the management of Aboriginal cultural heritage within the project area throughout the life of the project.	Construction
Site inductions	AH2	AH2	Prior to the commencement of works, all construction personnel will undergo an Aboriginal heritage induction which identifies the general nature of Aboriginal sites and objects, the location of areas of archaeological sensitivity, requirements of the ACHMP (if relevant), procedure for unexpected finds, personnel responsibilities, and safeguards to be implemented to protect and avoid impacts to Aboriginal sites, if discovered.	Construction
Unexpected Aboriginal objects or human remains	AH3	AH3	If unexpected Aboriginal objects or human remains are uncovered in the project area during construction, TransGrid's Unexpected Finds Protocol will be initiated. This includes[10]: 1. All ground surface disturbance in the area of finds should cease immediately when the finds are uncovered and relevant personnel will be notified; 2. If the find is suspected to be human skeletal material, the NSW Police will be contact immediately;	Construction

[10] Unexpected Finds Protocol, TransGrid Aboriginal Heritage Due Diligence Assessment (Document ref: D2018/05672)

Impact	EIS ID	New ID	Measure	Timing
			3. If there is substantial doubt regarding an Aboriginal origin for the finds, then a qualified opinion from an archaeologist will be sought as soon as possible; 4. If a qualified opinion cannot be gained or the identification is positive, immediately notify the following authorities or personnel of the discovery: a. OEH (Environment Line: 131 555); b. Relevant Aboriginal Community Representatives; 5. Immediately notify the following authorities or personnel of the discovery: a. OEH (Environment Line: 131 555); b. Relevant Aboriginal Community Representatives; 6. Facilitate, in co-operation with the appropriate authorities and relevant Aboriginal community representatives: a. the recording and assessment of the finds; b. fulfilling any legal constraints arising from the find(s). This will include complying with OEH directions; and c. the development and conduct of appropriate management strategies. Strategies will depend on consultation with stakeholders and the assessment of the significance of the find(s). Where the find(s) are determined to be Aboriginal Objects, any re-commencement of construction related ground surface disturbance will only resume in the area of the find(s) following the preparation of an ACHMP for the project, if one does not already exist.	
Non-Aboriginal heritage				
Impact on Alexandra Canal and Potts Hill Reservoirs 1 and 2	NAH1	NAH1	Works in the vicinity of Alexandra Canal at Beaconsfield West substation and the Potts Hill Reservoirs 1 and 2 will be managed by the Cultural Heritage Management Plan (CHMP) (refer to NAH6) to ensure that there are no direct impacts on the canal walls or the reservoirs.	Construction
Removal of street trees/plantings at the intersection of Seventh Avenue and Fifth Avenue (Canterbury	NAH2	NAH2	The project will avoid impacts to heritage listed street plantings on Fifth Avenue wherever feasible and reasonable. During construction, manual excavation and monitoring by an arborist, with exclusion fencing used to protect trees from indirect impacts if there are works in their immediate vicinity will be considered. If tree removal cannot be avoided, a tree replanting strategy will be discussed and agreed with the relevant local council, in consideration of the Canterbury Bankstown Tree Management Manual (~~Canterbury~~ Bankstown Council, 2015).	Detailed design and construction

Impact	EIS ID	New ID	Measure	Timing
LEP 2012 Item 55)				
Impacts on the Brick Paving (Marrickville LEP 2011 Item 98)	NAH3	NAH3	The design of the final transmission cable route will avoid the footpath that includes the brick paving that is immediately adjacent to the transmission cable route.	Detailed design and construction
Impact on heritage values of the HCAs from tree removal	NAH4	NAH4	Removal of street trees identified as providing contributory heritage values within HCAs will be avoided where possible. If tree removal cannot be avoided, a tree replanting strategy will be developed in consultation with the relevant local council.	Construction
Damage to heritage structures from vibration	NAH5	NAH5	Minimum working distances will be enforced when working in proximity to heritage structures. This includes: • hand held jack hammers will be used, if needed, at least one metre away from the location of a heritage item; • hydraulic hammers up to 300 kilograms only be used if greater than four metres away from the location of a heritage item; • hydraulic hammers up to 900 kilograms will only be used if greater than 12 metres away from the location of a heritage item; and • hydraulic hammers up to 1,600 kilograms will only be used if greater than 34 metres away from the location of a heritage item. If minimum working distances cannot be maintained during construction, a CHMP will be developed that includes building condition surveys and/or vibration monitoring as per environmental management measure NV14.	Construction
General construction impacts	NAH6	NAH6	A CHMP will be produced for the project as part of the CEMP, to manage any impacts on identified heritage items. The CHMP will: • guide appropriate responses to identified heritage constraints during construction; • define limits to machinery use and construction activity in proximity to heritage structures to avoid vibration impacts; • detail where and when monitoring will be undertaken to ensure no vibration or other indirect impacts on identified heritage items; • define any protectionary fencing required to delineate safe working areas and/or no-go areas in relation to heritage protection; and	Detailed design and construction

Impact	EIS ID	New ID	Measure	Timing
			• include maps showing the location and curtilage of heritage items. A toolbox presentation or project induction will be held with all staff and contractors prior to the commencement of works to make them aware of their responsibilities with regard to avoiding heritage impacts. Once the final design is known, the relevant local councils within the project area will be informed of any anticipated impacts to heritage items.	
Unexpected finds	NAH7	NAH7	In the event that unexpected historic finds are identified during construction, all works will immediately cease at that area. Unexpected finds may include artefact scatters (including glass, animal bone, ceramic, brick and metal), building foundations and earthworks of unknown origin. The following procedure guides the management of unexpected and previously unidentified finds during the course of project works: • all work in the area will cease immediately; • alert the Environmental Specialist to the find; • if necessary, protect the area with fencing; • engage a suitably qualified archaeologist to undertake an assessment of the find/s; • if it is determined the relic is likely to be significant, a Section 146 notification form will be sent with a short letter report to the Heritage Council notifying them of the discovery; • an assessment will be undertaken using the guidelines *Assessing Significance for Historical Archaeological Sites and 'Relics'* (NSW Heritage Branch, 2009); • on the advice of the archaeologist, if necessary, prepare an Impact Assessment with Research Design and Methodology to submit to the Heritage Division along with a Section 140 excavation permit to undertake archaeological works; • undertake the archaeological mitigation in accordance with the prepared documents and any permit/exception issued by the Heritage Division; and • once the site has been mitigated to the satisfaction of the archaeologist and the Heritage Division, works may resume in the area.	Construction
Soils and contamination				
Assessment of excavation areas	CT1	CT1	Soil investigations will be undertaken prior to construction along the project area to: • assess the presence of contamination and risks posed to project workers and the environment, so that appropriate controls can be implemented during construction; • chemically classify the soil *in-situ,* for potential re-use or off-site disposal to licensed landfill or re-use facility in accordance with the applicable land use criteria, Waste Classification Guidelines (NSW EPA, 2014a) or applicable Resource Recovery exemption and order; and • assess for the presence of acid sulfate soils and liming rates, so Acid Sulfate Soils Management Plans (ASSMPs) can be prepared and waste classified in accordance with Waste Classification Guidelines (NSW EPA, 2014a).	Construction

Impact	EIS ID	New ID	Measure	Timing
			A Sampling Analysis Quality Plan (SAQP) will be prepared for soil investigation in accordance with the NEPM (ASC NEPM, 2013). The SAQP will detail: • data quality objectives (DQOs) and data quality indicators (DQIs); • justification of the number, density and location of sampling locations based on the potential for contamination, excavation extent and quantities requiring off-site disposal; • analytical suite and schedule, including contaminants of concern identified; • assessment criteria for on-site reuse or off-site disposal (waste classification); and • sampling and laboratory methodologies, field and laboratory quality assurance and control. Following the completion of the soil investigations a report will be prepared for each construction precinct providing conclusions on waste classification and recommendations for health and environmental controls during construction. The reports will provide clear commentary on the classification of the waste in accordance with the Waste Classification Guidelines (NSW EPA, 2014a).	
Assessment of imported Virgin Excavated Natural Material (VENM)	CT2	CT2	Prior to the backfilling of trenches during construction with VENM, the VENM source(s) will be identified and assessed against the definition of VENM in the Waste Classification Guidelines (NSW EPA, 2014a) and *Protection of the Environment Operations Act 1997* (POEO Act). The VENM source(s) will be assessed by an appropriately qualified contaminated land consultant, which will entail: • identifying whether the current and past activities at the source site that had potential to contaminate the land, whether actual acid sulfate soils (AASS) or potential acid sulfate soils (PASS) is present and that the site is not within an area mapped as containing naturally occurring asbestos; and • undertaking chemical assessment to ascertain that the material is not contaminated. The NSW EPA VENM certificate will be completed and signed by the consultant (or supplier) and provided to TransGrid prior to importation and use of the VENM. The VENM will also be inspected at the work site to check the imported VENM is from the same source assessed.	Construction
Construction laydown areas	CT3	CT3	Limited baseline soil investigations and site inspections will be undertaken for each construction laydown area to manage identified risks during construction. The investigations will include limited sampling to identify and assess contamination in surface soil. A baseline report will be prepared for each construction laydown area. Where contamination is identified, a site-specific management plan will be implemented prior to construction to inform the management of asbestos or chemical contamination in soil while the construction laydown area is in use. Following demobilisation of the construction laydown area a post–construction report will be prepared for each construction laydown area. The post-construction report will compare to the baseline report and confirm whether or not conditions are the same and if remedial works are required to clean up contamination from the project works within the construction laydown areas.	Construction
Contaminated soil	CT4	CT4	Protocols for the management of contaminated soil during construction will be included in the CEMP for all construction works and will:	Construction

Impact	EIS ID	New ID	Measure	Timing
management during construction			• detail requirements for safety controls including the following where required: - air monitoring; - exclusion zones and decontamination; - excavation ventilation; - dust suppression and containment; - odour suppression and monitoring; - personnel protective equipment; - training and supervision; • detail requirements for environmental controls including the following: - sediment and erosion control; - management of surface water runoff around the excavation areas and prevention of surface water entering excavations; - stockpile management and separation; and - materials tracking and records. Sediment and erosion mitigation measures will be implemented in accordance with ESCPs.	
Spoil waste management and transport	CT5	CT5	Spoil which has been assessed as not suitable for reuse or cannot be reused will be classified in accordance with the Waste Classification Guidelines (NSW EPA, 2014a). The spoil will be transported to an appropriate waste disposal facility licensed to receive such waste. Approval will be obtained from the respective landfill facility prior to transport and will require an estimate of the likely volume of waste to be disposed. The following material handling requirements will be implemented for trucks transporting materials off-site: • a licensed transporter will be used to transport material to an appropriately licensed NSW EPA waste facility; • all truck loads will be filled to the correct level and not over filled; • trucks carrying waste materials will be covered prior to exiting the work site and will remain covered until authorised to unload at the destination (NSW EPA licensed waste facility); • trucks will be fitted with seals to ensure that the movement of potentially saturated materials is undertaken appropriately. The integrity of the seals will be inspected and tested prior to commencement of each day's haulage works; • in the event that materials are tracked or spilt outside of the construction zone, soil will be immediately cleaned up in a way that prevents contamination of land, the stormwater or waterways; and • all truckloads and landfill waste tickets/dockets will be tracked and a register completed to reconcile and check spoil has been lawfully disposed. Temporary spoil stockpiles may be stored at select construction laydown areas. As all spoil will be classified in-situ prior to excavation, the stockpiled material will already be classified in accordance with the NSW EPA guidelines. Stockpiles will be kept separate based on their classification. All stockpiles will be tracked in	Construction

Impact	EIS ID	New ID	Measure	Timing
			accordance with protocols within the CEMP for material tracking. Stockpiles will be managed with appropriate sediment and erosion controls as outlined in an ESCP.	
Asbestos management	CT6	CT6	An Asbestos Management Plan (AMP) will be developed for areas identified during pre-construction investigations as containing Asbestos Containing Materials (ACM), areas suspected of containing ACM and to address unexpected finds of ACM during construction. Specifically, protocols will be stipulated for separation, monitoring, validation and clearance of asbestos. The AMP and associated Standard Work Procedures will satisfy the requirements of: • Work Health and Safety Regulation 2011; • the Safe Work Australia Asbestos Codes of Practice and Guidance Notes: - Code of Practice: How to Manage and Control Asbestos in the Workplace; - Code of Practice: How to Safely Remove Asbestos; and - Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibre, 2nd Edition [NOHSC: 3003 (2005)]. An Occupational Hygienist (Hygienist) will be on-site for the duration of the excavation works where ACM has been identified from pre-construction or where unexpected finds of ACM are encountered. The Hygienist will: • undertake air monitoring for asbestos during excavation; • provide on-site visual inspection, identification of asbestos impacted material and clearance of non-asbestos impacted surfaces; and • supervise works to ensure compliance with the AMP and NSW regulatory requirements for asbestos containing material management and disposal. In the event that friable asbestos is detected, a suitably licensed Asbestos Removal Contractor (licensed to undertake friable asbestos (Class A) removal) will be required to undertake and oversee all the asbestos removal and disposal works outlined in the AMP. All persons performing the works will be required to undertake a suitable risk assessment and develop a Safe Work Method Statement (SWMS) for all of their work activities prior to commencing work in ACM impacted areas. Identified ACM will be segregated, managed and disposed of as Special Waste and transported and disposed in accordance with Protection of the Environment Operations (Waste) Regulation (2014). Where more than 100 kg of asbestos waste or more than 10 square metres of asbestos sheeting is transported the NSW EPA online tool WasteLocate will be used. The handling and disposal of asbestos waste will be tracked and recorded.	Construction
Acid sulfate soils	CT7	CT7	ASSMPs will be prepared in accordance with the ASSMAC (1998) guidelines based on the results of the pre-construction investigations for locations within Precinct 2, 3, 4 and 5. The ASSMPs will incorporate the following procedures:	Construction

Impact	EIS ID	New ID	Measure	Timing
			• soil will be treated with lime in accordance with the ASSMP where PASS is not able to be loaded and transported to a landfill licensed to receive untreated PASS within 24 hours of excavation or if AASS are identified and excavated; • exposure of PASS material within an excavated trench or excavation site will be minimised to reduce the potential for oxidation and acid leachate generation; • excavation will be done under dry conditions, where possible using a truck and shovel (tracked excavator) operation and the water table will be lowered within excavation areas, as part of excavation dewatering; • excavated fill will be monitored for colour and leachate quality; • no PASS material will be placed and left at the surface untreated; • soil will be placed into an appropriately bunded treatment area (pads) and treated with a neutralising agent (e.g. lime). Leachate water from the PASS material will be managed and treated to ensure no acid is released to the environment; • leachate generated during the ASS treatment operations will be captured. Any water potentially affected by leachate collecting within the excavation will be treated with hydrated lime or equivalent prior to discharge. Water potentially affected by leachate accumulating within the work site will not be discharged until it meets acceptable water quality standards or collected and disposed at a licensed liquid waste treatment facility; and • PASS materials will be kept separate from non-PASS materials at all times to reduce the volume of material requiring treatment. Acid is transported by water; therefore, excavation works in PASS will be conducted during dry periods (where practical) to minimise the risk of overflow associated with sudden or heavy rain and to allow better control of treated waters for discharge.	
Unexpected finds	CT8	CT8	An unexpected finds procedure will be included in the CEMP. An unexpected find is potential contamination that was not previously identified during this PSI or pre-construction investigations. Project workers will be trained in identifying the following: • soil that appears to be contaminated based on visual and olfactory (odour) observations; • ACM (i.e. either bonded or friable asbestos); • groundwater that appears to be contaminated based on visual and olfactory (odour) observations (including potential hydrocarbon sheens on the water surface, free phase liquids such as petroleum fuel, discolouration etc.); • drums or underground storage tanks (USTs); and • fill containing wastes (e.g. slag, refuse, demolition materials). In the event of an unexpected find: • excavation works will temporarily be suspended at the location of the unexpected find, the environment manager contacted and the area of concern appropriately isolated;	Construction

Impact	EIS ID	New ID	Measure	Timing
			• the area will be inspected by a contaminated land consultant and if required, appropriate sampling and analysis will be undertaken, the sampling works will be documented in a report; • the requirement for additional controls will be assessed by the consultant and implemented by the proponent; and • workplace health and safety and environmental protection requirements will be reviewed, depending on the type of unexpected finds encountered.	
Former landfill management	CT9	CT9	Site-specific management plans for former landfill sites will be required for excavation works in Sydney Park and Camdenville Park. A plan may also be required for Henson Park following the outcome of investigations (see CT1). The development of the plans will include consultation with the relevant councils. Approval will be sought from the NSW EPA in all areas where exhumation of landfill waste is required in accordance with Clause 110A of the *Protection of the Environment Operations Legislation Amendment (Waste) Regulation 2018 (Amendment Regulation).* Where there are existing environmental management plans, such as for Camdenville Park, site-specific mitigation measures outlined in these plans will be reviewed and implemented as required. The plan will be prepared by a contaminated land consultant and occupational hygienist. The plan will specify: • an excavation plan specifying areas classified as per in-situ waste classification and suitability for reuse; • trench ventilation during excavation to prevent the accumulation of landfill gases within the trench (also refer to AQ12); • ambient and in-trench monitoring for landfill gases (methane, carbon dioxide, hydrogen sulfide and carbon dioxide), ammonia and volatile organic compounds; • action levels for evacuation of the work zone where health and lower explosive limit (LEL) levels are exceeded and additional controls to allow work to re-commence once implemented; • exclusion zone around the work area on either side of the trench, including fully fenced security chain mesh fences with bracing, where required; • geotechnical considerations for the base of the trench to mitigate the risk of subsidence of the installed cable; • final capping layer above the concrete cable conduit casing as per the Environmental Guidelines Solid Waste Landfills (NSW EPA, 2016), unless otherwise specified or agreed with City of Sydney ~~Council~~ and Inner West Council: - compacted clay layer at least 600 mm thick, with an in situ saturated hydraulic conductivity of less than 1 x 10–9 metres/s (where subsurface waste either side of the trench is less than; - a revegetating layer from the top of the capping layer to the surface comprising clean soils with 200 mm of topsoil (in landscaped areas); and	Construction

Impact	EIS ID	New ID	Measure	Timing
			• the construction of joint bays, link boxes and sensor pits within former landfill areas will be designed to prevent the accumulation of landfill gases. Inner West Council and City of Sydney ~~Council~~ will be consulted on the design, monitoring and location of the pits within Sydney Park, Camdenville Park, and Henson Park (if required).	
Sydney Park	CT10	CT10	TransGrid will undertake additional investigations at Sydney Park on leachate and methane risks prior to or during construction and will report these findings to the City of Sydney.	Detailed design and construction
Drilling slurry	CT11	CT11	TransGrid will investigate and adopt good practice measures for the management of drilling slurry during horizontal directional drilling, where used, taking into consideration the volume of slurry that will be generated.	Detailed design and construction
Surface water and flooding				
Water quality, soil erosion and sediment control (CSWMP)	WQ1	WQ1	A CSWMP will be prepared as part of the overall CEMP to document the measures required to mitigate and manage potential impacts on soils, surface water and groundwater during construction. The CSWMP will include the following sub-plans and measures: • ESCPs (see WQ2); • where wheel washing is required, wheel wash wastewater will be collected (e.g. through temporary containment and directing to sediment basins or tanks) and disposed of appropriately; • water collected during construction (e.g. during dewatering or surface water inflows to the trench or pits) would be discharged or disposed of in accordance with the *Protection of the Environment Operations Act, 1997 and the ANZECC Water Quality Guidelines (2000) for 95% protection level for marine ecosystems.* Contaminated water captured during construction would be disposed of at an appropriately licensed facility; and • where works are within the riparian zone (40 metres from the top of the watercourse bank) the *Controlled Activities on Waterfront Land Guidelines* (DPI, 2012) would be reviewed and relevant measure included into the CSWMP where appropriate. Procedures and protocols to manage potentially contaminated fill, soil, bedrock, acid sulfate soils and extracted groundwater will be detailed in the CEMP in accordance with conditions outlined in the Preliminary Site Investigation report (refer to Appendix K of the EIS) and the *NSW Acid Sulfate Soils Manual* (Stone *et al*, 1998).	Construction
Water quality, soil erosion and sedimentation (ESCP)	WQ2	WQ2	ESCPs will be prepared as part of the CEMP for transmission cable route work sites, substations and construction laydown areas, in accordance with the Blue Book (Landcom, 2004). ESCPs will be implemented in advance of site disturbance and updated as required as the construction progresses and the work site locations change. Measures in the ESCPs will include:	Construction

Impact	EIS ID	New ID	Measure	Timing
			• construction traffic to be restricted to access tracks, where existing roads cannot be utilised (e.g. through Sydney Park). These access tracks will be clearly delineated and maintained until construction is complete; • where possible, clean water will be prevented from entering excavations by diverting runoff away from earthworks activities; • the extent of ground disturbance and exposed soil will be minimised to the greatest extent practicable to minimise the potential for erosion; • disturbed ground and exposed soils, such as inside trenches or at construction laydown areas, will be temporarily stabilised (e.g. with geotextile) prior to extended periods of site inactivity and permanently stabilised as soon as possible to minimise the potential for erosion; • stormwater flows will be managed to avoid flow over exposed soils which may result in erosion and impacts to water quality. Inside the excavation this may require the use of trench stops; and • rainfall forecasts will be monitored daily during construction and works rescheduled if necessary and as determined by the contractor, to reduce risk of erosion and sedimentation and to minimise the impact of heavy rainfall and flood events.	
Water quality – spills and leaks	WQ3	WQ3	The following measures will be documented in the CSWMP and implemented to mitigate and manage spills and leaks: • areas will be allocated for the storage of fuels, chemicals and other hazardous materials. These areas will be as far away as feasible and reasonable from watercourses, located where flooding during a 20 year Average Recurrence Interval (ARI) event is unlikely, and on an impervious bunded area; • the storage and handling of dangerous goods will be in accordance with relevant guidelines and standards such as the *Storage and Handling of Dangerous Goods Code of Practice* (WorkCover NSW, 2005); • fuel and liquid storage at construction laydown areas will be secured and stored in accordance with the NSW EPA guidelines (Department of Environment and Climate Change NSW, 2007b); • appropriate spill containment and prevention measures will be applied to fuel and liquid storage, where feasible and reasonable; • accidental spills or leaks will be managed through the use of spill containment measures including spill kits. Any contaminated material will be disposed of to an appropriately licenced facility; • re-fuelling of construction plant and equipment will be undertaken using appropriate spill containment measures to mitigate pollution risks from accidental spills or leaks; • refuelling activities will be undertaken at least 100 metres from the nearest watercourse; • a spill response kit will be available on-site at all work sites at all times; • where bulk fuel or other liquid substances are to be brought to a work site, a container specifically designed for that purpose will be used;	Construction

Impact	EIS ID	New ID	Measure	Timing
			• underboring sites will have appropriate stormwater diversions, as well as downstream pollution and sediment control measures to both prevent stormwater entering the excavation as well as to assist with containing any loss of drilling fluid; and • flows of drilling fluid will be visually monitored in accordance with the CSWMP.	
Flooding and water flows (FMS)	FF1	FF1	A Flood Mitigation Strategy (FMS) will be prepared in accordance with the *Floodplain Development Manual* (DIPNR, 2005) for work within flood prone or flood affected land within the project area to demonstrate that the existing flooding characteristics will not be exacerbated. The FMS will be prepared by a suitably qualified and experienced person in consultation with directly affected landowners, DPI-Water, DPIE, Sydney Water and relevant councils. The FMS will be prepared during detailed design and prior to construction. The FMS will identify design and mitigation measures that will: • be considered by the contractor in the development of site-specific flood management plans, including the need to protect plant, staff, materials and earthworks activities from flooding (also refer to FF**2**); • avoid or reduce impacts at adjacent properties; and • not significantly alter surface water flows during construction and operation. The FMS will limit flooding characteristics to the following levels, or else provide alternative flood mitigation solutions consistent with the intent of these limits: • a maximum increase in inundation time of one hour in a 100 year ARI rainfall event; • a maximum increase of 10 millimetres in inundation at properties where floor levels are currently exceeded in a 100 year ARI rainfall event; • a maximum increase of 50 millimetres in inundation at properties where floor levels would not be exceeded in a 100 year ARI rainfall event; and • no inundation of floor levels which are currently not inundated in a 100 year ARI rainfall event.	Detail design
~~Flooding and water flows at Cooks River~~	~~FF2~~		~~The FMS will outline specific measures for the construction of the proposed cable bridge over the Cooks River to minimise impacts associated with impeding surface water flows. This will include:~~ ~~• where possible, construction will take place outside of the floodplain;~~ ~~• construction will not be undertaken during flooding events;~~ ~~• temporary mobile plant will be used during construction that can be quickly removed in the event of a flood;~~ ~~• the crossing will be designed to be elevated above the 100 year ARI floodplain extent (as identified in the FMS), subject to consultation with Sydney Water and the relevant road authority; and~~ ~~• if abutments or piers are required within the floodplain and within an area with significant depth or velocity during flood events, or are likely to affect an overland flow path, then a quantitative flood impact assessment will be prepared for the crossing to meet the requirements of mitigation measure FF1. If these requirements cannot be met, design changes for this crossing may be required. These changes will be discussed with the relevant authorities, where necessary.~~	~~Detail design and construction~~

Impact	EIS ID	New ID	Measure	Timing
Flooding and water flows during construction	FF3	**FF2**	Flood Management Plans (FMPs) will be developed as part of the CSWMP for works within flood prone or flood affected land within the project area. Measures to be detailed in the FMPs to manage potential flood and water flow impacts would include: • the construction of the project will be staged to limit the extent and duration of temporary works in a floodplain; • work inside ephemeral watercourses including, but not limited to the Coxs Creek and other urban drainage network assets, will not be undertaken during or immediately following runoff generating rainfall events when stormwater flows in these watercourses are expected; and • flood emergency response procedures will be documented within the FMPs to make sure construction equipment and materials are removed from floodplain areas at the completion of each work activity or in the event a weather warning is issued for impending flood producing rain.	Construction
Camdenville Park flood detention basin	FF4	**FF3**	Design of the transmission cable route through Camdenville Park will consider the integrity and functionality of the existing flood detention basin.	Detail design
Groundwater				
Groundwater interception	GW1	GW1	A Groundwater Management Strategy will be prepared that will outline the requirement for drilling and installation of monitoring wells and baseline groundwater level and quality monitoring. This additional information will be collected prior to or during detailed design in locations where it is likely that the water table may be intersected. This data will be used to confirm whether groundwater control measures or dewatering will be required. Where it is likely that groundwater will be intersected, estimates of groundwater inflows will be predicted to assess if a groundwater extraction license would be required (that is if 3 ML/year of groundwater discharge was to be exceeded). Outcomes from the GMS will inform the Construction Environmental Management Plan (CEMP). The CEMP, where necessary: • measures to stabilise the excavation, such as installation of temporary shoring in trenches (e.g. sheet piling); • localised temporary dewatering measures to maintain dry working conditions; • measures to maintain groundwater flow conditions to minimise disruption to down-gradient receptors; and • measures to minimise groundwater drawdown to reduce any ground settlement impacts.	Detailed design
Aquifer interference	GW2	GW2	Detailed hydrogeological information (e.g. bore data) will be used to inform the most suitable underboring construction method at select special crossings that will minimise the need for dewatering. Where an aquifer is to be completely penetrated at the underboring special crossings, appropriate controls (such as drainage blankets) will be installed beneath the infrastructure to ensure groundwater flow is maintained	Detailed design

Impact	EIS ID	New ID	Measure	Timing
			to minimise disruption to groundwater flow paths.	
Intersection of contaminated groundwater	GW3	GW3	In areas where contaminated groundwater is identified, measures will be implemented to ensure that the backfill within the excavation does not create a more permeable pathway for migration of contamination.	Detailed design and construction
Dewatering	GW4	GW4	A CSWMP will be prepared as part of the CEMP to document the measures required to mitigate and manage potential impacts on groundwater during construction. The CSWMP would include the following measures: • water collected during dewatering of excavations would be discharged or disposed of in accordance with the *Protection of the Environment Operations Act 1997* and the *ANZECC Water Quality Guidelines* (2000) for 95% protection level for marine ecosystems; and • contaminated groundwater captured during construction will be disposed of at an appropriately licenced facility.	Construction
Waste management				
Waste minimisation	WM1	WM1	The following waste minimisation strategies will be implemented: • use of recycled materials (i.e. recycled content for asphalt and concrete including the use of fly ash) wherever feasible; • use of wastewater or recycled water to reduce potable water demand for construction activities; and • use of modular, precast/prefabricated structures, where feasible.	Detailed design and construction
General	WM2	WM2	Waste will be managed in accordance with the waste hierarchy established in the *Waste Avoidance and Resource Recovery Act 2007* (WARR Act). This will include the: • classification of waste during construction in accordance with the current guidelines; • segregation of waste at construction laydown areas and substations (within appropriate bins) for ease of recycling/reuse; • procurement of materials on an as needed basis to avoid waste due to over-ordering; and • investigating opportunities to reuse materials where feasible.	Construction and operation
Construction waste	WM3	WM3	Waste will be managed (classified, handled and stored) in accordance with relevant state legislation and government policies (including the NSW EPA *Waste Classification Guidelines*). All waste to be disposed off-site will be directed to a waste management facility that is lawfully permitted to accept that type of waste. Records of waste tracking and disposal will be maintained.	Construction and operation
Spoil management	WM4	WM4	The Waste Management Plan developed for the project as part of the CEMP will outline the requirements for spoil management. The plan will identify: • spoil generation activities; • spoil generation location; • spoil management hierarchy;	Detailed design and construction

Impact	EIS ID	New ID	Measure	Timing
			• on-site management, including stockpile sites; • spoil reuse options; • spoil disposal locations; • spoil transport modes and routes; and • material tracking requirements.	
Asbestos waste	WM5	WM5	The disturbance, movement and disposal of asbestos containing materials will be carried out in accordance with the Work Health and Safety Regulation 2011 and other relevant guidelines. The handling and disposal of asbestos waste will be tracked in accordance with the Asbestos Management Plan (refer to CT6).	Construction
Construction wastewater	WM6	WM6	Wastewater not used on-site will be disposed off-site or discharged into the local stormwater system in accordance with the requirements of the POEO Act.	Construction
Spoil reuse	WM7	WM7	Reasonable and feasible options will be investigated to reuse spoil (where it can be achieved safely) in accordance with the POEO Act and WARR Act.	Detailed design and construction
Concrete recycling	WM8	WM8	Opportunities to recycle concrete (i.e. from excavation of concrete roads) will be investigated.	Detailed design and construction
Land use and property				
Property use	LP1	LP1	Agreements will be negotiated with relevant landowners for the temporary use of property during construction and permanent easements over private property during operation.	Detailed design and construction
Traffic and access disruptions	LP2	LP2	Affected landowners/occupants will be provided with advance notification of project construction schedules and changes to access arrangements or traffic disruptions.	Construction
Vehicle access	LP3	LP3	Vehicle access to residential and business properties will be maintained at all times, where possible. Where restricting access to properties is required to enable construction works, vehicle access will be restored as soon as possible. Where access to a property cannot be maintained, affected owners/occupants will be informed and feasible and reasonable solutions for access to their specific location discussed.	Construction
Temporary land use change	LP4	LP4	Construction laydown areas will be reinstated to their pre-existing condition as soon as practicable following the completion of construction, in consultation with the relevant landowner.	Construction and operation
Identification of utilities	LP5	LP5	Further surveys (including pot holing) will be undertaken to confirm the locations of major utilities identified in DBYD. Thermal resistivity assessments will be undertaken to determine the potential for reduced trench widths in order to minimise the need for utility relocation or support/protection measures.	Detailed design

Impact	EIS ID	New ID	Measure	Timing
Disruption of services or relocation of utilities	LP6	LP6	Where services need to be disrupted or utilities relocated, relevant stakeholders will be consulted and affected communities notified.	Detailed design and construction
Utility damage	LP7	LP7	Where works are to be carried out in close proximity to utilities, consultation will be undertaken with the relevant utility provider to determine safety and network integrity requirements.	Construction
Social and economic				
Community consultation	SE1	SE1	Implementation of the project CCF (refer to Appendix C of the EIS) **as part of the project Community and Stakeholder Engagement Strategy and Plan**.	Detailed design and construction
Social infrastructure	SE2	SE2	Construction laydown areas within private and public reserves and parks will be planned to minimise impacts on existing recreational and sporting infrastructure, including playground equipment, with construction laydown areas located in areas of open space, where possible. Establishment and use of the laydown areas will consider public safety and maintain safe access to recreational areas. Private and public reserves and parks proposed for the construction laydown areas will be returned to their original or improved condition following construction (or as otherwise agreed with the relevant authority). Access to community facilities along the transmission cable route and in proximity to construction laydown areas will be maintained at all times unless an alternative solution has been negotiated with the landowner/occupier. Access to areas of reserves and parks not utilised for construction laydown areas will be maintained throughout construction.	Construction
Access and transport	SE3	SE3	Opportunities to enhance pedestrian and cyclist connectivity within the local study area, including design of cable bridges to accommodate pedestrian and cyclist movements will be investigated during detailed design, in consultation with relevant stakeholders. The construction workforce will be encouraged to travel to and from work sites via public transport or use car-pooling to reduce impacts on local parking. Temporary relocation of bus stop facilities will be undertaken in consultation with the relevant road authority, bus operators and TfNSW. The relocated bus stops will be reinstated at their original location as construction works are completed in each location. Vehicle access to residential and business properties will be maintained at all times, where possible. Where restricting access to properties is required to enable construction works, vehicle access will be restored as soon	Detailed design and construction

Impact	EIS ID	New ID	Measure	Timing
			as possible. Where access to a property cannot be maintained, affected owners/occupants will be informed and feasible and reasonable solutions for access to their specific location discussed.	
Business impacts	SE4	SE4	Vehicle access to business properties will be maintained at all times, where possible. Where restricting access to properties is required to enable construction works, vehicle access will be restored as soon as possible. Where access to a property cannot be maintained, consultation will be undertaken with affected landowners/occupants, in accordance with the CCF, to identify appropriate timeframes for restricting access, or to negotiate alternative solutions. Construction activities undertaken in proximity to businesses will maintain visibility of business frontage, associated signage and access points, where possible. Business impacts resulting from changes to amenity or access will be managed in line with mitigation measures identified for other relevant environmental issues.	Construction
Utilities impacts	SE5	SE5	Consultation and construction planning with relevant utility/service providers (including councils, TfNSW, Sydney Trains, ARTC and Roads and Maritime) and measures such as searches of DBYD will be undertaken to minimise the potential for damage or disruption to utilities and services.	Detailed design and construction
EMF impacts	SE6	SE6	Information about potential EMF levels and the relevant health guidelines will continue to be provided to stakeholders in proximity to the cable route as part of community consultation undertaken for the project.	Construction
Sydney Park impacts	SE7	SE7	Construction works within Sydney Park will be undertaken in stages and appropriate diversions for access provided to minimise disruption to park users and the City of Sydney.	Construction
Cumulative impacts				
General	CE1	CE1	TransGrid explore project refinements and opportunities (including construction scheduling) to further minimise impacts on the environment and communities.	Detailed design
General	CE2	CE2	Key stakeholders, including relevant government agencies, councils and developers (including project proponents), will be kept informed of construction progress and scheduling in an effort to minimise community impacts. The frequency and method of this communication will be outlined in the project CEMP and CCF.	Construction
General	CE3	CE3	TransGrid will review the environmental impacts of the project before the start of construction and periodically during construction to identify further opportunities to reduce cumulative impacts. Any potential changes to impacts or mitigation measures will be captured in the CEMP.	Detailed design and construction
General	CE4	CE4	Consultation and construction planning will be undertaken with relevant stakeholders, particularly proponents for other developments within proximity to the project.	Detailed design and construction

7.0 Conclusion and next steps

The NSW DPIE will, on behalf of the NSW Minister for Planning and Public Spaces, review the EIS, this Submissions Report and the Amendment Report for the project. Once DPIE has completed its assessment, an Environmental Assessment Report will be prepared for the Planning Secretary of DPIE, which may include recommended conditions of consent.

The Environmental Assessment Report will be provided to the NSW Minister for Planning and Public Spaces, who will then approve the project (with any conditions considered appropriate) or refuse the project.

A copy of the final Submissions Report and Amendment Report will be made publicly available on the DPIE Major Projects website. The NSW Minister for Planning and Public Spaces determination, including any conditions of consent and the Planning Secretary's Environmental Assessment Report, will be published on the DPIE Major Projects website following determination.

8.0 References

AECOM Australia Pty Ltd (2019a), *Potts Hill to Alexandria transmission cable project – Environmental Impact Statement*

AECOM Australia Pty Ltd (2019b), *Potts Hill to Alexandria transmission cable project – Amendment Report*

Benson DH, Howell J (1994), *The natural vegetation of the Sydney 1:100 000 map sheet*. Cunninghamia 3, 677–787

Department of the Environment (2019a), Regent Honeyeater Conservation Advice: http://www.environment.gov.au/biodiversity/threatened/species/pubs/82338-conservation-advice.pdf

Department of the Environment (2019b), Swift Parrot Conservation Advice: http://www.environment.gov.au/biodiversity/threatened/species/pubs/744-conservation-advice-05052016.pdf

Energy Networks Association (2016), EMF Management Handbook

NSW Government (2011), *State Transit Bus Infrastructure Guide*

NSW Heritage Office and NSW Department of Urban Affairs and Planning (1996), *Archaeological Assessment Guidelines*

Roads and Maritime Services (2018), *Traffic control at work sites – Technical manual version 5.0.*

Specht RL (1970), Vegetation. Pages 44–67 in Leeper, G.W. (ed.), *Australian Environment* (4th edn). (Melbourne University Press, Melbourne)

Tozer MG, Turner K, Keith DA, Tindall D, Pennay C, Simpson C, MacKenzie B (2010), *Native vegetation of southeast NSW: a revised classification and map for the coast and eastern tablelands*. Cunninghamia 11, 359–406

Appendix A

Register of submitters

Issues raised in submissions are grouped into State agencies, councils, organisations, special interest groups and individual community members. Submitters can locate the issues raised in their submissions in the relevant section of the report where these have been addressed. Each submission author has been assigned a submitter identification number based on their submission form number assigned by the NSW Department of Planning, Industry and Environment (DPIE) on receipt of the submission. A submitter can access their submitter identification number by locating their submission on the DPIE Major Projects website[11].

Submitter type	Submitter ID	Submitter name	Section where issues are addressed
State agencies	S-105645	NSW Department of Primary Industries	4.1
	S-105888	NSW Environment Protection Authority	4.2
	S-106780	Transport for NSW	4.3
	S-119345	State Transit Authority	4.4
	S-105396	Heritage Council of NSW	4.5
	S-108247	NSW Rural Fire Service	4.6
	S-108251	Sydney Water	4.7
	S-108244	Biodiversity Conservation Division	4.8
Councils	S-108243	City of Canterbury Bankstown	4.9
	S-108254	Inner West Council	4.10
	S-105311	City of Sydney	4.11
Organisations	S-119347	Ausgrid	4.12
	S-119346	Caltex	4.13
Special interest group	S-105496	Inner West Environment Group	4.14

[11] https://www.planningportal.nsw.gov.au/major-projects/project/9956

Submitter type	Submitter ID	Submitter name	Section where issues are addressed
Individuals	S-104240	Name withheld	5.1.1, 5.2.1, 5.2.2, 5.4.1, 5.5.1, 5.6.1, 5.7.1, 5.9.1, 5.9.3 and 5.12.1
	S-104259	Name withheld	5.1.1, 5.2.1, 5.2.2, 5.4.1, 5.5.1, 5.6.1, 5.7.1, 5.9.1, 5.9.3 and 5.12.1
	S-105921	Name withheld	5.1.1, 5.2.1, 5.2.2, 5.4.1, 5.5.1, 5.6.1, 5.7.1, 5.9.1. 5.9.3 and 5.12.1
	S-107192	Name withheld	5.6.1, 5.7.1, 5.8.1, 5.10.1 and 5.11.1
	S-107199	Name withheld	5.2.1, 5.3.1, 5.4.1, 5.9.1, 5.9.2, 5.9.3 and 5.11.2
	S-107200	Janet Parker	5.1.1, 5.2.1, 5.2.2, 5.9.1, 5.9.2 and 5.9.3
	S-108258	Name withheld	5.2.2 and 5.3.1