Powering Sydney's Future

Potts Hill to Alexandria transmission cable project

Amendment Report

February 2020

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Powering Sydney's Future
TransGrid

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Glossary of terms and abbreviations

Term	Definition
ARI	Average recurrence interval
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.
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.
DPIE	NSW Department of Planning, Industry and Environment
EIS	Environmental Impact Statement
EP&A Act	*Environmental Planning and Assessment Act 1979*
Impact	Influence or effect exerted by a project or other activity on the natural, built and community environment.
kV	kilovolt
LGA	Local Government Area
NSW	New South Wales
the project	Construction and operation of a new 330 kilovolt underground transmission cable circuit between the existing Rookwood Road substation in Potts Hill and the Beaconsfield West substation in Alexandria.
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.
Road reserve	The area comprising roads, footpaths, nature strips and public transport infrastructure (including indented bus bays, bus shelters and bus stop signage).
Sensitive receiver	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.

Term	Definition
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.

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 NSW *Environmental Planning and Assessment Act 1979* (EP&A Act) for the construction and operation of a new 330 kilovolt 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 State Significant Infrastructure 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 Environmental Impact Statement (EIS) for the project (AECOM, 2019a) was placed on public exhibition for six weeks from 11 October to 22 November 2019. TransGrid has responded to submissions from the community and key stakeholders in a Submissions Report (AECOM, 2019b), which is available to view on the NSW Department of Planning, Industry and Environment (DPIE) Major Projects website[1].

As outlined in Chapter 4 Project description of the EIS, the project description and associated assessment presented in the EIS is based on an initial concept design which is subject to refinement as the project design develops.

Subsequent to the EIS being exhibited, TransGrid is proposing a number of refinements to the project. This Amendment Report has been prepared in accordance with the EP&A Act and describes design refinements that:

- identify a preferred option from a range of options assessed in the EIS;
- aim to further minimise environmental impacts;
- address potential design and construction requirements; and
- address issues raised during ongoing community and stakeholder consultation for the project.

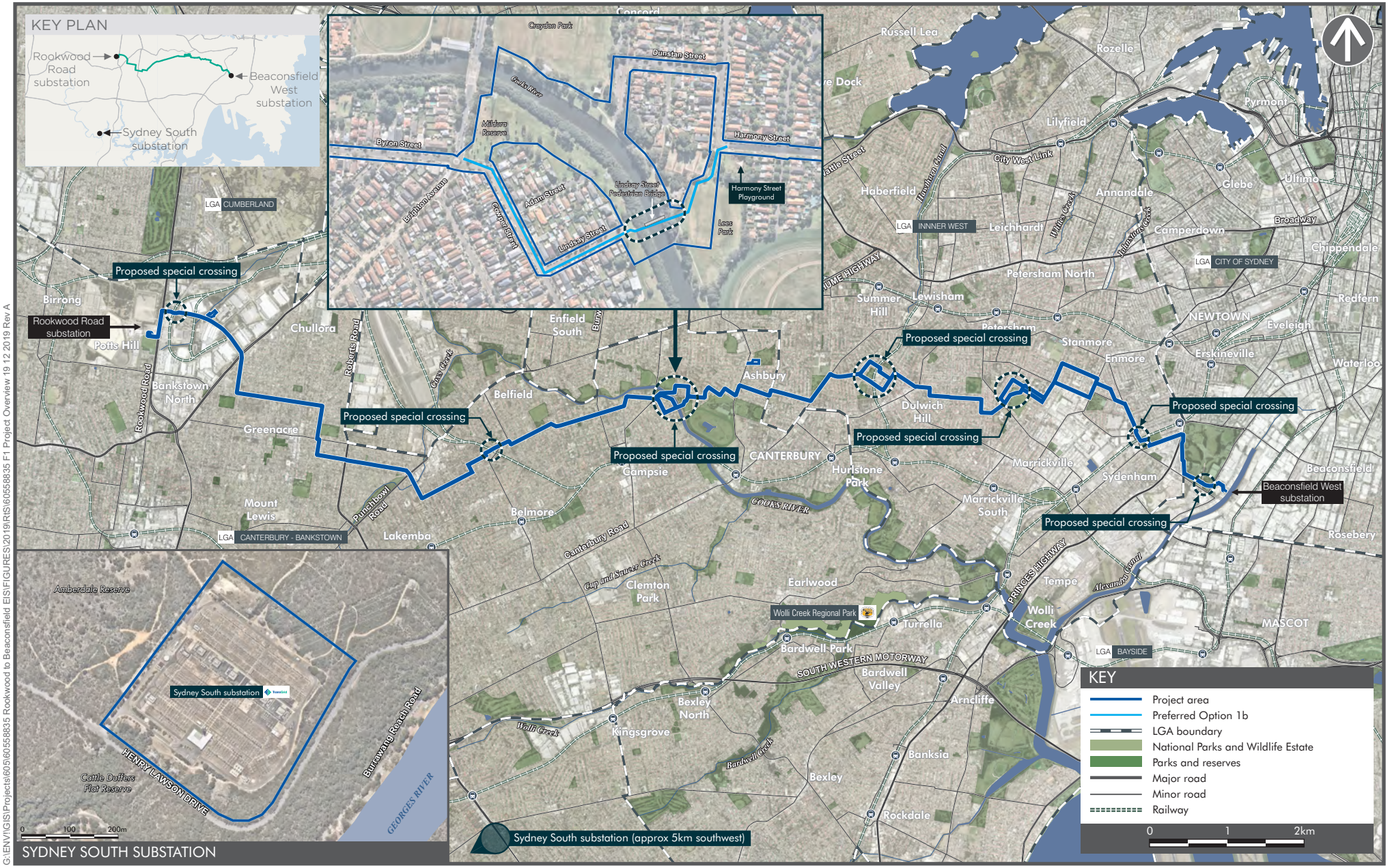
1.2 The project

This Amendment Report considers the following proposed design refinements:

- Option 1b is 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 – refer to **Section 2.1**;
- 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 – refer to **Section 2.2**; and
- identifying potential additional circumstances along the route where the transmission cable circuit could be constructed via underboring methods rather than trenching – refer to **Section 2.3**.

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**.

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



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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 purpose of this Amendment Report is to:

- describe and assess the proposed design refinements and identify any changes to the environmental management and mitigation measures that are proposed to minimise environmental impacts;
- inform key stakeholders and the community of the implications of the design refinements; and
- assist decision-makers to evaluate the project.

This Amendment Report is available to view on the DPIE Major Projects website[2].

A summary of the updated environmental management and mitigation measures for the project including changes associated with the design refinements considered in this Amendment Report is provided in **Section 3.0**.

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

2.0 Design refinements

2.1 Preferred option at the Cooks River – Option 1b

2.1.1 Description

Chapter 4 Project description of the EIS identifies five potential route and construction methodology options for the transmission cable route in the vicinity of the Cooks River at Campsie/Croydon Park. The EIS also identified Option 1b as the preferred option for crossing the Cooks River.

Based on the feedback received from key stakeholders (including Department of Primary Industries and the City of Canterbury Bankstown), ongoing design refinement and opportunities to further minimise potential environmental and community impacts, Option 1b has been confirmed as the preferred option at the Cooks River in Croydon Park/Campsie. This option involves underboring[3] 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. Temporary launch and receive work sites for underboring would be located in the road reserve at Lindsay Street and within Lees Park. The potential impacts of this design refinement are assessed in **Section 2.1.2**.

The other options outlined in Chapter 4 Project description of the EIS for the Dulwich Hill light rail corridor, Henson Park and Marrickville Park, are still under investigation. As the project design develops, a preferred option would be selected for each of these locations.

2.1.2 Potential environmental impacts

Option 1b at the Cooks River in Croydon Park/Campsie was assessed in the EIS and therefore no additional assessment is required. A summary of the potential impacts of this option is presented below:

- temporary construction impacts associated with the underboring work sites including traffic and access disruption, noise, dust generation, and potential contamination of soil and water;
- no removal of mangrove vegetation along the Cooks River during construction, which constitutes key fish habitat; and
- no operational flooding impacts as there would be no permanent operational infrastructure located within the 100 year average recurrence interval (ARI) water level for the Cooks River.

Option 1b at the Cooks River in Croydon Park/Campsie is associated with fewer impacts to the environment and community compared to the other options at this location as assessed in the EIS.

As a result of selecting Option 1b as the preferred option, three environmental management and mitigation measures are no longer relevant to the project (refer to **Section 3.0**). A summary of the updated environmental management and mitigation measures for the project is provided in **Section 3.0**.

2.2 Removal of construction laydown area at Cooke Park, Belfield

2.2.1 Description

Chapter 4 Project description of the EIS identified five potential temporary construction laydown areas required to facilitate construction of the project. Construction laydown areas would be required to store materials, equipment, excavated spoil and provide space for other ancillary facilities such as site offices for a duration of around two years and include:

- 12 Muir Road, Chullora in the City of Canterbury Bankstown LGA;
- Cooke Park, Belfield in the Strathfield LGA;
- Peace Park, Ashbury in the Inner West Council LGA;
- Camdenville Park, St Peters in the Inner West Council LGA; and

[3] Underboring may include various techniques such as thrust boring and horizontal directional drilling.

- Beaconsfield West substation, Alexandria in the City of Sydney LGA.

Ongoing construction planning has determined that the proposed construction laydown area at Cooke Park, Belfield, in the Strathfield LGA, is no longer required to support construction of the project.

Further consideration of potential construction laydown areas would be ongoing during detailed design and confirmed prior to construction commencement. The final selection of laydown areas would be determined by the contractor based on their construction approach.

2.2.2 Potential environmental impacts

The removal of the Cooke Park construction laydown area would result in the following changes to the construction impacts assessed in the EIS:

- no impacts on the park's recreational function or users;
- no impact on surrounding traffic movements from heavy and light construction vehicles accessing the laydown area;
- no impact to adjacent receivers from noise or dust emissions at the site; and
- no impact on visual amenity in the local area from the presence of construction activities, personnel and equipment.

Removal of the Cooke Park construction laydown area would minimise potential impacts to the environment and community as outlined above. The project area would also no longer extend into the Strathfield LGA.

The environmental management and mitigation measures identified in the EIS and in **Section 3.0** remain relevant to the remaining construction laydown areas.

2.3 Additional underboring locations

2.3.1 Description

Chapter 4 Project description of the EIS describes the potential construction methodologies for the project including trenching and underboring (such as thrust boring and horizontal directional drilling) at special crossing locations. The EIS noted that while trenching is the preferred method of conduit installation, should locations be identified during detailed design where underboring would be more suitable (such as at stormwater culverts), that the location specific impacts of this approach would be assessed further.

A number of additional locations are currently being investigated where underboring may be a more suitable construction methodology, such as at various road and stormwater culvert crossings. Design development and identification of underboring locations and feasibility is ongoing and may be refined further to minimise potential impacts.

2.3.2 Potential environmental impacts

A change in construction methodology from trenching to underboring would result in an underboring work site that is typically shorter in length but in place for longer (up to four weeks). This duration includes the set-up of equipment, completion of the underbore and demobilising from the work site. Other activities, such as permanent road restoration (if required), would be the same as for trenching, i.e. completed following cable testing. A typical launch and receive pit at each work site could be around 5 metres wide by 20 metres long and 5 metres wide by 10 metres long, respectively.

Underboring within the road reserve would generally reduce the area of surface disturbance compared to trenching which could result in a reduction in potential traffic disruption and loss of on-road parking. Underboring of State and regional roads may provide greater flexibility in when the works may be carried out (i.e. preparation and set-up being undertaken during standard construction hours rather than at night-time). This could reduce the impacts on nearby receivers.

While the potential for noise, vibration, air quality, erosion, and amenity impacts from underboring roads and stormwater culverts would vary depending on the specific location and nearby receivers, it is expected that the overall environmental and community impacts of underboring would not be greater than for trenching and would be consistent with the assessment in the EIS.

2.3.3 Assessment process

During detailed design, the preferred construction methodology for each infrastructure crossing location would be confirmed. This would be subject to further investigation and environmental assessment in consultation with the relevant road authorities. At locations where underboring is preferred, the contractor would determine the most appropriate method of underboring.

Consistency assessments would be undertaken to determine if the proposed methodology is consistent with potential impacts assessed in the EIS, the environmental management and mitigation measures for the project and the conditions of consent (should the project be approved). The consistency assessment process would be outlined in the Construction Environmental Management Plan which would be prepared prior to construction commencing. The process will also include (where relevant and required):

- identification of additional mitigation measures;
- amendments to environmental management plans; and
- notification to relevant stakeholders and affected community members to confirm the construction method and expected duration and timing.

If the proposed construction approach is not consistent, or the location is outside the project area as defined and assessed in the EIS, a modification application to DPIE may be required. Post-approval modifications are described further in Chapter 5 Statutory planning and approval process of the EIS.

3.0 Updated environmental management and mitigation measures

A summary of the updated environmental management and mitigation measures for the project including changes associated with the design refinements considered in this Amendment Report and submissions received on the EIS, is provided in **Table 3-1**. Changes to these measures, as outlined in **Table 3-1**, were made to:

- include a new commitment based on submissions received on the EIS (refer to the Submissions Report and 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 this 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 3-1**.

Table 3-1 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 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.	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[4] 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	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 will ~~also~~ 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[5]: 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

[5]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 by 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 watertable 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 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.	Detailed design and construction

Impact	EIS ID	New ID	Measure	Timing
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

4.0 Conclusion

In response to ongoing design development, construction planning and community and stakeholder consultation, TransGrid is seeking the following design refinements to the project as described in the EIS:

- Option 1b is the preferred route and special crossing option at the Cooks River in Croydon Park/Campsie;
- removing the proposed construction laydown area at Cooke Park in Belfield, within the Strathfield LGA; and
- identifying potential additional locations along the route where the transmission cable circuit could be constructed via underboring.

The assessment in this Amendment Report has determined that impacts associated with proposed design refinements are generally consistent with impacts described in the EIS and that these potential impacts can be managed through the implementation of the environmental management and mitigation measures described in **Section 3.0**.

5.0 References

AECOM (2019a), *Potts Hill to Alexandria transmission cable project - Environmental Impact Statement*

AECOM (2019b), *Potts Hill to Alexandria transmission cable project - Submissions Report*