

Environmental Management and Conclusions

Section 8

8.1 Introduction

The preceding chapters of this REF describe the potential impacts of the proposed Manildra to Parkes 132kV transmission line and identify a range of measures to mitigate or eliminate these impacts. This section provides a summary of these measures and identifies additional strategies and management tools for monitoring their implementation.

8.2 Environmental Management

The proposed project would require the preparation of a Construction Environmental Management Plan (CEMP). The CEMP will cover all environmental aspects associated with the construction of the proposed transmission line and will include the controls and mitigation measures identified in the approved Review of Environmental (REF), Species Impact Statement (SIS) and Concurrence from the Director General of the Department of Environment and Climate Change (DECC).

TransGrid maintains high environmental standards when undertaking all its activities and has an Environmental Management System accredited to ISO14001.

This system ensures that:

- all work complies with all relevant environmental statutes, regulations and standards;
- environmental factors are taken into account for each activity; and
- regular audits are performed to confirm compliance with environmental policies and standards.

TransGrid will appoint an appropriate independent Environmental Management Representative (EMR) to regularly audit the 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 all environmental approval and legislative conditions. The EMR will report directly to the Manager Central Region or delegate.

The TransGrid Site Superintendent (or delegate) is the reporting channel regarding all environmental incidents, which shall be registered in TransGrid's Environmental Incident Notification System and managed in accordance with 'Environmental Incident Notification: GD EN G3 018'.

To support the environmental management of the project, TransGrid will also prepare:

- a Management Plan detailing TransGrid's internal management approach and their required and proposed actions under the REF, SIS and CEMP; and
- an Operational Environmental Management Plan (OEMP) to assist with post construction management of the line and ensure legislative compliance.

8.3 CEMP Outline

The CEMP outlines the procedures that shall be implemented to address and manage potential environmental impacts associated with construction of the transmission line. The CEMP shall be prepared by the Contractor engaged by TransGrid to carry out the construction works.

Section 8

Environmental Management and Conclusions

The primary purpose of the CEMP is to provide a reference document that ensures that the safeguards and mitigation measures specified as part of project approval are being implemented and monitored. The CEMP shall outline the key steps to be taken by all site personnel to manage the environmental hazards and risks associated with the Project and to effectively minimise the potential for environmental harm. The CEMP will be subject to the Environmental Management Representative's (EMR) review prior to commencement of construction works.

The CEMP shall include the following:

- a description of the proposed construction works;
- an outline of the proposed construction program;
- statutory requirements – licences and approvals required;
- standards and/or performance measures for the relevant environmental issues associated with the construction work;
- a description of what actions and measures will be implemented to mitigate the potential impacts associated with the construction works and ensure that these works will comply with the relevant standards and/or performance measures;
- a description of the procedures to ensure all employees are trained in regards to their responsibilities under the CEMP;
- a description of the procedures that will be implemented to:
 - register, report and respond to any complaints during the construction work; and
 - ensure the operational, health and safety of construction workers.
- a description of the procedures that will be implemented to manage any environmental incidents;
- identify the key personnel who will be involved in the construction works, and provide their contact numbers;
- explain how the environmental performance of the construction works will be monitored and what actions will be taken if any non-compliance is detected; and
- include a detailed:
 - Construction Erosion and Sediment Management Plan;
 - Construction Soil and Water Management Plan;
 - Construction Waste Management Plan;
 - Construction Noise Management Plan;
 - Construction Flora and Fauna Management Plan; and
 - Construction Heritage Management Plan.

A summary of the mitigation and control measures for this project are listed in the following section. The mitigation and control measures related to construction works shall be incorporated in their entirety (as a minimum) into the CEMP in accordance with the approved Review of Environmental (REF), Species Impact Statement (SIS) and Concurrence from the Director General of the Department of Environment and Climate Change (DECC).

Environmental Management and Conclusions

Section 8

8.4 Summary of Mitigation Measures

The adoption of the mitigation measures discussed in **Section 7 Impact Assessment** is an important component of the proposal and reiterates TransGrid's commitment to mitigation and management of the environmental impacts identified in this REF.

Table 8-1 summarises these safeguard measures and sets out the timetable for their implementation. As stated above, mitigation and control measures related to construction will be incorporated in their entirety into the CEMP.

Table 8-1 Summary of Mitigation Measures

Mitigation Measures		Implementation of mitigation measures		
		Design	Construction	Operation
General				
A1	The proponent shall carry out the construction and operation of the proposed 132kV transmission line generally in accordance with the REF.	✓	✓	✓
A2	The proponent shall ensure that all practicable measures are implemented to prevent or minimise any impacts to the environment which may arise from the construction or operation of the transmission line.	✓	✓	✓
A3	The proponent shall ensure that the contractor would prepare and implement a <i>Construction Environmental Management Plan (CEMP)</i> .		✓	✓
Soils and Geology				
B1	The Contractor shall engage suitably qualified staff or contractors to prepare a Soil Management Strategy, including an erosion and sediment control plan, which shall be implemented as part of the CEMP. Soil conservation and erosion prevention measures shall be in accordance with " <i>Managing Urban Stormwater: Soils and Construction Volume 1 (Landcom, 2004) and Volume 2 (DECC, 2008)</i> " (The <i>Blue Book Volumes 1 & 2</i>). The plan shall have a cover sheet that outlines the verification measures employed in preparing the plan as well as the justification of the plan itself.	✓	✓	
B2	Locate the alignment to avoid areas of steep terrain wherever possible.	✓		
B3	Avoid or minimise wherever possible soil exposure generated as a result of construction-related activities, especially on dispersive soil areas.		✓	✓
B4	Divert upslope surface water flow around disturbed construction areas such as stockpiles. This may involve constructing an earth bank or mitre drains around construction zones.		✓	
B5	Roughen the surfaces of compacted, disturbed and exposed soils impacted by construction vehicle movement to increase infiltration rates and slow down sheet flow.		✓	

Section 8

Environmental Management and Conclusions

Mitigation Measures		Implementation of mitigation measures		
		Design	Construction	Operation
B6	Minimise vehicle access routes into working areas. Apply gravel or crushed rock to the driveway area linking the worksite to paved roadways to minimise disturbance and avoid erosion impacts.	✓	✓	
B7	Sediment fences (straw bales or silt fences) to be placed 1 to 2 metres downslope from soil stockpile areas, and all stormwater entry points surrounding disturbed areas to protect other lands and waterways. These measures shall be detailed in the soil management strategy and erosion and sediment control plans.		✓	
B8	Inspect sediment and erosion pollution control structures following rainfall events and repair or replace as required.		✓	✓
B9	Revegetate disturbed areas as soon as possible after construction and no longer than 4 weeks after construction in that area, using young plants wherever possible or seeding with cover crops where more appropriate. For soils situated between AP 41-54, AP 62-75 and AP 78-85 plant species native to the area adapted to thrive in low fertile, acidic environments with the potential of experiencing some levels of aluminium toxicity, should be used.		✓	✓
Hydrology and Surface Water				
C1	Preferential placement of pole structures further than 40m from any surface water feature along the proposed line.	✓		
C2	Appropriate erosion control measures at each pole location (designated work site location inclusive of work pad and laydown area) will be implemented as detailed in Section 7.2 .	✓	✓	
C3	Refuelling or servicing of vehicles and machinery to occur only on level ground using temporary bunding and not within 40m of any prescribed stream or water body.		✓	✓
C4	Park vehicles and machinery carrying fuel/ oil/ herbicide on level ground at least 40m away from prescribed streams or water bodies.		✓	✓
C5	All required access roads to be appropriately constructed (appropriate grading, cross fall, drainage provision and sealing as required) and maintained during construction and operational phases of the project. All works should be undertaken in accordance with Managing Urban Stormwater: Soils and Construction Volume 1 (Landcom 2004) and Volume 2 (DECC, 2008) (The Blue Book Volumes 1 and 2) and DLWC 2004 Guidelines (Appendix G).	✓	✓	✓
C6	Avoid establishment of new watercourse crossings wherever possible. Detailed design and preconstruction inspections across the route will confirm the most appropriate access routes to each worksite and along the line. Access road works will favour upgrading existing roads and tracks.	✓	✓	

Environmental Management and Conclusions

Section 8

Mitigation Measures		Implementation of mitigation measures		
		Design	Construction	Operation
C7	Watercourse crossings would be constructed in accordance with TransGrid specifications and undertaken in accordance with the NSW Department of Primary Industries <i>Policy and Guidelines for Fish Friendly Waterway Crossings</i> (2004) and <i>Why Do Fish Need to Cross the Road?</i>	✓	✓	
C8	TransGrid or its contractor will advise the Minister for Primary Industries of the proposed water crossing upgrades and construction works when final details have been determined and field inspections have been carried out.	✓	✓	
C9	Culvert size (and number) will be matched to the natural stream width to minimise high speed flows which can occur when water is forced through a narrow opening. Provide low flow culverts- ensure culverts provide deep water for larger fish during low flow periods.	✓	✓	
Terrestrial Biodiversity				
D1	As part of the Route Selection process, the proposed alignment has been designed to avoid identified ecological constraints wherever possible.	✓		
D2	An Environmental Management Plan (EMP) will be developed for the construction and operational phases of the proposal and will include measures for the minimisation or avoidance of the impacts on native flora and fauna.	✓	✓	✓
Vegetation Clearing				
D3	Prior to construction, a suitably qualified ecologist will undertake pre-clearance surveys to identify populations or potential habitat for threatened species at exact pole locations and identified access tracks. Where possible access tracks and poles will avoid EECs, identified breeding habitat and populations of threatened flora.	✓	✓	
D4	Vegetation clearing will be restricted to those areas where it is absolutely necessary.		✓	✓
D5	Clearing of vegetation will follow best practice methods for fauna rescue (as per NSW National Parks and Wildlife Service (2001) <i>Policy for the Translocation of Threatened Fauna in NSW</i>).		✓	✓
D6	All potential habitat trees (i.e. with a DBH > 400 mm, or that contain visible hollows) will be clearly marked prior to clearing, and will be left intact where possible. This should be assessed on a case-by-case basis.	✓	✓	

Section 8

Environmental Management and Conclusions

Mitigation Measures		Implementation of mitigation measures		
		Design	Construction	Operation
D7	<p>Vegetation will be cleared using the two-stage approach in areas identified as containing habitat trees (trees with hollows and other habitat features such as nests, drays etc). Areas containing habitat trees will be identified during pre-clearance surveys of pole locations and access tracks. This approach involves the following process:</p> <ul style="list-style-type: none"> Initially all non-habitat trees should be removed, leaving 2 - 3 m wide connections between stands of habitat trees. All habitat trees should then be knocked (gently tapped with plant equipment) once all non-habitat trees have been removed at the end of each day. 		✓	
	<ul style="list-style-type: none"> At least 48 hours after partial clearing, habitat trees will then be carefully removed in the presence of a suitably qualified ecologist, fauna rescue personnel or certified wildlife handler and they will guide the plant equipment operators on the best manner to fell habitat trees (eg. what side to fell them to), so that habitat resources can be quickly and easily checked for fauna once the tree has been felled. 			
D8	<p>Where feasible all fauna habitat features such as logs and tree hollows, known as coarse woody debris (CWD), will be relocated to adjacent woodland. The placement of CWD debris will follow the relocation criteria established by DECC.</p>		✓	✓
D9	<p>Appropriate nest boxes (small, medium and large with a range of different size entry points) and/or artificial bat roosts on a 1:2 ratio will be used to replace all removed hollows per habitat tree. It is recommended that a nest box location and installation plan be developed as a part of the CEMP or the fauna management plan, to ensure that the appropriate nest boxes are used to suit the types of fauna using the area and suitable locations are utilised.</p>		✓	✓
D10	<p>All noxious weeds identified within the alignment and associated work areas will be controlled as per the most recent information available from the NSW Department of Primary Industries. Specific management strategies for any noxious weeds identified will include:</p> <ul style="list-style-type: none"> the application of a registered herbicide, and/or mechanical removal prior to seed set. All parts of the plant must be completely removed to prevent regrowth. The removed material must be disposed of in a manner that will prevent the reestablishment of the plant from either seed or vegetative means. 		✓	✓
D11	<p>At locations where there is a risk of construction works resulting in weeds or weed material being spread, ensure vehicles and machinery brought to the work site have been cleaned to prevent weeds being introduced.</p>		✓	
D12	<p>Where appropriate, regeneration of native vegetation within the easement will be carried out to reduce edge effects. All planting will use plants from local seed stock. Re-establishment of native vegetation communities will reduce the potential for invasion by noxious weeds.</p>		✓	

Environmental Management and Conclusions

Section 8

Mitigation Measures		Implementation of mitigation measures		
		Design	Construction	Operation
D13	Where practical, in EECs or threatened species habitat, transmission line easement clearance practices will allow for restricted clearing. Where statutory clearance requirements allow and it is technically possible, bands of understorey vegetation will be retained within the alignment. Intact habitat features such as hollow logs will be placed in these bands of vegetation.	✓	✓	
Fragmentation and Edge Effects				
D14	In densely vegetated areas, temporary fences will be used to minimise disturbance to adjacent vegetation.		✓	
D15	Wherever possible, poles and access tracks will be located such that disturbance to water bodies would be minimised.	✓	✓	
D16	Where possible, construction machinery will be parked in cleared or disturbed areas away from waterways and other sensitive areas.		✓	✓
D17	Stockpiling of material will avoid native vegetation where possible		✓	✓
D18	Construction activities will be managed to ensure waste material is disposed of off site at an appropriate waste facility, in an appropriate manner		✓	✓
D19	Soil erosion and sedimentation controls in accordance with the soil management strategy and erosion and sediment control plan (noted in Table 7-2) will be implemented prior to vegetation clearing work commencing in an area.		✓	✓
D20	Access will be restricted in sensitive areas of the alignment (e.g. in areas of EEC and within threatened species habitat) during the construction phase by the installation of fencing and signs surrounding such areas.		✓	
D21	Native locally endemic plants would be used for any revegetation works.		✓	✓
Fauna Management				
D22	Mitigation measures would be implemented to avoid mortality of animals during clearing, ensure the protection of nesting habitat, promote long-term connectivity within the landscape and control feral predators where necessary.		✓	✓
D23	Ecologists will work closely with TransGrid or its construction contractor to further identify breeding habitat for affected species, and where possible, access tracks and pole locations will avoid these areas.	✓	✓	✓
D24	Pre-clearing surveys will be conducted to identify any nesting and breeding habitat for fauna within the alignment. Details for this will be developed as part of the Fauna Management Plan.		✓	
D25	Clearing of vegetation will follow best practice methods for fauna rescue, including relocation of rescued fauna and the involvement of wildlife specialists in the process.		✓	

Section 8

Environmental Management and Conclusions

Mitigation Measures		Implementation of mitigation measures		
		Design	Construction	Operation
D26	In areas where embedded or rock outcrops occur, care would be taken to avoid removal of rock. Where unavoidable, a suitably qualified ecologist or certified wildlife handler will be present for fauna rescue and translocation.		✓	
D27	Any rescued fauna will be transferred to appropriate areas within adjacent habitat or placed in the care of WIRES or other certified wildlife rescue organisations within the local area, if injured.		✓	✓
Nesting Resources				
D28	Where possible these nesting resources would be placed intact in adjacent vegetation, outside of the alignment to provide ground habitat. A range of nest boxes will be installed in adjacent habitat to provide habitat for hollow-nesting species.		✓	✓
Connectivity				
D29	Where practical in EECs or threatened species habitat, bands of understorey vegetation should be retained within the easement. Habitat features such as hollow logs will be placed in these bands.	✓	✓	✓
D30	Treeless gaps of more than 75m pose a significant barrier to the movement of Squirrel Gliders. Glider poles will be placed at 20m intervals (based on an average glide distance of 32m) where the proposed transmission line would fragment existing habitat by more than 80m. Location of glider poles can be determined during pre-clearance surveys of pole locations and access tracks by an ecologist. Poles would avoid interference with the transmission line and be positioned so they connect areas of good foraging habitat.	✓	✓	✓
Ongoing monitoring				
D31	Ongoing monitoring of any flora and fauna management measures will be undertaken for a minimum period of five years. Monitoring will aim to determine the short and long term impact of management strategies and feed directly back into management of the proposed easement. The details of the monitoring program will be included in the Operational EMP for the proposed transmission line. This Operational EMP would be prepared prior to the completion of construction works.		✓	✓
Indigenous and European Heritage				
E1	Consideration and assessment of portions of the proposed alignment and associated access tracks not already assessed will be undertaken prior to any preconstruction or construction activities in accordance with the approach outlined in Section 8 Environmental Management and Conclusions .	✓	✓	
E2	Once the pre-construction assessment is complete, it is recommended that TransGrid apply for a whole of development AHIP permit at the project outset, to cover all monitoring, test/salvage excavation and partial/full site destructions. This will streamline the permit application process, saving time and the unnecessary duplication of written material.	✓	✓	

Environmental Management and Conclusions

Section 8

Mitigation Measures		Implementation of mitigation measures		
		Design	Construction	Operation
E3	Following the pre-construction assessment - pole sites/ laydown areas and access tracks around known sites will be avoided if at all possible. A suitable curtilage around each recorded site must be determined so as to ensure its protection during both the short term construction phase of development and in the longer term use of the area.	✓	✓	
E4	An appropriate curtilage will be delineated around sites to be avoided using a highly visual physical barrier (e.g. 1m high orange roadwork fencing). This will ensure all sites could be easily identified and protected from inadvertent machinery impacts.	✓	✓	
E5	Should sites be in areas where tracks are required, mitigation will come in the form of protecting sites from the impacts of vehicles through the use of geofabrics, matting and materials imported to cover site areas for the construction period.	✓	✓	
E6	If impact is unavoidable then an Aboriginal Heritage Impact Permit – (AHIP) may be applied for from the NSW DECC. Approval will depend on the assessed significance of the recorded sites. Consultation with the Indigenous community as per the DECC Interim Community Consultation Guidelines is required for all AHIP applications. Sites of moderate to high significance and/or potential may require either test or salvage excavation, or more detailed recording. Sites of low significance may have an AHIP approved with no further archaeological assessment being required, or with an approved monitoring programme.		✓	✓
E7	The construction team, sub-contractors, machine operators and truck drivers will undergo site induction concerning cultural and non-Indigenous heritage issues, prior to working on the site. This induction will inform workers/contractors of the location of nearby sites, and of their legislative protection under Section 90 of the NSW <i>National Parks and Wildlife Act 1974</i> and the <i>Heritage Act 1977</i> . Induction shall be undertaken by an individual who has a good working knowledge of Indigenous sites and of the legislation protecting them. These inductions will be recorded in a register, with all those present signing their complicity with these guidelines.		✓	
E8	As part of the detailed design phase, TransGrid and its Contractors will attempt to conserve the identified heritage resource (Group 1 sites) within project design and engineering parameters, and to avoid where possible impacts to within 200 m of major waterways and 100 m of minor waterways where possible.	✓	✓	

Section 8

Environmental Management and Conclusions

Mitigation Measures		Implementation of mitigation measures		
		Design	Construction	Operation
E9	Should any previously unidentified 'relics' or other Aboriginal sites (such as burials) be uncovered during the course of construction, work in that area will cease and the DECC Western Regional Archaeologist (Dubbo Office), and the Peak Hill and Orange Local Aboriginal Lands Council will be contacted to discuss how to proceed.		✓	✓
E10	An appropriate curtilage will be delineated around any identified non-indigenous heritage locations (including the possible Cobb & Co. staging location) to ensure no inadvertent impacts occur. Should any previously unidentified archaeological finds (non-indigenous heritage) or evidence be uncovered during the course of construction, work in that area shall cease and advice obtained from an archaeologist on how to proceed.		✓	
Visual Amenity				
F1	General alignment - a careful and considered route selection process has been carried out to avoid sensitive receptors and loss of existing vegetation wherever possible (refer Route Selection Report provided in Appendix A).	✓		
F2	Where practical and possible, strategically locating poles to minimise potential visual impact (e.g. avoiding, where possible, skyline views) and maximum setback from road and railway line corridors.	✓		
F3	Selection of suitable pole design and pole component materials with low reflective properties.	✓		
F4	Selection of materials with low reflective properties for conductors and insulators.	✓		
F5	Selection of suitable storage areas for construction materials or plant with minimum visibility from residences and roads with screening where necessary.	✓	✓	
F6	Excess material from the pole foundation would be spread evenly on the surface around the pole structure. Any excess soil material unsuitable for surface spreading in the location of excavation for poles or access tracks, should be taken of site and disposed of at a licensed facility.		✓	
F7	Strategic tree or shrub planting between the receptor and the transmission line. Tree planting will only be undertaken where it is determined by a visual assessment to provide benefit and in consultation with the landowner and TransGrid.		✓	✓
Traffic and Transport				
G1	Vehicle movements would be limited to the designated route where no loss in level of service would be caused by the project	✓	✓	✓
G2	A number of access tracks require upgrading. The use of existing tracks and the construction of new tracks will be negotiated with individual property owners	✓		
G3	Truck drivers will drive in a safe and responsible manner at all times to reduce the risk of accidents occurring		✓	✓

Environmental Management and Conclusions

Section 8

Mitigation Measures		Implementation of mitigation measures		
		Design	Construction	Operation
	Noise and Vibration			
H1	Carrying out all construction works during the standard daytime construction hours. Close consultation with the affected community is essential where construction works are proposed outside normal working hours.	✓	✓	
H2	Scheduling construction to minimise the multiple use of the most noisy equipment or plant items near noise sensitive receptors.	✓	✓	
H3	Strategic positioning of plant items to reduce the noise emission to noise sensitive receptors, where possible.	✓	✓	
H4	Carrying out maintenance work away from noise sensitive receptors, where practicable.		✓	✓
H5	Awareness training of staff and contractors in environmental noise issues.	✓	✓	✓
H6	Minimising the use of horn signals and maintaining to a low volume. Alternative methods of communication should be considered.		✓	✓
H7	Avoiding any unnecessary noise when carrying out manual operations and when operating plant.		✓	✓
H8	Switching off any equipment not in use for extended periods during construction work		✓	
H9	Restricting heavy vehicles' entry to site and departure from site to the nominated construction hours.		✓	
H10	Should any unexpected construction activities occur which could potentially generate significant noise not described in this report, monitoring is recommended to ensure equipment noise emission levels do not deteriorate.	✓	✓	
H11	Restricting blasting to the period between 10 am and 3 pm.		✓	
H12	Monitor initial blasts to develop blast site laws, optimise further blasts and confirm blasting predictions.		✓	
H13	Where noise level exceedances cannot be avoided, consideration should be given to applying time restrictions and/or providing quiet periods for nearby residents.	✓	✓	
H14	Community consultation with local residents and building owners will be undertaken to assist in the alleviation of community concerns. Previous experience on similar projects has demonstrated that affected noise sensitive receptors may be prepared to endure higher construction noise levels for a short duration if they have been provided with sufficient warning in the place of intermittent but extended periods of construction noise at lower levels.	✓	✓	✓
H15	Maintaining a suitable complaint register. Should noise complaints be received, undertake noise monitoring at the locations concerned. Reasonable and feasible measures would need to be implemented to reduce noise impacts.	✓	✓	✓

Section 8

Environmental Management and Conclusions

Mitigation Measures		Implementation of mitigation measures		
		Design	Construction	Operation
Air Quality				
I1	Reduce vehicle speeds when in the vicinity of residences to minimise the generation of nuisance dust		✓	
I2	As work is completed along the line, disturbed areas will be progressively revegetated or otherwise rehabilitated in accordance with the erosion and sediment control procedures in the CEMP		✓	
I3	Dust awareness training will be provided during induction of all construction personnel		✓	
I4	All vehicles to be used must be properly maintained to avoid smoky exhaust emissions		✓	✓
I5	Burning of vegetation shall be carried out only with the permission of the local council and local fire authority (Rural Fire Control Centre or NSW Fire Brigade) and in accordance with the Rural Fires Act 1997 and all Regulations thereunder and any necessary permits shall be obtained.		✓	✓
I6	Open consultation with property owners along the line will be maintained; information about scheduling will be provided to residents; procedures to respond to community complaints through investigation, monitoring, corrective action and feedback will be established.		✓	✓
Waste Recovery and Utilisation				
J1	Develop and implement a Waste Management Plan in accordance with TransGrid's Waste Management policy (GD EN G3 023) and ensure all personnel are advised of the waste management and disposal procedures outlined, prior to the commencement of works.	✓	✓	
J2	Recycling targets will be included in the Waste Management Plan	✓		
J3	Minimise construction waste by accurately calculating materials brought to the site and limiting materials packaging	✓	✓	
J4	The waste must be stored in a manner so as to avoid contaminants entering waterways and the possibility of migration off-site.	✓	✓	✓
J5	Separation of materials using designated and labelled bins at the site to collect nominated materials		✓	
J6	Construction wastes suitable for recycling will be stored in labelled, sealed and covered skips prior to removal from site		✓	
J7	Waste skips/bins will be collected by a licensed contractor on a regular basis and transported for disposal to a recycling facility or licensed landfill as appropriate		✓	
J8	Staff carrying out the construction works will record the types, quantities and destinations of all waste material removed from site		✓	

Environmental Management and Conclusions

Section 8

Mitigation Measures		Implementation of mitigation measures		
		Design	Construction	Operation
	Socio-economic			
K1	Maintain the public consultation strategy in order to address concerns from affected lot holders and the wider community throughout all stages of the project.	✓	✓	✓
K2	Compensatory process; the proponent has been engaged in negotiations with individual property owners who would be affected by the construction.	✓	✓	

8.5 Pre-Construction Design and Environmental Survey Works

During on-ground ecological and cultural heritage surveys undertaken for the REF, the locations of a number of the intermediate pole locations or on-easement access tracks will have already been surveyed. For example, where access was granted to a land parcel for cultural heritage surveys, the survey was conducted along the entire length of the alignment and therefore would have encompassed the location of intermediate poles or on-easement access in that land parcel. Similarly, biodiversity surveys have encompassed the entire length of the alignment between a number of angle positions, and therefore would have encompassed the intermediate pole locations and on-easement access track locations. **Table 7-1** of the SIS identifies areas where further biodiversity surveys are required along the easement.

Whilst the easement has been finalised and angle position locations have been determined, there remains some flexibility in the final location of intermediate poles and of the access tracks to them both within and external to the 45m wide easement. The location of these poles and tracks are still to be determined and may not have been subject to on-ground cultural heritage or biodiversity surveys undertaken to date. Also, some areas of the alignment were not surveyed due to access restrictions or time constraints.

The process outlined below for determining the location of intermediate poles and access tracks has been designed to maximise the avoidance of environmental constraints. It incorporates a management strategy developed to ensure that environmental assessment is undertaken of the areas that will be impacted and that have not yet been subject to on-ground surveys as part of this REF.

8.5.1 Determining the Location of Intermediate Poles and Access Tracks

The following general principles, strategies and approaches have been applied throughout the route selection process to date and will be applied in the selection of the location of intermediate poles and access tracks:

1. **avoidance of impact** - by altering the proposal or locating poles or tracks outside areas of known environmental constraints.
2. **minimise impact** – determine pole and track locations in order to minimise impact and disturbance to the environment.

The specific principles and approaches to be taken in each case will be as follows:

Intermediate Poles

The detailed line design process will identify the position of intermediate poles. The location of known environmental constraints identified as part of the assessments undertaken for the REF will be considered and

Section 8

Environmental Management and Conclusions

the line design process will avoid constraints wherever possible. Upon completion of the line design, the pole locations will be surveyed and pegged on site.

Access Tracks

The identification of the path of the access tracks to the pole locations will then be determined by site assessments involving the Contractor, TransGrid and the Biodiversity and Cultural Heritage specialists as required.

The determination of the location of access tracks will take into consideration the location of identified environmental constraints and attempt to avoid them wherever possible.

The selection of access track paths will also aim to minimise disturbance to the overall environment and will be in accordance with *Managing Urban Stormwater, Soils and Construction, Volume 2C Unsealed roads (DECC, 2008)*. The principles for selecting the location of access tracks detailed in this document include:

- minimise disturbance to soils and vegetation;
- minimise the number of watercourse and drainage line crossings;
- avoid steep cross slopes; and
- take advantage of topographic opportunities, such as locating the track on high ground to minimise drainage requirements, and following the contour of the land to reduce requirements for cut and fill work.

8.5.2 Pre-Construction Surveys

In accordance with the mitigation measures outlined in this REF, once the location of intermediate poles and access tracks are known, further ecological and cultural heritage surveys may be required. Assessment and identification of survey requirements will also be undertaken for parts of the alignment which were not subject to on ground survey for the REF.

These surveys will be undertaken by specialists and in a manner consistent with the surveys undertaken for the project to date. This will ensure that the impacts of pole locations and access tracks are assessed and that they do not result in a significant impact on biodiversity or cultural heritage values.

The surveys will be documented by the ecological and cultural heritage specialists and based on the results of the surveys, the specialists will detail any required mitigation measures. These measures shall be consistent with the strategies and measures identified in this REF and will be incorporated into the CEMP. The results of the surveys and proposed mitigation measures will be presented to the proponent for verification to ensure they are consistent with the strategies and measures in the REF.

It has been identified that where access will be obtained by the crossing of largely flat paddocks, pasture or grazing land, there is no woodland vegetation, and

- no watercourse crossings are required;
- no clearing of vegetation, felling of trees or levelling or fill will be required; and
- all vehicle movements can be confined to the one already established route,

then, in these situations;

Environmental Management and Conclusions

Section 8

- no further biodiversity surveys of the access routes will be required; and
- the requirement for targeted pre-construction heritage survey of access tracks and pole locations is to be discussed and determined by the Archaeologist and Aboriginal Community representatives and the decisions documented.

The identification of these low impact areas, and the associated conclusion of a reduced requirement for pre-construction surveys, will be incorporated into the CEMP to ensure consistency with the principles, strategies and approaches committed to in the REF.

If the preconstruction surveys identify environmentally sensitive areas and the impacts are not able to be mitigated and managed by the measures identified within this REF or the proposed works in the area are likely to result in a significant impact, then a supplementary REF will be required.

Mitigation Measures as a Result of Pre-Construction Surveys

Cultural Heritage

If new heritage sites are identified during pre-construction surveys, the principals of management will be consistent with the principles developed for sites identified in the REF as outlined within **Section 7.6.4 Indigenous Heritage Management Measures**.

Biodiversity

If during pre-construction surveys it is identified that populations or potential habitat for threatened species or EECs may be impacted, mitigation measures will be consistent with the strategies detailed in **Section 7.5.7 Biodiversity Mitigation Measures**.

Section 8

Environmental Management and Conclusions

8.6 Conclusions

The impacts of the proposed development have been assessed in accordance with the *Environmental Planning and Assessment Act (EP&A Act)* and the *Environmental Planning and Assessment Regulation 2000*.

The potential impacts of constructing the transmission line have been assessed and appropriate management strategies, mitigation measures and controls to manage and mitigate potential environmental impacts have been identified within the REF and SIS Reports. An *Is An EIS Required?* evaluation (refer **Appendix H**) has been undertaken in accordance with the Department of Urban Affairs and Planning Guidelines (1996).

On the basis of the evaluation and the studies detailed in the various sections of this REF, the proposed activity is identified being unlikely to significantly affect the environment beyond the ecological impacts discussed within the terrestrial biodiversity section of this document and the accompanying SIS.

Environmental impacts will predominantly be limited to short term impacts arising during the construction phase. Any negative environmental impacts will be mitigated wherever possible through the implementation of appropriate mitigation and environmental management measures outlined throughout the REF and SIS documents and summarised in the Outline CEMP.

The proposed transmission line is required to ensure the reliability of electricity supply across the Central West and to meet growing demands into the future. Overall, the proposal is assessed as appropriate in terms of state environmental planning policy and of a design that addresses and responds to the environmental and socio-economic aspects assessed.