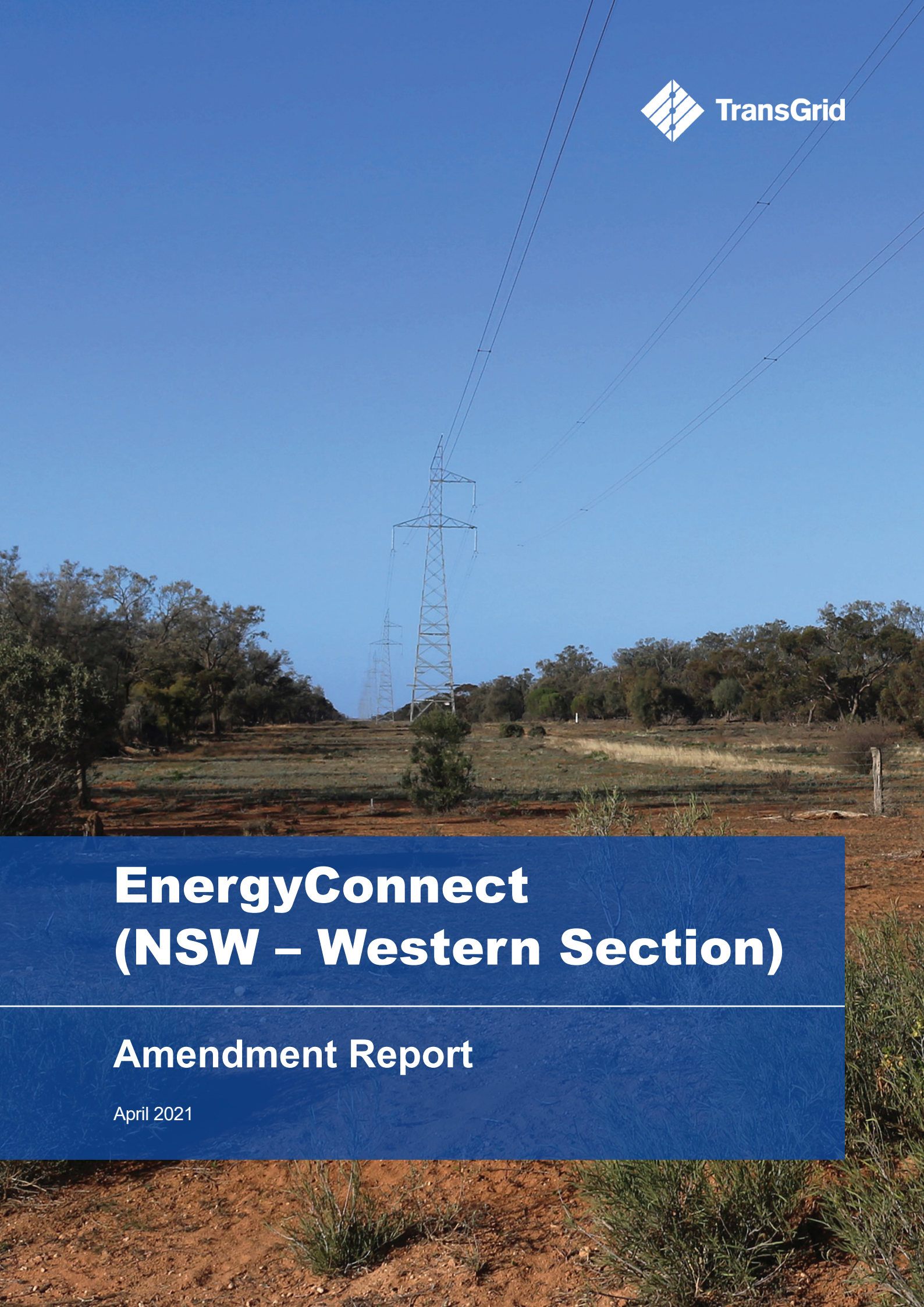

TransGrid

EnergyConnect (NSW – Western Section)

Amendment Report

April 2021

Document Preparation History

Revision	Prepared by	Reviewed By	Date
Final	Jarryd Barton	Caitlin Bennett Emma Taylor	8 April 2021

Abbreviations

Proposal term / acronym	Definition
ANO	Authorised Network Operator
BCD	Biodiversity Conservation Division
BDAR	Biodiversity Development Assessment Report
CSSI	Critical State significant infrastructure
DPE	NSW Department of Planning and Environment
DPIE	NSW Department of Planning, Industry and Environment
EPA	NSW Environment Protection Authority
EP&A Act	*Environmental Planning and Assessment Act 1979* (NSW)
EP&A Regulation	Environmental Planning and Assessment Regulation 2000 (NSW)
EIS	Environmental Impact Statement
HV	high voltage
kV	kilovolt
LSE	large scale equipment
NSW	New South Wales
OOHW	out of hours work
PAD	potential archaeological deposit
PoEO Act	*Protection of the Environment Operations Act 1997*
SA	South Australia
UXO	unexploded ordinance

Glossary

Proposal term	Definition
brake/winch sites	A brake and winch site is a temporarily cleared area where plant and equipment is located for the purposes of spooling and winching a conductor into place on erected transmission line structures along a transmission line corridor. Dependent upon the angle of line deviation, the location of the brake and winch site at that angle may or may not be within the nominated transmission line easement. The brake and winch site is only required for the construction phase of the proposal. It does not need to be maintained for ongoing operation and / or maintenance of the transmission line.
disturbance area	Refers to the area that would be directly impacted by both construction and operation (including the areas that would be impacted by maintenance activities) of the proposal including all proposal infrastructure elements (including the proposed transmission line alignment, substation site works and other ancillary works i.e. the operational footprint) as well as locations for currently proposed construction elements such as construction compounds, access tracks and site access points, laydown and staging areas, concrete batching plants, brake/winch sites, site offices and accommodation camps. This area would be mostly contained within the transmission line corridor and would be determined during detailed design in consideration of avoidance and impact minimisation. For heritage and biodiversity assessments, an indicative disturbance area was applied. The disturbance area would have varying degrees of physical disturbance along the transmission line alignment to reflect construction and operational requirements – specifically: > Disturbance area A, in which ground disturbance would be required > Disturbance area B, in which ground disturbance is not required except in limited circumstances From time to time during construction and operation, high risk trees may be removed from within, or adjacent to, the easement but outside the disturbance area.
disturbance area A	Refers to an area around the transmission line structures and for new/upgraded access tracks in which vegetation would be removed during construction. It would include potential sub-surface impacts through construction activities such as grading, excavation, and full tree removal. Except in areas where only temporary disturbance is required (i.e. temporary access tracks), this area would also be subject to ongoing maintenance during operation (i.e. removal to ground level) for operational and safety requirements (including bushfire). This zone is a subset to the disturbance area (refer to Section 2.8).
disturbance area A (centreline clearing)	Refers to the areas between the proposed transmission line structures in which all vegetation would be removed during construction to ground however topsoil materials and ground material would be retained (where possible) and would not likely result in sub-surface impacts. This area would also be subject to ongoing maintenance during operation (i.e. removal to maintain vegetation clearance requirements) for operational and safety requirements (including bushfire). This zone is a subset to the disturbance area.

Proposal term	Definition
disturbance area B	Refers to an area between transmission line structures in which removal of vegetation (including trees) would be undertaken where they have the potential to exceed vegetation clearance heights. This removal may result in temporary ground disturbance. Vegetation clearance heights are set by TransGrid for operational and safety requirements, including bushfire risk management. This area would also be subject to ongoing maintenance during operation. This zone is a subset to the disturbance area.
EnergyConnect	An electrical interconnector of around 900 kilometres between the electricity grids of South Australia and New South Wales, with an added connection to north west Victoria. In NSW, EnergyConnect comprises two sections – Western Section (the proposal the subject of this EIS) and the Eastern Section (which will be subject to separate environmental assessment).
hazard/high risk tree	Hazard/high risk trees are defined under TransGrid procedures and include any tree or part of a tree that if it were to fall would infringe on the vegetation clearance requirements at maximum conductor sag of the transmission lines. Hazard/high risk trees shall be identified during detailed designed based on the transmission line conductor profile. All hazard/high risk trees located along the corridor shall be removed.
proponent, the	The proposal is proposed to be undertaken by NSW Electricity Networks Operations Pty Ltd as a trustee for NSW Electricity Operations Trust (referred to as TransGrid). TransGrid is the operator and manager of the main high voltage (HV) transmission network in NSW and the Australian Capital Territory (ACT), and is the Authorised Network Operator (ANO) for the purpose of an electricity transmission or distribution network under the provisions of the *Electricity Network Assets (Authorised Transactions) Act 2015*.
proposal, the	The proposal is known as 'EnergyConnect (NSW – Western Section)' as described in Chapter 5 and Chapter 6 of the EIS.
proposal study area	The study area for the EIS, which comprises a one-kilometre wide corridor between the SA/NSW border near Chowilla and Buronga substation and a 200 metre wide corridor between Buronga substation and the NSW/Victoria border at Monak, near Red Cliffs. It encompasses the indicative disturbance area and transmission line corridor, which has been applied to identify the constraints nearby to the proposal which may or may not be indirectly impacted by the proposal. Some access tracks could be located within the proposal study area.
transmission line corridor	A 200-metre corridor in which the final transmission line easement and transmission line infrastructure would be contained within. Construction activities associated with the transmission line would be expected to be contained within this area.
transmission line assessment corridor	A 120-metre corridor that has been assessed for operational assessments for operational noise and electric and magnetic fields (EMF).

Proposal term	Definition
transmission line easement	An area surrounding and including the transmission lines, which is a legal 'right of way' and allows for ongoing access and maintenance of the lines and will be acquired from landholders. The easement width would be up to 80 metres wide for the 330kV transmission line component and 50 metres wide for the 220kV transmission line component.

Executive summary

EnergyConnect

TransGrid (electricity transmission operator in New South Wales (NSW)) and ElectraNet (electricity transmission operator in South Australia (SA)) are seeking regulatory and environmental planning approval for the construction and operation of a new High Voltage (HV) interconnector between NSW and SA, with an added connection to north west Victoria. Collectively, the proposed interconnector is known as EnergyConnect.

EnergyConnect aims to secure increased electricity transmission between SA, NSW and Victoria, while facilitating the longer-term transition of the energy sector across the National Electricity Market (NEM) to low emission energy sources.

EnergyConnect has been identified as a priority transmission project in the NSW Transmission Infrastructure Strategy (NSW Department of Planning and Environment (DPE), 2018), linking the SA and NSW energy markets and would assist in transporting energy from the South-West Renewable Energy Zone to major demand centres.

EnergyConnect comprises of several sections that would be subject to separate environmental planning approvals under the relevant jurisdictions. It includes:

- NSW sections including:
  - Western Section (the current proposal), which would extend from:
    - the SA/NSW border (near Chowilla in SA) to TransGrid's existing Buronga substation
- Buronga substation to the NSW/Victoria border at Monak (near Red Cliffs in Victoria)
- Eastern Section, which would extend from the Buronga substation to the existing Wagga Wagga 330kV substation
- a Victorian Section, which would extend from the NSW/Victoria border to Red Cliffs substation
- a SA Section, which would extend from Robertstown to the SA/NSW border.

Planning approvals process

The NSW Minister for Planning and Public Spaces declared the NSW portions of EnergyConnect to be Critical State significant infrastructure (CSSI) under section 5.13 of the *Environmental Planning and Assessment Act* 1979 (EP&A Act). An Environmental Impact Statement (EIS) was prepared to support TransGrid's application for approval of the proposal in accordance with the requirements of Division 5.2 of the EP&A Act. The EIS was placed on public exhibition by the NSW Department of Planning, Industry and Environment (DPIE) for a period of 42 days, commencing 30 October 2020 and concluding on 10 December 2020.

During the exhibition period, interested stakeholders and members of the community were able to review the EIS online or at display locations, participate in consultation and engagement activities, and make a written submission to the DPIE for consideration in its assessment of the proposal.

In accordance with clause 192(2) of the Environmental Planning and Assessment Regulation 2000 (NSW) (EP&A Regulation), an application may, with the approval of the Planning Secretary, be amended at any time before the application is determined.

TransGrid proposes to amend the proposal following further design development since the exhibition of the EIS. TransGrid applies for the Secretary's approval to amend the proposal in the manner described in this Amendment Report in accordance with clause 192(2) of the EP&A Regulation.

Purpose of this Amendment Report

This Amendment Report considers the proposed amendments which have been made following exhibition of the EIS and includes an assessment of any different or new impacts arising out of the proposed amendments. The Amendment Report is intended to assist the community, government agencies and the approval authority to understand the implications of the changes that are currently proposed to the proposal as described in the EIS.

The proposed amendments have been made in response to both issues raised in community and stakeholder submissions received during the public exhibition of the EIS, as well as changes which have been made by TransGrid as part of ongoing design development of the proposal with the preferred construction contractor. The Amendment Report is to be read in conjunction with the Submissions Report.

The proposed changes and their justifications are summarised in Table ES-1 below.

Table ES-1 Summary of proposed amendments to the proposal as described in the EIS

Proposed amendment	Overview of proposed proposal amendments
Construction compound and accommodation camp sites	Revision of the proposed use and location of the previously proposed construction compound and accommodation camp sites to include: > a confirmed location for the construction compound and accommodation camp at Wentworth > refinement of the proposed use of the Anabranch South site > an increase in the number of workers proposed to be accommodated at the Buronga accommodation camp site.
Buronga substation layout	Amendment of the layout of the Buronga substation to reduce impacts on a Potential Archaeological Deposit.
Buronga substation earthworks	Inclusion of two additional earthwork material sites within the vicinity of the Buronga substation to improve earthwork efficiency and reduce potential traffic movements associated with obtaining material from external sites. The construction methodology would also include crushing and screening operations.
Temporary bypass transmission line	Construction of a temporary 220kV transmission line bypass to the south of the Buronga substation in order to minimise potential electrical network outages of the existing transmission line during construction.
Onsite wastewater treatment	Addition of wastewater treatment facilities within the Buronga and (proposed) Wentworth accommodation camps to minimise water use by reusing the effluent and greywater produced by these sites.
Construction water supply	Identification of a series of construction water supply points required to supply water for the construction of the proposal.
Indicative disturbance footprint	Amendment to the indicative disturbance area for the proposal following ongoing consideration of the proposed construction methodology, including revised approach to access tracks.

A full assessment of the proposal amendments is presented in Chapter 6. The impacts associated with the proposed amendments would be manageable through the application of the environmental mitigation and management measures presented in Appendix C of this Amendment Report.

Section 2.9 also provides a summary of a series of minor clarifications and refinements that have been made following exhibition of the EIS. This include addressing clarifications and refinements which were made in the EIS document that were identified during the exhibition process.

Conclusions and next steps

This Amendment Report considers and documents the proposed amendments and clarifications/refinements that have been identified in response to further design investigations, submissions received and/or outstanding issues identified in the EIS.

The environmental impacts of the amended proposal have been assessed, including impacts to biodiversity, Aboriginal and non-Aboriginal heritage, land use and property, landscape character and visual amenity, social and economic, noise and vibration, traffic and access soils, contamination and groundwater. The EIS identified that the proposal would have both potential positive and negative impacts. Further consideration of the amended proposal has identified additional opportunities to reduce impacts.

In particular, the amended proposal has been refined to:

- further avoid and minimise impacts on biodiversity where possible. This has included:
  - reducing impacts on the SAII species *Austrostipa nullanulla* through re-alignment of the transmission line design as a result of discussions with, and the submission received from, the NSW Department of Planning, Industry and Environment – Biodiversity Conservation Division (DPIE BCD)
  - reduced impact during operation through increase in the minimum vegetation height within the transmission line corridor from two metres to between four and 10 metres across the width of the easement as a result of discussions with, and the submission received from, the NSW Department of Planning, Industry and Environment – Biodiversity Conservation Division (DPIE BCD)
- further avoid and minimise impacts on Aboriginal heritage including avoidance of up to three previously identified Potential Archaeological Deposits (PADs) along the transmission line corridor and within the vicinity of the Buronga substation upgrade and expansion site. Further opportunities to minimise impacts would continue to be investigated during detailed design
- improved outcomes with respect to traffic and transport impacts as a result of the proposed earthwork material sites including:
  - reduced overall truck movements during construction that are associated with the movement of materials for the substation site
  - reduced safety risk associated with trucks and driver fatigue
  - reduced overall program timeframe associated with the movement of materials for the substation site
  - reduced impacts on local roads and proposed haulage routes.

The majority of the remaining impacts have been concluded as being generally consistent with those previously presented in the EIS.

It is proposed that the revised proposal, as described in this Amendment Report, be considered, along with the *EnergyConnect (NSW – Western Section) Submissions Report* (WSP, 2021a) as part of the assessment by DPIE. DPIE will then prepare a report to the Minister for Planning and Public Spaces who will subsequently decide whether to grant approval, or to refuse the proposal. Should the proposal be approved by the Minister, TransGrid would continue to consult with community members, government agencies and other stakeholders during the pre-construction, construction and commissioning phases.

Contents

Contents (continued)

Contents (continued)

Contents (continued)

List of appendices

List of tables

List of figures

1. Introduction and background

This chapter provides a background to, and description of the key features of, the proposal as described in the EIS, an overview of the proposed amendments and outlines the purpose and structure of this report.

1.1 Background

TransGrid (electricity transmission operator in New South Wales (NSW)) and ElectraNet (electricity transmission operator in South Australia (SA)) are seeking regulatory and environmental planning approval for the construction and operation of a new High Voltage (HV) interconnector between NSW and SA, with an added connection to north west Victoria. Collectively, the proposed interconnector is known as EnergyConnect.

EnergyConnect aims to secure increased electricity transmission between SA, NSW and Victoria, while facilitating the longer-term transition of the energy sector across the National Electricity Market (NEM) to low emission energy sources.

EnergyConnect has been identified as a priority transmission project in the NSW Transmission Infrastructure Strategy (NSW Department of Planning and Environment (DPE), 2018), linking the SA and NSW energy markets and would assist in transporting energy from the South-West Renewable Energy Zone to major demand centres.

EnergyConnect comprises of several sections that would be subject to separate environmental planning approvals under the relevant jurisdictions. It includes:

- NSW sections including:
  - Western Section (the proposal), which would extend from:
    - the SA/NSW border (near Chowilla in SA) to TransGrid's existing Buronga substation
- Buronga substation to the NSW/Victoria border at Monak (near Red Cliffs in Victoria)
- Eastern Section, which would extend from the Buronga substation to the existing Wagga Wagga 330kV substation
- a Victorian Section, which would extend from the NSW/Victoria border to Red Cliffs substation
- a SA Section, which would extend from Robertstown to the SA/NSW border.

1.2 Key features of the proposal

The key components of the proposal include:

- about 135 kilometres of new 330 kilovolt (kV) double circuit transmission line and associated infrastructure between the SA/NSW border near Chowilla and the existing Buronga substation
- an upgrade of the existing 22-kilometre 220kV single circuit transmission line between the existing Buronga substation and the NSW/Victoria border at Monak, near Red Cliffs in Victoria to a 220kV double circuit transmission line, and the decommissioning of the 220kV single circuit transmission line (known as Line 0X1)
- a significant upgrade and expansion of the existing Buronga substation to a combined operating voltage of 220kV/330kV
- a minor realignment of the existing X2 220kV transmission line, in proximity to the Darling River
- new and/or upgrade of access tracks as required
- ancillary works required to facilitate the construction of the proposal (e.g. laydown and staging areas, concrete batching plants, brake/winch sites, site offices and accommodation camps).

An overview of the regional context of the proposal is provided in Figure 1-1. Further details of the key components of the proposal are provided in Chapters 5 and 6 of the Environmental Impact Statement (EIS).

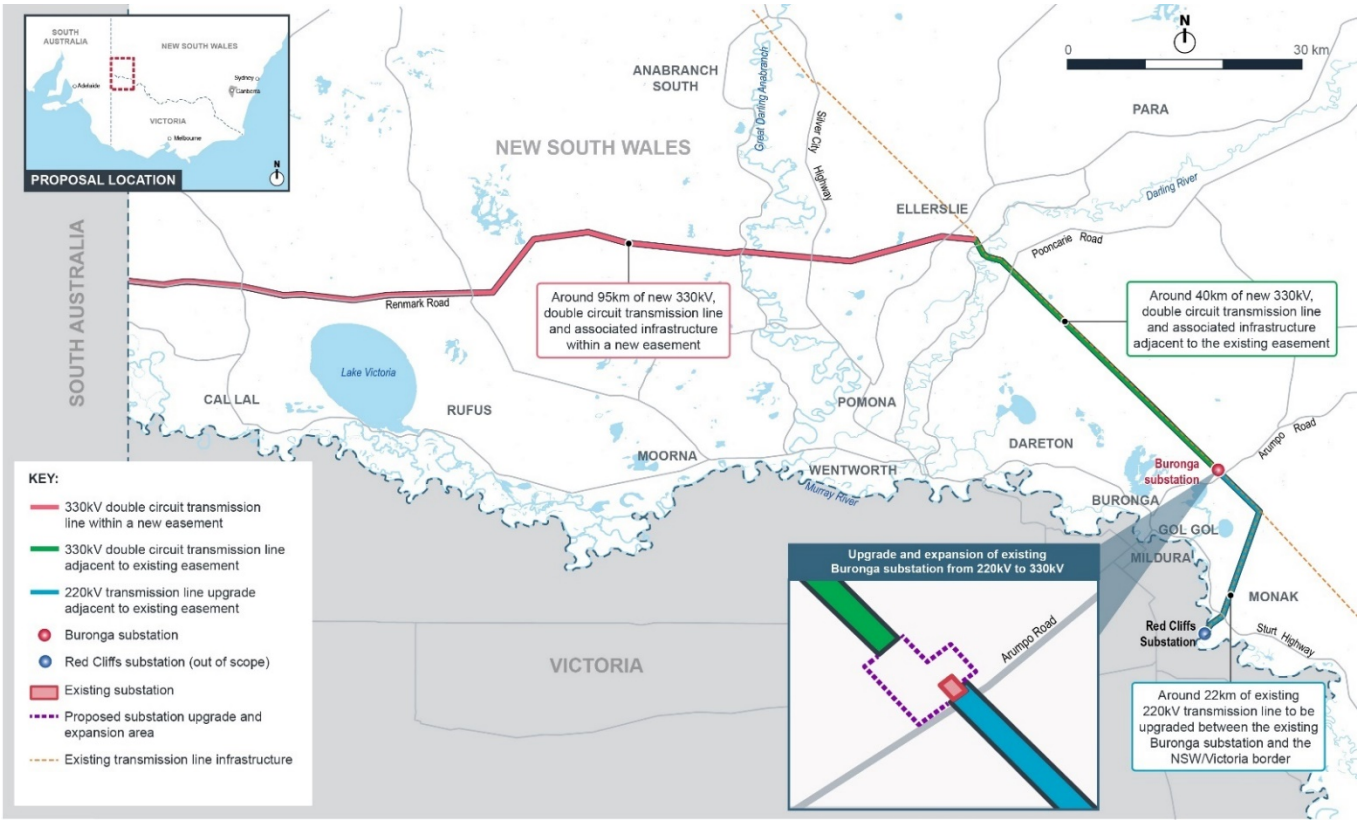

Figure 1-1 Overview of the proposal as shown in the EIS

1.2.1 Timing and commencement of operation

Subject to approval of the proposal, it is anticipated that construction of the proposal would commence in mid-late 2021. The construction of the transmission lines would be undertaken along multiple work fronts concurrently and take around 18 months for the western section, which is the subject of this proposal. The Buronga substation upgrade and expansion would be delivered in two components and would be initially operational by the end of 2022. Site decommissioning and final rehabilitation to be completed by around mid-2024. The final construction program would be confirmed during detailed design.

1.3 Exhibition of the EIS

An EIS was prepared to support TransGrid's application for approval of the proposal in accordance with the requirements of Division 5.2 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act). The EIS was placed on public exhibition by the NSW Department of Planning, Industry and Environment (DPIE) for a period of 42 days, commencing 30 October 2020 and concluding on 10 December 2020.

During the public exhibition period consultation activities were conducted to involve stakeholders and the broader community in exhibition activities, provide guidance on the submissions process, and encourage parties to engage with the information in the EIS and make a submission accordingly. Submissions on the EIS were made directly to DPIE. Submissions were accepted by DPIE via electronic submission or by post.

A Submissions Report (WSP, 2021a) has been prepared to respond to the submissions received as part of this process.

1.4 Purpose and structure of this report

This Amendment Report considers the proposed amendments which have been made following exhibition of the EIS. This Amendment Report outlines the proposed design and construction changes to the proposal and assesses the associated environmental impacts of the proposed amendments. Where required, the report has included additional or revised environmental management measures to manage or minimise environmental impacts.

This report also provides a summary of a series of minor clarifications and refinements that have been made following exhibition of the EIS. This include addressing clarifications and refinements which were made in the EIS document that were identified during the exhibition process.

This Amendment Report is intended to assist the community, government agencies and the approval authority to understand the implications of these changes. The Minister for Planning and Public Spaces will subsequently decide whether to grant approval, or to refuse the proposal, under the EP&A Act. Approval from the Minister is required before TransGrid can proceed with the proposal.

This report is structured as follows:

- introduction (Chapter 1) which provides an overview of the proposal background and purpose of the report
- description of the proposal amendments (Chapter 2)
- strategic context (Chapter 3) which identifies any changes to the strategic context of the proposal arising from the proposed amendments
- statutory context (Chapter 4) which provides an outline of any changes to the statutory requirements arising from the proposed amendments
- engagement (Chapter 5) which summarises the stakeholder engagement that has been undertaken during the development of the proposed amendments
- assessment of impacts (Chapter 6) which assesses the change in impacts associated with the proposed amendments
- an evaluation of the merits and conclusions of the amended proposal (Chapter 7)
- references (Chapter 8)
- appendices
  - Appendix A – Updated proposal description (operation)
  - Appendix B – Updated proposal description (construction)
  - Appendix C – Updated approach to environmental management, including revised environmental mitigation measures
  - Appendix D – *Revised Biodiversity Development Assessment Report* (WSP, 2021a)
  - Appendix E – *Revised Non-Aboriginal and Aboriginal Cultural Heritage Assessment Report* (Navin Officer, 2021)
  - Appendix F – *Addendum Landscape and visual impact assessment* (Iris, 2021)
  - Appendix G – *Addendum Socio-economic impact assessment* (WSP, 2021b)
  - Appendix H – *Addendum Air quality impact assessment* (WSP, 2021c)
  - Appendix I – *Addendum Noise and vibration impact assessment* (WSP, 2021d)
  - Appendix J – *Addendum Traffic, transport and access impact assessment* (WSP, 2021e)
  - Appendix K – *Addendum contamination assessment* (WSP, 2021f).

2. Description of amendments

This chapter describes the proposed changes associated with the amended proposal. This chapter also provides a summary of a series of minor clarifications and refinements that have been made following exhibition of the EIS. A consolidated revised proposal description is provided in Appendix A (operation) and Appendix B (construction).

2.1 Overview of the proposed amendments

Following exhibition of the EIS, TransGrid has identified a series of proposed amendments to the proposal as presented in the EIS. These amendments provide functional improvements to the design, confirm elements of the proposal that were highlighted as opportunities in the EIS and takes into account ongoing development of the construction methodology following selection of the preferred construction contractor. They also respond to issues raised in community and stakeholder submissions.

The proposed amendments include:

- confirmation of the construction compound and accommodation camp site at Wentworth (refer to Section 2.2)
- amendment of the layout of the Buronga substation to reduce impacts on a potential archaeological deposit (refer to Section 2.3)
- inclusion of two additional earthwork material sites within the vicinity of the Buronga substation to improve earthwork efficiency and reduce potential traffic movements associated with obtaining material from external sites (refer to Section 2.4)
- a temporary 220kV transmission line bypass to the south of the Buronga substation during construction (refer to Section 2.5)
- addition of wastewater treatment facilities within the Buronga and (proposed) Wentworth accommodation camps (refer to Section 2.6)
- addition of a series of construction water supply points (refer to Section 2.7)
- change to the indicative disturbance area for the proposal following refinement of the proposed construction methodology (refer to Section 2.8).

For the purposes of this chapter, the proposal as described and assessed in the EIS is referred to as the ‘EIS proposal’ and the proposal including the proposed changes is referred to as the ‘amended proposal’.

An overview of the location of the proposed amendments is provided in Figure 2-1.

A number of clarifications have been identified as a result of ongoing design of the proposal and comments received during exhibition of the EIS. These clarifications are detailed in Section 2.9.

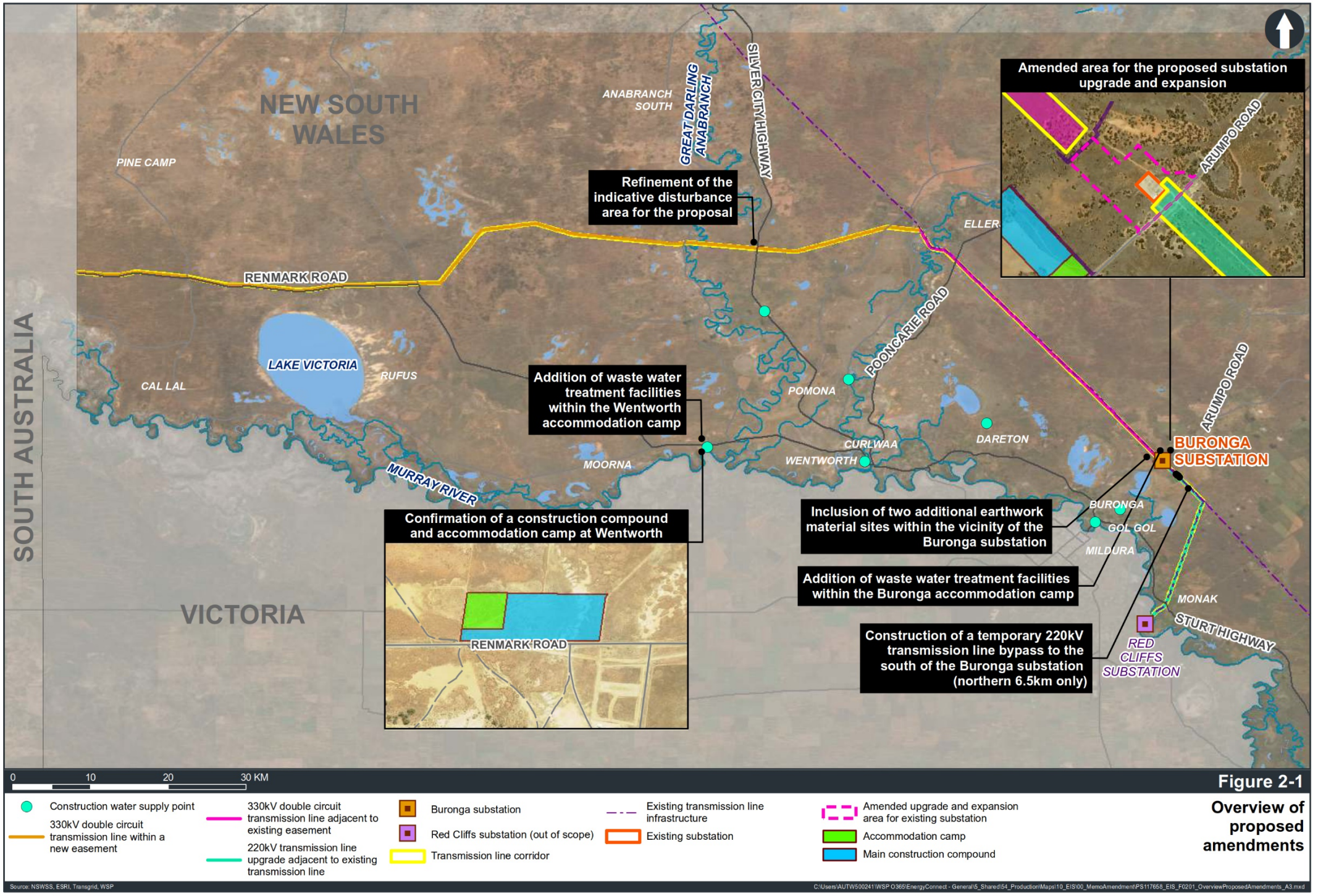

Figure 2-1

Overview of proposed amendments

2.2 Construction compound and accommodation camp sites

2.2.1 EIS description of proposal

Section 6.7 of the EIS described the proposed main construction compound and accommodation camp site locations. The EIS identified that up to three construction compound and accommodation camp sites would be required during the construction of the proposal. These included:

- Buronga – located in the vicinity of the Buronga substation and would provide primary support for the construction of the eastern end of the 330kV transmission line, the 220kV transmission line and the Buronga substation upgrade and expansion
- Anabranch South – located on the Silver City Highway providing primary support for the construction of the western end of the 330kV transmission line
- Wentworth (and surrounds) – This potential camp site would provide primary support for the construction of the central section of the 330kV transmission line. The EIS stated that the location of this site, if required, would be subject to further investigation, but would be located in general proximity to Wentworth and its surrounds.

The locations of the proposed Anabranch South and Buronga accommodation camp sites as shown in the EIS are shown in Figure 2-2 and Figure 2-3. It was also identified in the EIS that each of the proposed accommodation camp sites were estimated to accommodate between 100 to 200 workers.

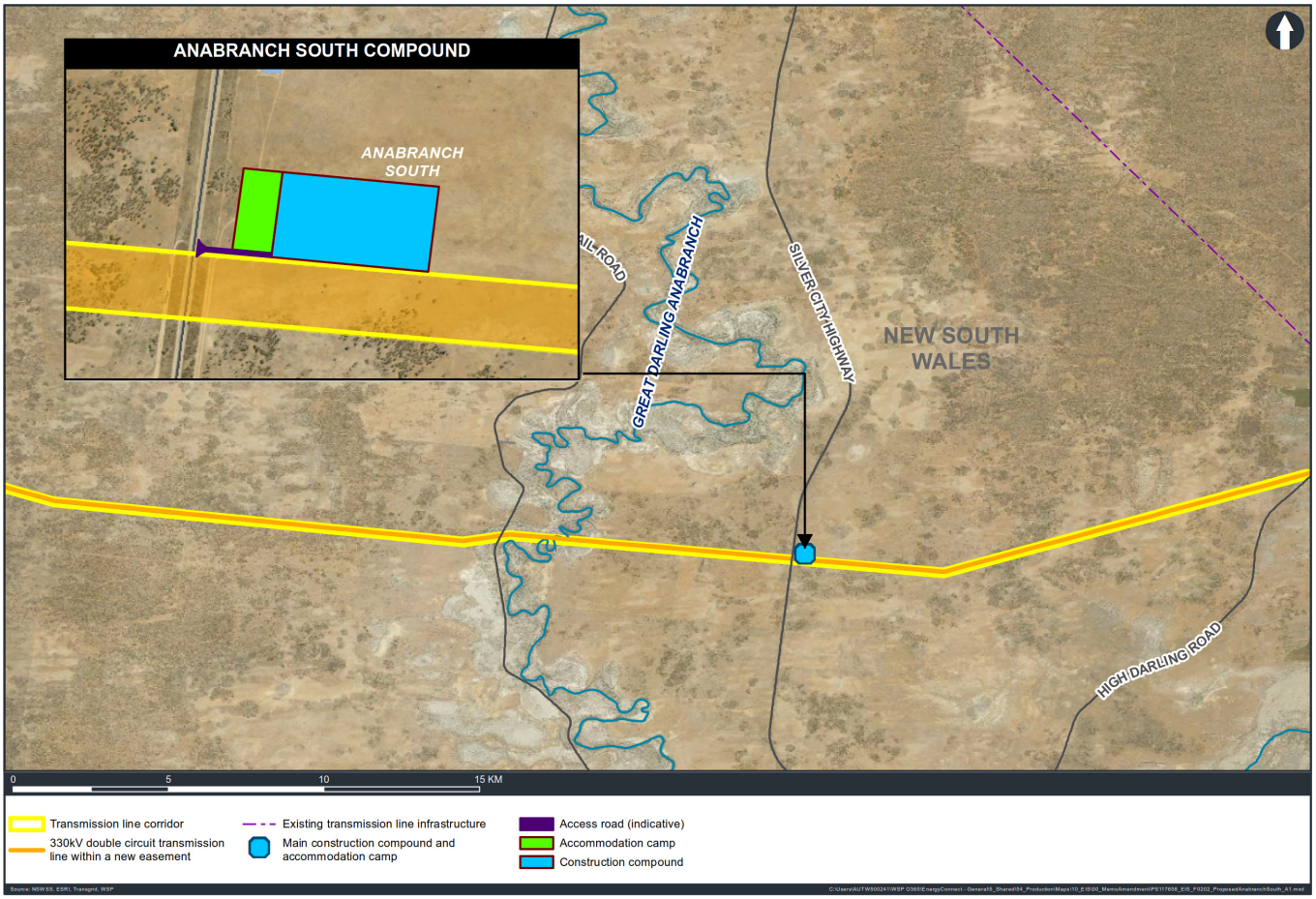

Figure 2-2 Proposed Anabranch South accommodation and camp site as exhibited in the EIS

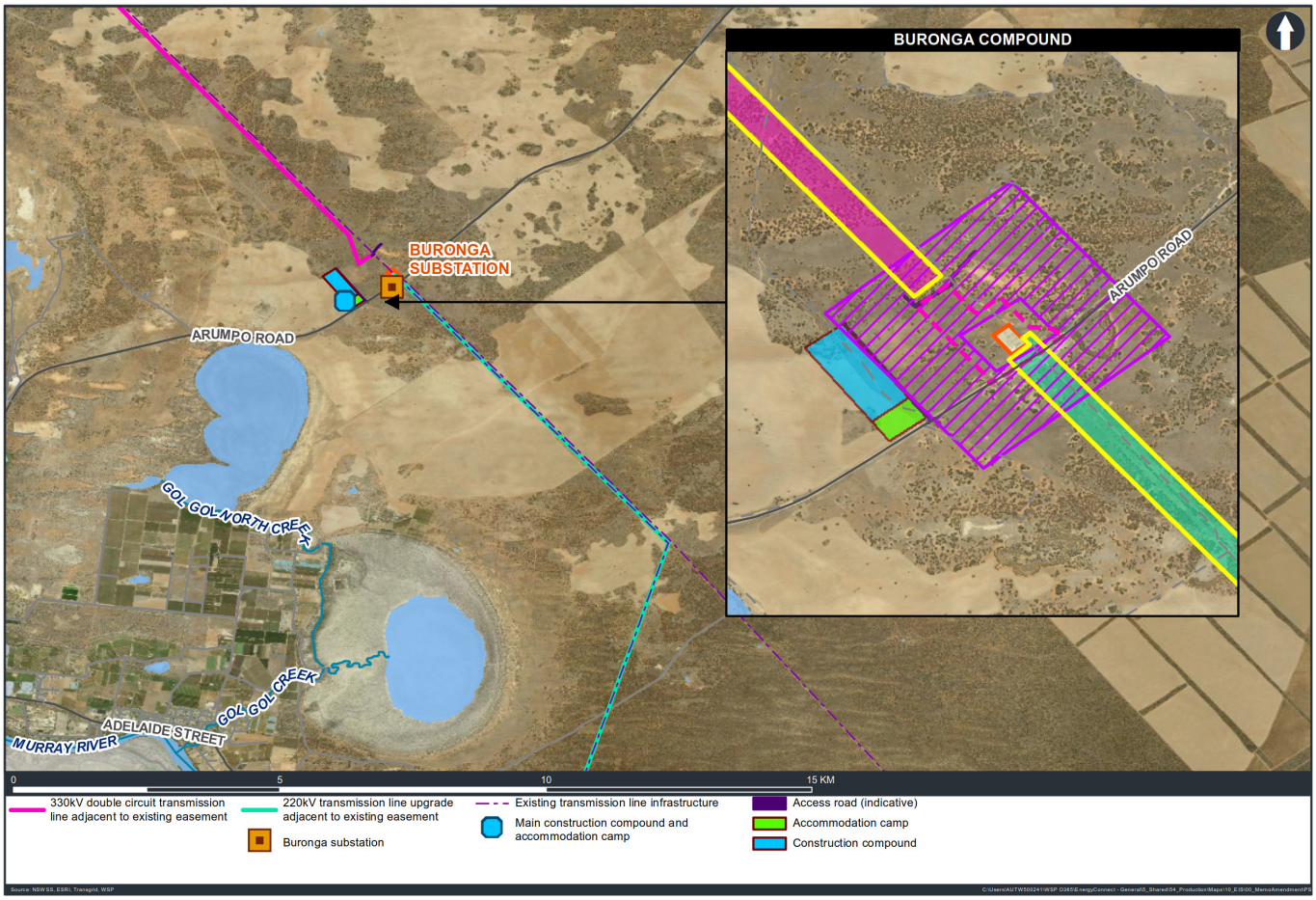

Figure 2-3 Proposed Buronga compound and accommodation camp sites as exhibited in the EIS

2.2.2 Description of the proposed amendment

Following appointment of the preferred construction contractor, further consideration of the construction strategy for the proposal was carried out. This has resulted in a revision of the proposed use and location of the previously proposed construction compound and accommodation camp sites. These revisions include:

- confirmation of the construction compound and accommodation camp location at Wentworth
- refinement of the of proposed use of the Anabranch South site
- increase in the number of construction workers, increasing from 400 workers to 600 full-time equivalent workers during the construction peak, including an increase of workers accommodated at the Buronga accommodation camp site.

The Wentworth construction compound and accommodation camp site would primarily service construction activities for the western end of the proposal, with the Buronga site primarily servicing construction activities towards the eastern end of the proposal. These changes are described in the sections below.

Wentworth construction compound and accommodation camp site

The location for the Wentworth construction compound and accommodation camp site has been identified on the northern side of Renmark Road, around 17 kilometres west of the township of Wentworth. The site has been selected on the basis of the factors which were outlined in Section 6.7 the EIS including prioritising an area which:

- has previously been disturbed and are of relatively level ground to minimise earthwork requirements and offsite drainage risks
- would result in no impacts to threatened species (or their habitats) or threatened ecological communities and/or which have been identified as containing lower ecological and heritage value
- is located an appropriate distance from watercourses and sensitive receivers

- has minimal environmental impact with respect to and from flooding
- is within proximity to key construction activities and easily accessible for heavy vehicles.

The location of the site was also refined in consultation with the landholder.

Similar to the sites described in the EIS, the Wentworth construction compound and accommodation camp would provide a range of facilities including:

- staging and laydown facilities
- concrete batching plants
- workforce accommodation camp areas
- demountable offices for up to around 50 workers
- construction support facilities including vehicle and equipment storage, maintenance sheds, chemical/ fuel stores and potential stockpile areas.
- parking for up to around 190 light vehicles, 45 heavy vehicles and five 20-seat buses
- other worker facilities such as food and catering facilities, fitness and recreational facilities (such as indoor and outdoor recreational spaces, gymnasium areas), first aid facilities and telecommunication services for personal use.

The proposed location for the proposed Wentworth construction compound and accommodation camp site is shown in Figure 2-4. The accommodation camp would house around 200 workers.

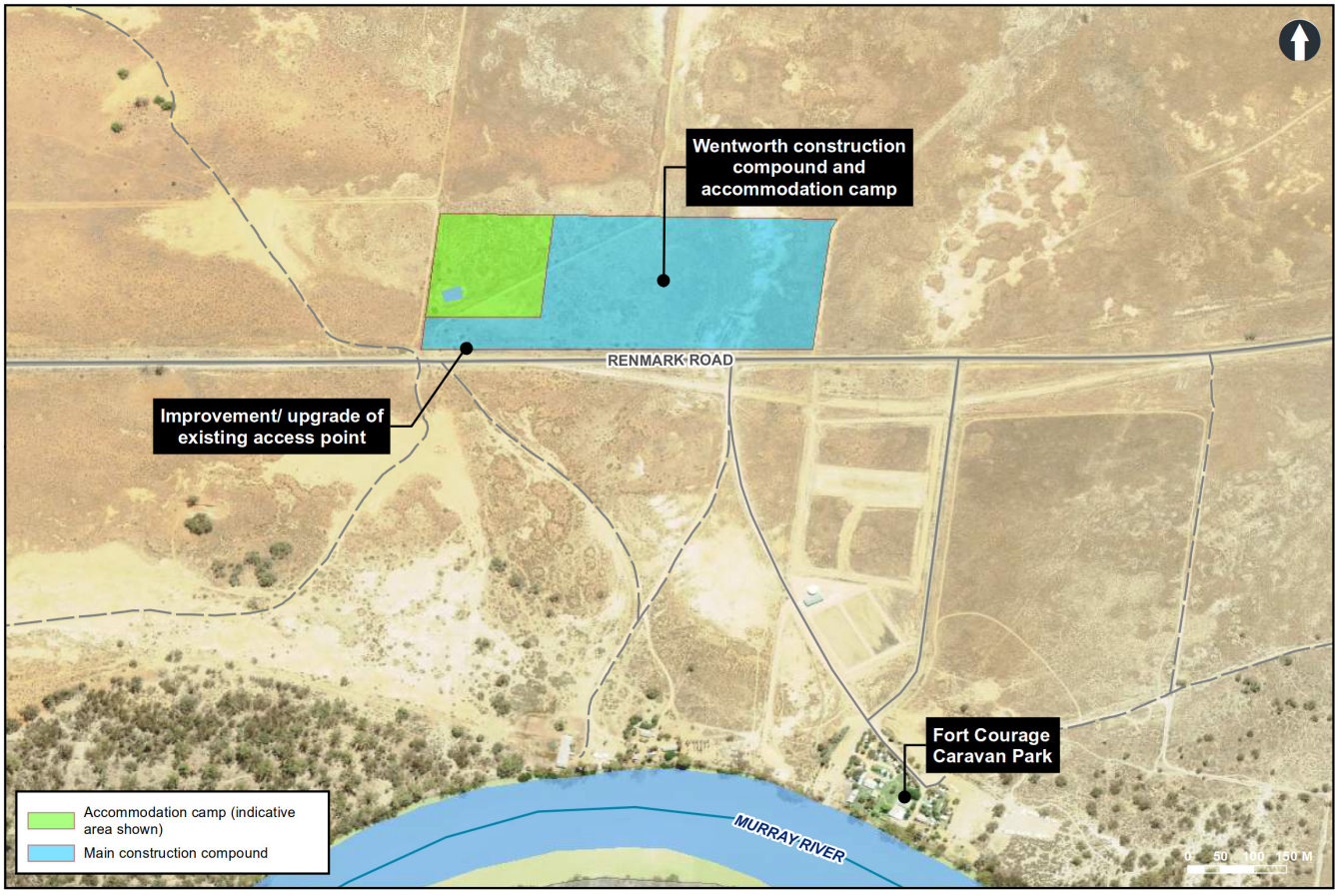

Figure 2-4 Proposed Wentworth construction compound and accommodation camp site location

Anabranch South accommodation camp site

The Anabranch South accommodation camp site would no longer be required as a result of the changes to the construction accommodation strategy for the proposal.

The Anabranch South construction compound site would however be retained as an ancillary construction site to allow for activities such as laydown areas, vehicle and equipment storage, maintenance sheds, potential stockpile areas, and demountable offices and parking (for up to around 10 staff) (refer to Figure 2-5). The area would be slightly reduced by around 2.5 hectares where the accommodation area is no longer required.

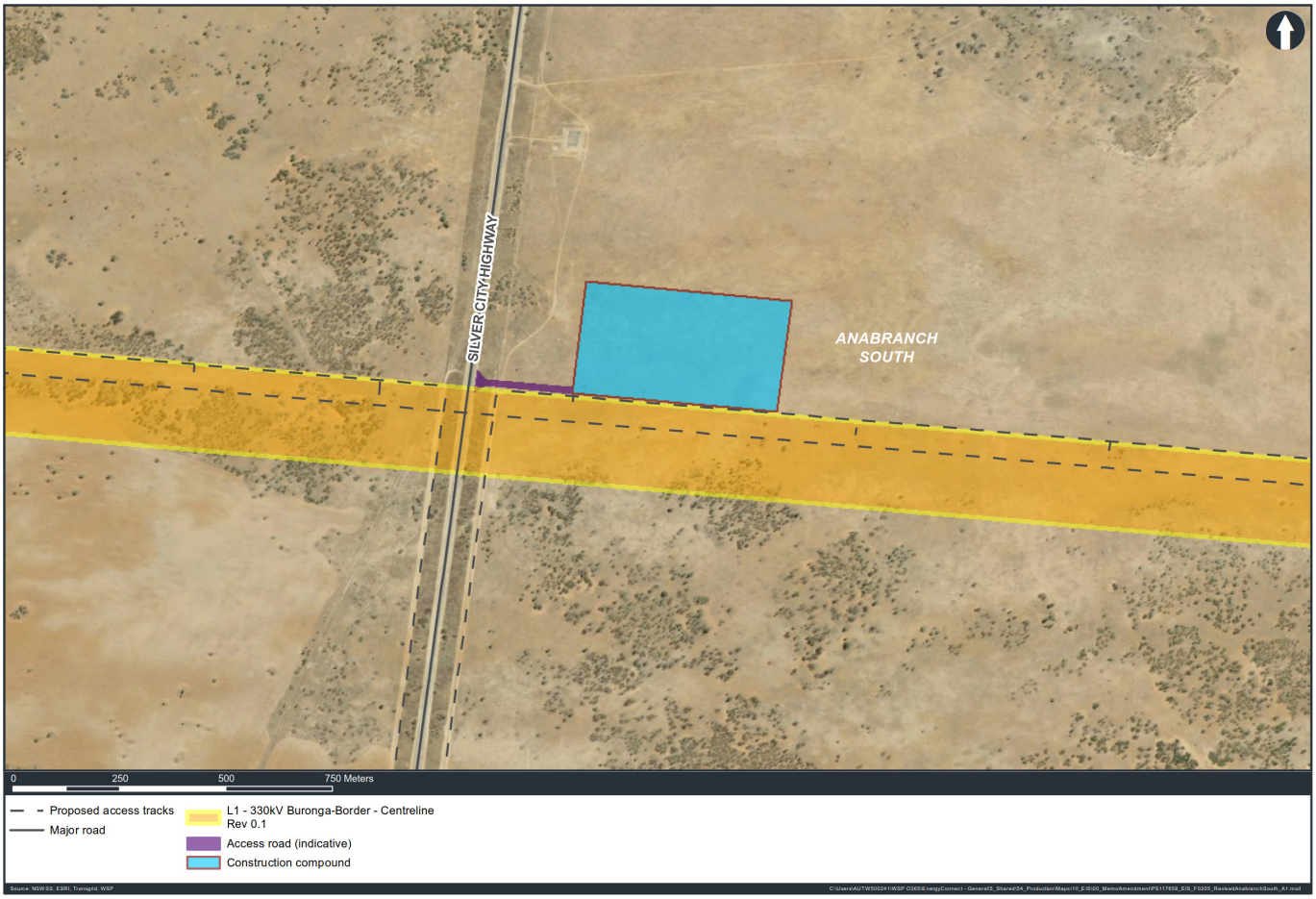

Figure 2-5 Revised Anabranch South construction compound site

Change to the total number of construction workers

Further consideration of the construction strategy for the proposal has also determined that the proposed number of workers required to construct the proposal would increase from around 400 full-time equivalent workers during the peak period(s) (as identified in the EIS) to up to around 600 full-time equivalent workers during the peak period(s). A majority of these additional workers would be accommodated within the Buronga accommodation camp site, which would result in an increase from around 200 to 400 workers at this accommodation camp site.

The proposed redistribution (including the proposed increase in the overall number of full-time equivalent construction workers) is shown in Table 2-1 below.

Table 2-1 Estimated number of workers that would be accommodated at each proposed camp

Accommodation camp and compound site location	Camp accommodation [1]	Office staff
Buronga substation	Around 400 workers	Around 100 workers
Wentworth	Around 200 workers	Around 50 workers

Note 1: Camp accommodation includes consideration of all worker including on-site office staff

While the overall area of the Buronga construction compound and accommodation camp site would not increase to what was presented in the EIS, the area allocated to camp accommodation facilities (shown as being adjacent to Arumpo Road in Figure 6-3 of the EIS) would be increased slightly to allow for additional housing area to be provided (with a subsequent slight decrease in the overall compound and laydown area of the site).

2.3 Buronga substation layout

2.3.1 EIS description of proposal

Section 5.3.3 of the EIS provided an overview of the proposed upgrade and expansion of the existing Buronga 220kV substation to allow for a combined operating voltage of 220kV/330kV. Figure 2-6 shows the layout of the proposed new substation infrastructure as presented in the EIS. The maximum additional area required for the upgrade and expansion of the Buronga substation was identified as being around 530 metres by 630 metres (a total additional area of around 33.5 hectares).

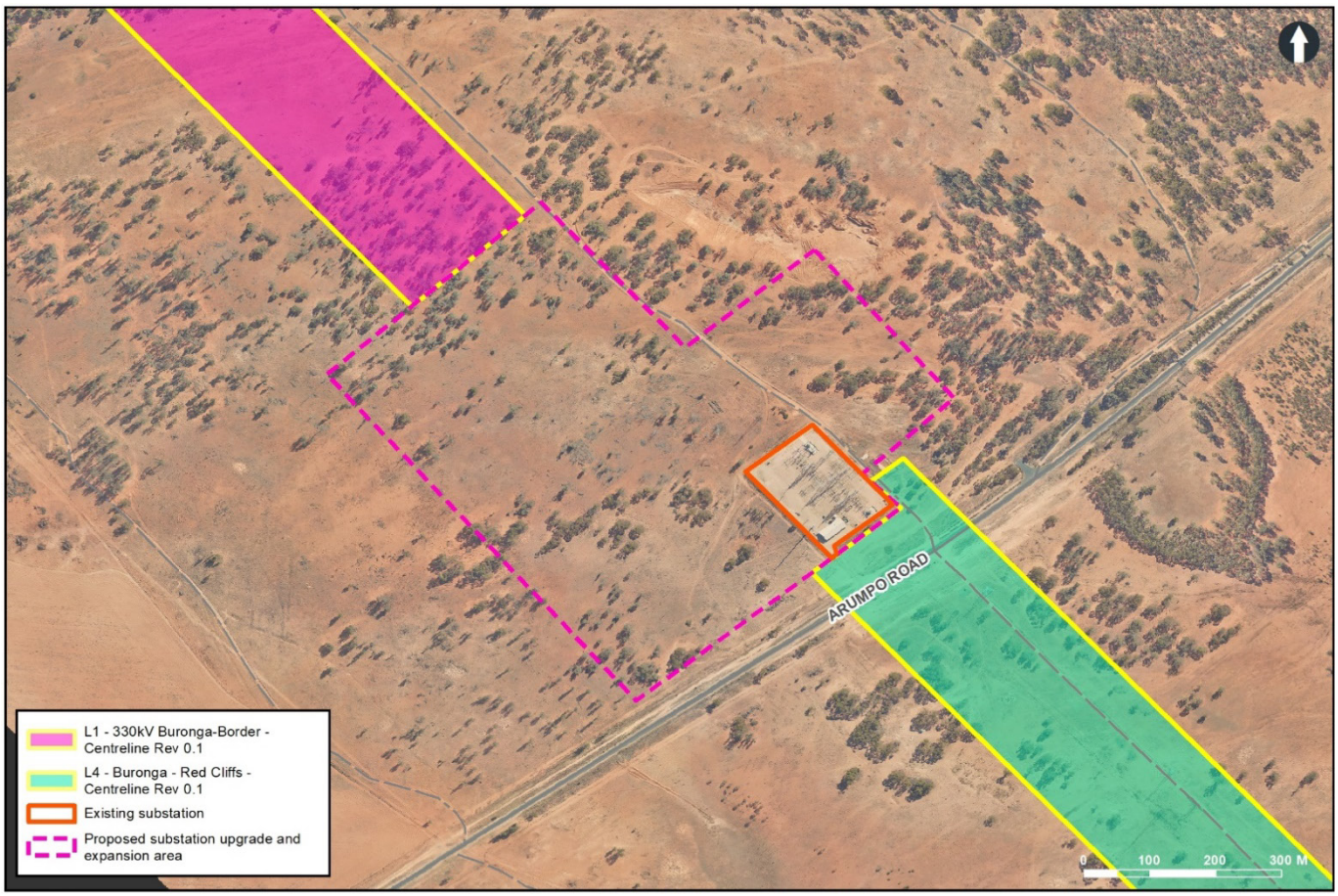

Figure 2-6 Proposed substation upgrade and expansion area (as shown in the EIS)

During the environmental assessment, it was identified that construction of the Buronga substation upgrade and expansion had the potential to directly impact on an area of Potential Archaeological Deposit (PAD) (PEC-PAD-27) (refer to Section 10.4 of the EIS). The location of the PAD was identified as being impacted by the north east corner of the expansion site.

2.3.2 Description of the proposed amendment

Mitigation measure AH-1 of the EIS identified that the final disturbance area for the proposal would be designed to avoid impacts to Aboriginal sites as far as practical with the avoidance of sites of moderate or higher archaeological significance being prioritised.

In order to avoid potential impacts to the PEC-PAD-27, the overall footprint for the Buronga upgrade and expansion site has been refined to avoid any direct impacts to the PAD. In addition, the overall substation upgrade and expansion site has been reduced from the area shown in the EIS. The upgrade and expansion would now require a maximum area of around 21.6 hectares (470 metres by 630 metres at its greatest extents).

This would represent an overall decrease in the overall footprint of the proposed substation upgrade and expansion by around 11.9 hectares. A comparison showing the previously proposed and revised substation upgrade and expansion areas is shown in Figure 2-7.

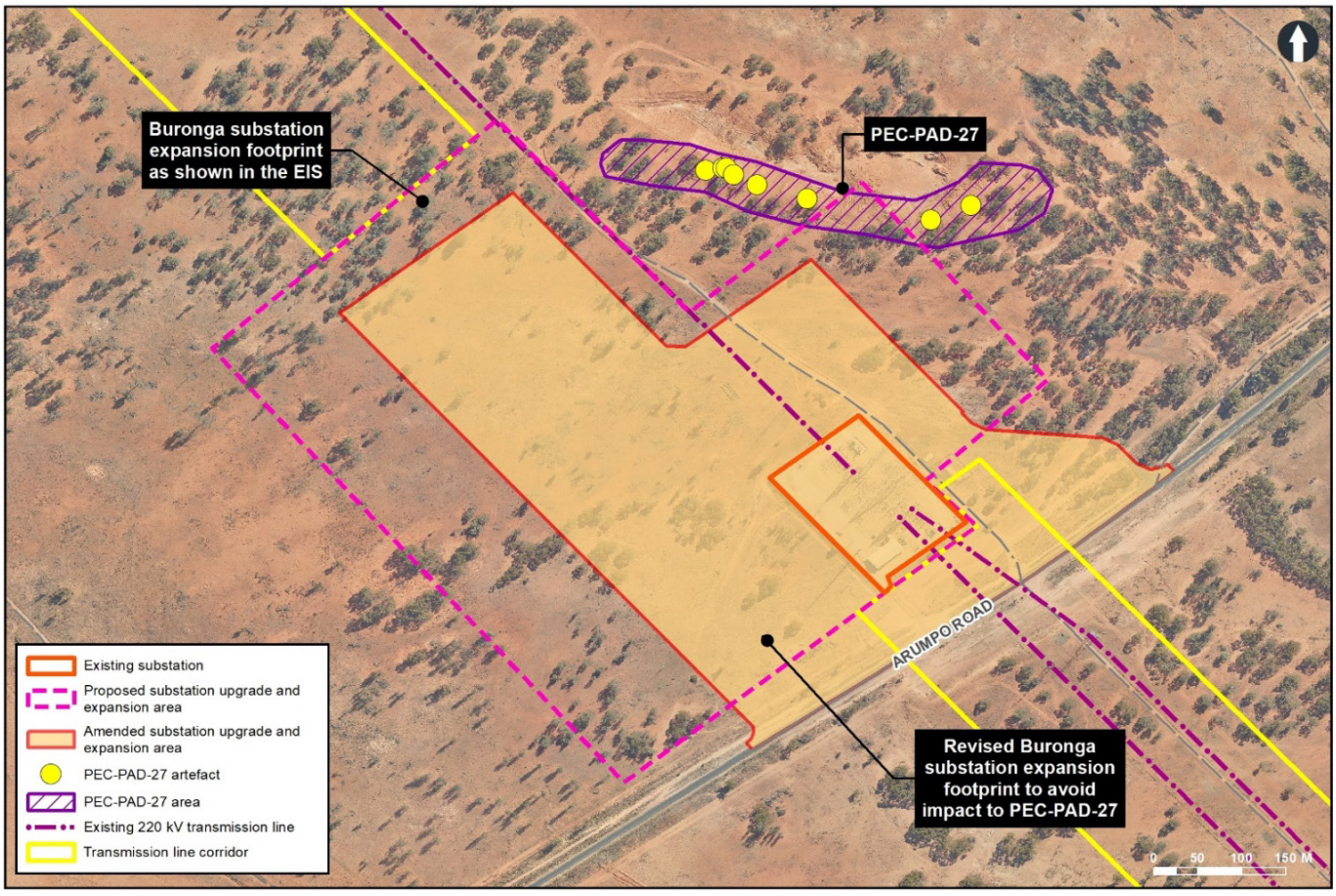

Figure 2-7 Comparison of the proposed substation upgrade and expansion area showing the previous and proposed areas in relation to PAD site PEC-PAD-27

The overall function and operation of the proposed substation upgrade and expansion would continue to be the same as described in Section 5.3.3 of the EIS.

2.4 Buronga substation earthworks

2.4.1 EIS description of proposal

Section 6.6.5 of the EIS identified that one of the initial stages of the construction works for the construction methodology at the proposed expansion of the Buronga substation would consist of bulk earthworks to form a raised substation pad including placement of rock/gravel/soil to allow for the construction of the substation.

Section 6.9.1 of the EIS provided an overview of the excavation volumes required for the proposal. Table 2-2 outlines the anticipated excavation volumes for the Buronga substation upgrade and expansion site as identified in the EIS. As can be seen in Table 2-2, it was anticipated that the volume of material required for fill at the substation upgrade and expansion site would be from imported quarry products or other fill materials suitable for compaction. These materials were anticipated to as being likely sourced locally and transported by road to the expanded substation site (or transmission line sites as necessary).

Table 2-2 Indicative earthwork volumes for the Buronga substation upgrade and expansion site as exhibited in the EIS

Approximate volume of material to be excavated	Approximate volume of material required for fill	Earthwork balance	Typical depth
Bulk earthworks to remove sand/soils unsuitable for compaction as part of construction of the expanded substation pad. 250,000 to 350,000 cubic metres.	Imported quarry products / fill suitable for compaction. 250,000 to 350,000 cubic metres.	Landscaping, drainage, crushed rock topping. Around 25,000 cubic metres.	Typical depth two metres (majority) to six metres (low spots in land parcel to be filled).

The EIS identified that excavation works would be carried out using earth moving equipment.

Section 6.9.1 of the EIS also noted that opportunities to win material within or in proximity to the proposal were continuing to be investigated as part of the ongoing refinement of the proposal.

2.4.2 Description of the proposed amendment

The exhibited proposal assumed that all of the material required for the bulk earthworks within the Buronga substation upgrade and expansion site would be required to be imported from surrounding quarries. Consideration of this element of the construction methodology following appointment of the preferred construction contractor identified that to access imported material may require sourcing the fill material from quarries located up to three hours away from the proposal site. This would require substantial traffic movements of heavy vehicles between the source material location and the proposal site, in particular the Buronga substation.

In order to reduce the potential impacts of the substantial traffic movements, further consideration of the construction method has determined that fill material for the substation upgrade and expansion site could be obtained closer to the substation site in order reduce the amount of fill material required to be imported from areas outside the proposal site. To achieve this, it is proposed that a substantial portion of the required fill material may be sourced from two areas adjacent to the substation upgrade and expansion site (referred to hereafter as the 'earthwork material sites') (subject to the suitability of the available fill material). Additional materials (such as gravel or other materials that would not be won from these sites) would still be required to be imported to the site from external location(s).

The proposed earthwork material sites are slightly mounded areas generally to the north and west of the proposed substation upgrade and expansion site (refer to Figure 2-8). Based on the current LiDAR information, the two locations have high points of up to seven metres above the surrounding landform. The location for the earthwork material sites have also sought to avoid areas of potential environmental impacts, such as the identified Aboriginal PAD site PAD-PEC-27 and represent a maximum possible extent.

The suitability of fill material for the raised substation pad and the final extent of the earthwork material sites would be confirmed by further geotechnical investigations during detailed design.

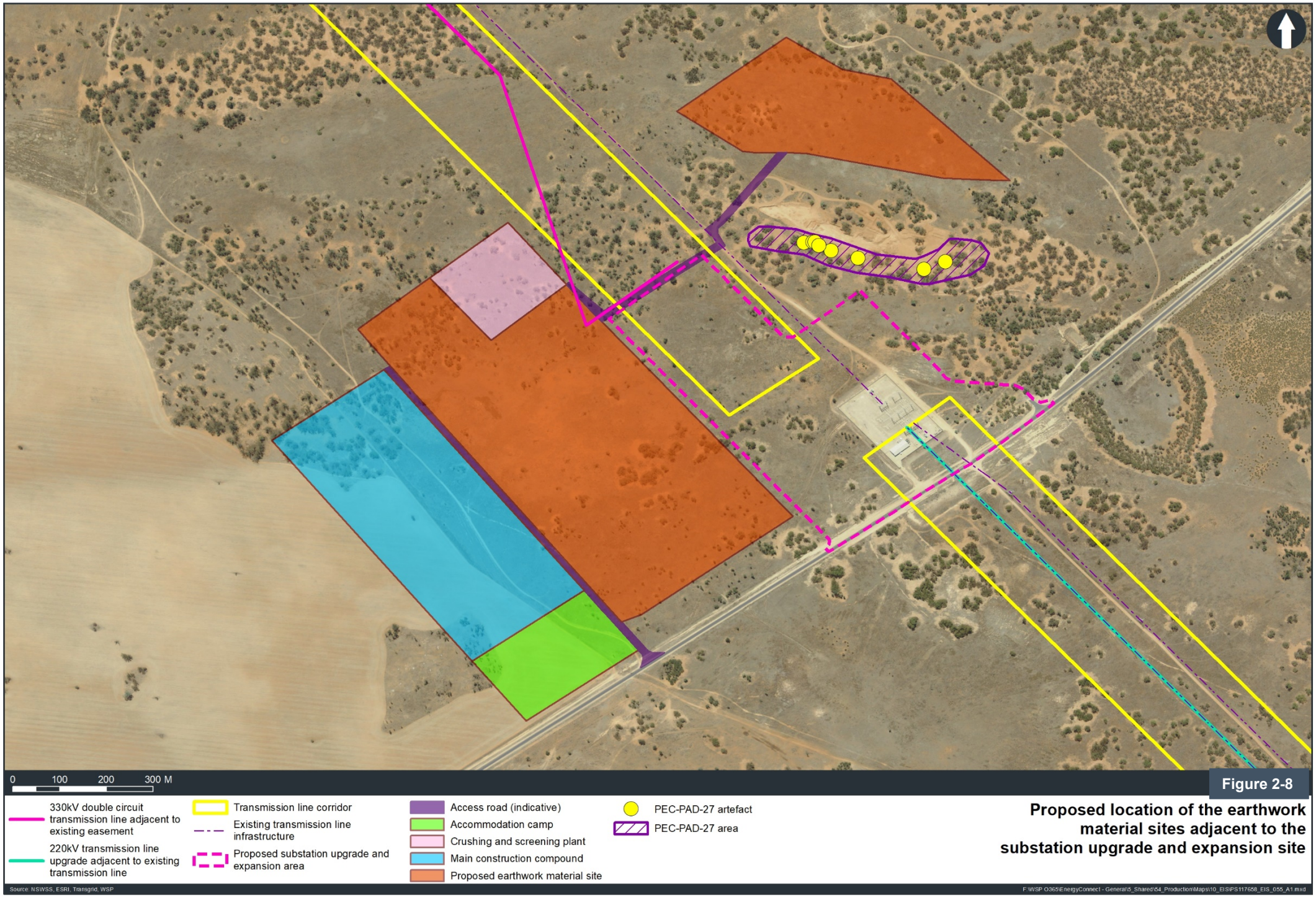

Figure 2-8

Proposed location of the earthwork material sites adjacent to the substation upgrade and expansion site

By sourcing material adjacent to the substation upgrade and expansion site where a majority of the earthworks would be required to be imported to, the key benefits of the proposed earthwork material sites would include:

- reduced overall truck movements during construction that are associated with the movement of materials for the substation site
- reduced safety risk associated with trucks and driver fatigue
- reduced overall program timeframe associated with the movement of materials for the substation site
- reduced impacts on local roads and proposed haulage routes.

Methodology

The construction methodology for the earthwork material sites would generally be consistent with the earthwork methodology presented in Section 6.6 of the EIS and consist of the following key activities:

- existing topsoil would be stripped from the substation site, laydown, camp and earthwork material sites locations. These would be stockpiled within the indicative disturbance areas and proposed asset protection zones
- excavation of the earthwork material sites. Following excavation, the material may be passed through a mobile crushing and screening plant (refer to section below)
- following the crushing and screening process, the refined material would be transferred to the pad site for the substation upgrade and expansion
- the proposed earthworks would remove the mounded areas of the two sites down to a level which is generally consistent with the surrounding landform, including re-establishment of the existing topsoil and seeding with appropriate vegetation seed mix to assist with stabilisation of the sites (subject to detailed design and consideration by a qualified ecologist). The landform of the sites would be reinstated so that water can freely run from and across the site along similar flow paths to existing conditions.

Crushing and screening

The main purpose of the mobile crushing plant would be to reduce the size of large rocks and meet the engineering requirements for use as the substation base.

Up to around 100,000 cubic metres (total volume) of material may need to be crushed and screened at a rate of around 600 to 700 cubic metres per day (with the final quantity material requiring crushing and screening to be confirmed after geotechnical investigations are complete). Crushing and screening activities could be undertaken between the period of 7:00am to 7:00pm seven days per week for the duration of the earthworks at this site.

Typical crushing and screening operation would include:

- unloading the accepted material via dump trucks / scrapers to a designated area within the earthwork material sites ready for the crushing and screening process
- loading the material into a hopper that feeds the crushing plant which would process material into a finer grade material
- the finer grade material would then feed into a screening machine which would consist of a deck which holds a screening media, that, when vibrated, causes particle separation
- once processed, a conveyer belt would transport the material out of the plant. Material for use would be stockpiled in a designated area adjacent to the earthwork material site.

The proposed crushing and screening plant would be relatively small and typically consist of two mobile crushing and screening units requiring a footprint of around 40 square metres to 60 square metres each. The specifications of the plant will be confirmed during detailed design.

The crushing and screening plant and material stockpiles would be contained within the earthworks material sites as shown in Figure 2-9. Material that is not suitable for use in the substation pad would be used during the re-instatement of the earthwork material sites.

The final details of the crushing and screening plant would be subject to ongoing the geotechnical investigation as part of the detailed design.

Figure 2-9 Example of a mobile crushing and screening plant process as proposed for use within the earthwork material sites

2.5 Temporary bypass for 220kV transmission line

2.5.1 EIS description of proposal

Section 6.6.4 of the EIS provided an overview of the general construction methodology for the transmission line structures. This methodology outlined the main activities as including:

- erection of the transmission line structures by assembling in sections on the ground and hoisting or lifting successive sections into place using cranes (or alternatively, erecting transmission line structures in place on the footings by installing individual members)
- following erection and securing of the transmission line structure, the transmission line would be strung by either a ground pulled draw wire (with brake/winch sites) or a line stringing drone.

For the purposes of the EIS, this methodology was considered appropriate for both the new sections of transmission line (comprising of the new double circuit 330kV transmission line from the SA/NSW border to the existing Buronga substation) as well as the upgrade of the existing TransGrid 220kV single circuit transmission line (known as line 0X1) between Buronga substation and the NSW/Victoria border to a new 220kV double circuit transmission line.

The 0X1 transmission line runs within an existing easement between the Buronga substation and the Red Cliffs Substation in north west Victoria. This easement has a current width of 50 metres. The new double circuit line is proposed to be constructed within a 50 metre wide easement (offset 25 metres to the south of the existing line).

2.5.2 Description of the proposed amendment

In order to minimise the disturbance area during the construction of 0X1 transmission line, an option to construct and operate a temporary bypass has been identified as part of the ongoing development of the construction methodology following appointment of the preferred construction contractor.

The proposed bypass line would consist of around 6.5 kilometres of temporary transmission line and around 60 supporting transmission line poles (around 18 metres in height).

The bypass line would commence from the existing Buronga substation and travel in a south east direction parallel to the eastern side of the existing 0X1 220kV transmission line (between the 0X1 220kV transmission line and the existing X3 220kV transmission line). The alignment for the proposed bypass line is shown in Figure 2-10.

The bypass line would have an offset of around 25 metres from both the existing 220kV 0X1 and X3 transmission lines.

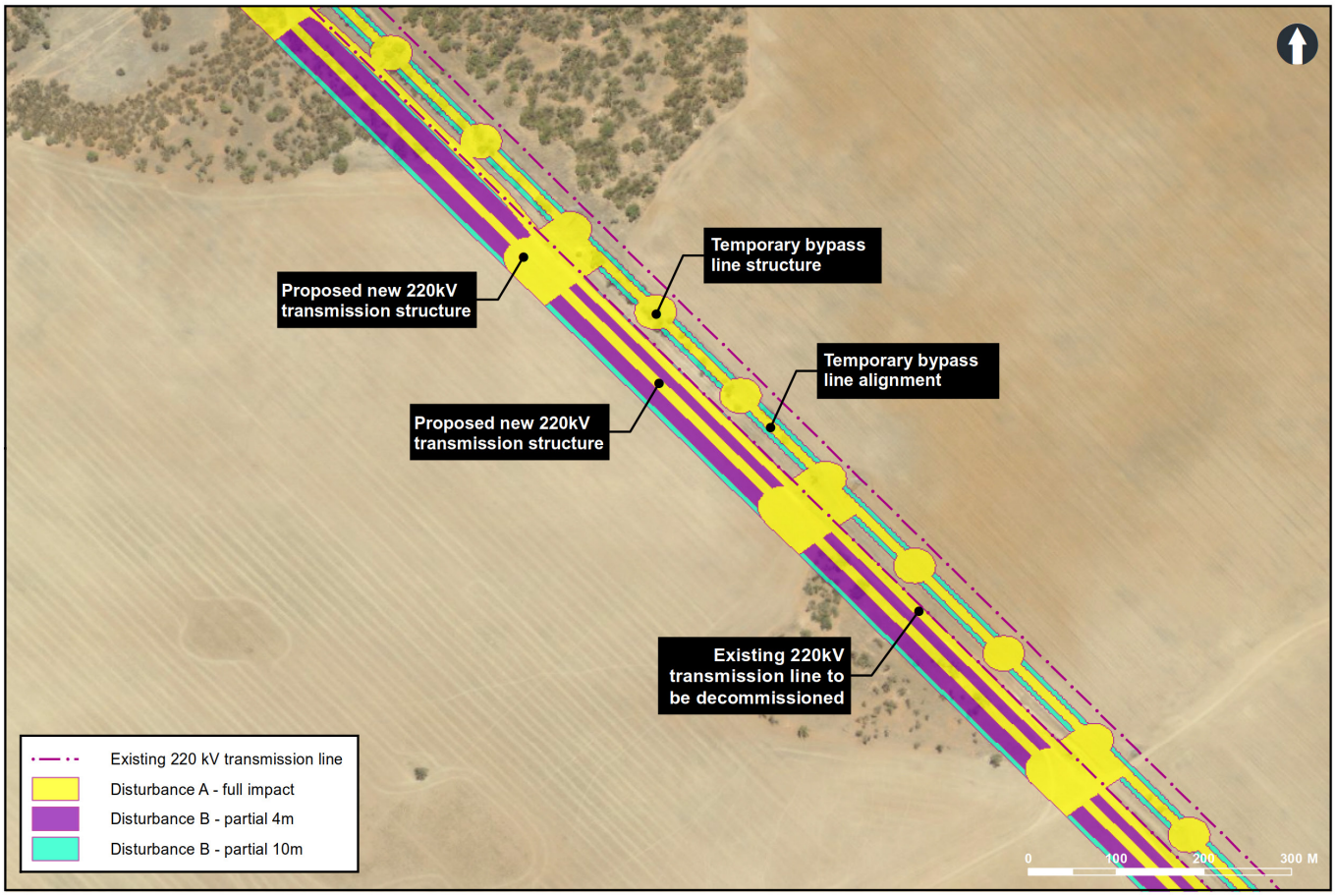

Figure 2-10 Indicative overview showing a section of the proposed 220kV temporary bypass line arrangement

The location of the temporary bypass line was also considered with respect to minimising additional environmental impacts for construction including:

- the temporary bypass line would be between and within two existing TransGrid easements
- any area cleared for the temporary bypass line would be temporary and allowed to regrow following removal of the bypass line.

The primary benefit of the bypass line would be that it would increase the safe working area between the proposed and existing 220kV transmission lines as it relocates the closest energized conductors to the construction zone further away. This would result in a number of further benefits, including:

- safety – the temporary bypass would allow the operation of mobile construction plant in this zone with a significantly reduced likelihood of breaching safe approach distances to the energized transmission conductors
- outages – by reducing the likelihood of breaching safe approach distances, the temporary bypass would reduce the risk of performing higher risk construction activities with the existing transmission line de-energized, referred to as outages. The existing 0X1 transmission line is a critical link in the south-western NSW Transmission Network which has a high impact on the export capability of renewable energy generators located in this region when de-energised
- construction certainty – outages on the existing 0X1 have negative impacts on the electricity market due to the removal of substantial renewable generation in south-western NSW. This makes these outages difficult to procure, requiring long lead times to arrange while being subject to cancellation at short notice. Construction of the temporary bypass and removing the likely need for outages would provide greater certainty to the construction methodology and overall project programme
- commissioning flexibility – construction of the temporary bypass line would allow both the proposed and existing transmission lines to operate at the same time, if required. Having this capability would provide greater flexibility in the staging and sequencing of commissioning works, allowing them to proceed with minimal disruption to the wider network.

Methodology

The construction sequence for the proposed bypass line would include the following construction activities:

- installation of around 60 new bypass poles between existing transmission line 0X1 Tower 1 and Tower 19 between the existing 0X1 and X3 220kV transmission lines
- stringing of two phases for the existing 0X1 circuit on the new bypass poles, leaving one single phase on the existing 220kV towers strung (i.e. completion of the bypass)
- connection and energisation of the bypass at existing transmission line 0X1 Tower 1 and Tower 19
- concurrently with the initial activities above, construction of the foundations would be commenced for the new double circuit steel pole line (as per the proposal described in the EIS)
- completion of construction of the new poles for the new double circuit line with only external one circuit strung
- energisation of the new line
- isolation and demolition of the existing (existing redundant) 220kV tower line and the temporary bypass transmission line
- stringing of the second circuit of the new 220kV double circuit line.

The indicative program for proposed bypass line is as follows:

- construction of the bypass – around three months
- commissioning (energisation) and use of the bypass – around seven months
- decommissioning and removal of the temporary poles and lines – around two months.

The temporary bypass would require some additional vegetation clearing including some additional areas of Chenopod sandplain mallee woodland (PCT 170) and PCT58 - Black Oak - Western Rosewood (PCT58), both of varying conditions. Clearing to ground level would be required at each of the bypass pole locations (up to a radius of around 20 metres at each pole and for a width of 10 metres between the transmission line structures to allow stringing to occur). The remaining areas of the bypass line corridor would be required to be maintained in accordance with TransGrid's operational maintenance requirements.

The final determination as to whether the temporary bypass line would be required would depend on outage availability of the 0X1 line and the construction sequencing. This would be resolved during detailed design.

2.6 Onsite wastewater treatment

2.6.1 EIS description of proposal

Wastewater would be generated from staff facilities and construction activities, including effluent from construction compounds and accommodation camps (onsite toilets and facilities). Section 6.9.2 of the EIS identified that wastewater would be collected via tanker trucks and disposed of at approved disposal locations in accordance with the NSW Environment Protection Authority (EPA) waste classification guidelines (NSW EPA, 2014).

2.6.2 Description of the proposed amendment

To minimise water use, an opportunity to reuse the effluent and greywater produced by the accommodation camps and construction sites has been identified following the exhibition of the EIS and in consultation with the preferred construction contractor. The proposed use and treatment of greywater as part of the overall construction processes would result in both a reduced need to dispose of the wastewater offsite at approved disposal locations as well as reducing the need to source water for construction from other sources and the associated traffic movements.

Overview

In order to manage effluent and greywater from the construction compounds and accommodation camp sites, wastewater treatment facilities would be constructed at both accommodation camp sites (refer to Section 2.1). The systems would be designed to collect wastewater from showers, kitchens, laundries and toilets, with toilet and kitchen facilities located both at the camp and the office areas.

The wastewater treatment facilities would be designed to accommodate the proposed personnel numbers at Buronga and Wentworth construction compounds and accommodation camp sites. The wastewater system would treat the effluent produced from both the camp and office facilities.

Wastewater produced during the establishment of the camps would be collected and transported to a council wastewater treatment plant. This process would be in place during the site establishment works for the proposed and would cease once the wastewater treatment facilities are operational.

The proposed wastewater treatment plants would be a generally contained system and would include biological and chemical treatment, filtration and disinfection. Subject to detailed design of the wastewater treatment facilities, it is proposed that a sequencing batch reactor type sewage treatment plant be constructed at each of the primary camp sites. The most suitable treatment processes and plant configuration would however be finalised during detailed design.

At site locations outside the Buronga and Wentworth accommodation camp sites, welfare facilities would continue to be installed to provide amenity to workers at these locations (as described in the EIS). Liquid waste would be removed and transported to a licenced facility.

Treatment process

The volume of water to be treated would be dependent on the camp and office occupancies and associated water use at any one time throughout the construction period. A conservative allowance of up to 240 litres per person, per day has been allowed for. At peak, the Buronga accommodation camp would therefore see a potential daily throughput for treatment of up to 96,000 litres with the Wentworth accommodation camp allowing for up to around 48,000 litres.

An example of the proposed type of wastewater treatment facility is shown in Figure 2-11.

Figure 2-11 Indicative example of the proposed wastewater treatment plant

The typical operation of the wastewater treatment facilities would include the following steps.

- *Input of wastewater* – Collection of raw water (from sources such as showers, kitchens, laundries and toilets, with toilet and kitchen facilities) through use of pumps. Wastewater would undergo a mechanical screening process to remove all the inorganic material from the sewage and dispose it to the waste bin.
- *Equalisation process* – Pumps would then transfer the raw wastewater to the wastewater treatment facility (into equalisation tanks). The equalisation tanks would provide sufficient storage capacity to control the peak flow and provide the treatment plant with continuous flow.
- *Treatment tanks* – The treatment tank(s) would function in five different modes being: fill, aerobic, anoxic, settle and decant. The treatment tank would cycle through all modes of operation up to four times per day. The storage tanks would be located above ground next to the wastewater treatment system in a bunded area (up to around 110,000 litre total capacity to allow for potential storage during rain events).
- *Final effluent treatment* – Treated effluent would be withdrawn from the tanks and pumped into the final storage and control tank. Additional tanks would be provided in order to increase the storage capacity of up to three days of operation during wet weather conditions.

  Effluent from the wastewater treatment facilities would be discharged to a small basin type structure ('turkey's nests'), following which greywater would be collected and transported via water carts for reuse in dust suppression, compaction of materials or other construction activities which may require and can utilise grey water. Subject to detailed design, it is anticipated that the turkey nests would include:

  - Buronga accommodation camp: around 20 metres by 20 metres by two metres deep providing around 800,000 litres of storage
  - Wentworth accommodation camp: around 13 metres by 13 metres by two metres deep providing around 338,000 litres of storage.

The turkey's nests would be lined with high density polyethylene/geosynthetic clay liner to avoid potential interaction with groundwater.

Sludge dewatering

All wastewater treatments plants produce sludge that requires disposal on regular intervals. Liquid waste sludge would be transported to a facility licensed to accept the waste.

Final effluent quality

The wastewater treatment system would be designed, maintained and monitored in accordance with *AS/NZS 1547 On-site domestic wastewater management, Designing and Installing On-Site Wastewater Systems* (WaterNSW, 2019) and the *Australian Guidelines for Water Recycling: Managing Health and Environmental Risks (Phase 1)* (National Resource Management Ministerial Council, Environment Protection and Heritage Council and Australian Health Minister's Conference, 2006).

The wastewater treatment facilities would be designed to produce effluent that meets the requirement for dust suppression and other construction related activities. The treated wastewater quality would be treated to comply with ANZECC and ARMCANZ (2000) guidelines for irrigation water and subject to disinfection prior to use. Wastewater discharges to watercourses would not occur.

Based on the proposed capacity of the wastewater treatment facilities at each camp site, it is not expected that an environment protection licence would be required under the *Protection of the Environment Operations Act 1997* (PoEO Act) (clause 36 of Schedule 1).

2.7 Construction water supply

2.7.1 EIS description of proposal

Section 6.2.1 of the EIS noted that water would be required during construction for a range of activities including:

- dust suppression on the substation construction site and transmission line structure construction sites, and on access tracks through the use of a water spray attached to a tanker vehicle
- concrete batching activities for use when mixing with cement, aggregates and water for transmission line structures and substation foundations
- wetting backfill material (if it is too dry for effective compaction)
- general worker facilities at the main construction compound and camp sites.

An estimated 616 megalitres of water would be required throughout the construction period.

The EIS identified that water would be supplied for the proposal from existing regulated sources and that water would be purchased from the existing water market within the region or from local council facilities. Access to these sources would occur through the use of existing, licensed water extraction infrastructure only.

At the time of preparation of the EIS, TransGrid had commenced discussions with Wentworth Shire Council to access the required volume of potable water for the proposal from existing council facilities. For non-potable water supply, commercial discussions with potential suppliers to secure non-potable water had also commenced.

2.7.2 Description of the proposed amendment

Following exhibition of the EIS, ongoing discussions have continued with a range of potential water suppliers to provide additional clarity in relation to access to potable and non-potable water during construction.

Water supply points

As part of the ongoing discussion with the potential water suppliers, a series of water supply points have been identified which would provide connection points to existing water supply pipelines. No new extraction infrastructure from existing watercourses is proposed as part of the water supply points proposed and water will be purchased under licensing agreements with the various water suppliers/landholders as required. The currently identified water supply points are shown in Figure 2-12 and described in Table 2-3.

Indicative locations and works required at each site are described within this section. This information would be confirmed during final negotiations with the water supplier. Ongoing consultation with water suppliers may also identify other water sources that may be used for the construction of the proposal which would be secured under standard supply/purchase agreement from existing facilities (no infrastructure amendments needed for them). This may include additional sources of potable water from areas such as Mildura. Should any approvals be required for additional site(s), these would be obtained as part of separate environmental approval processes.

Table 2-3 Proposed construction water source locations

Location	Description of water supply point
Alcheringa Road, Buronga	**Type**: Non-potable **Typical use**: Buronga substation and surrounding area and Transmission line west of Buronga **Description**: This site would be located at the point of the existing Buronga re-lift pump station operated by Western Murray Irrigation pipeline. The proposed works would include installation of a new standpipe and connection to the existing Western Murray Irrigation pipeline. The area is currently cleared and adjacent to Alcheringa Road. It is estimated that, at peak construction, the site would accommodate up to around 20 loads per day (indicatively using between 15,000 and 40,000 litre water trucks).
Fletchers Lake Drive, Dareton	**Type**: Non-potable **Typical use**: Transmission line west of Buronga **Description**: The site does not currently provide any existing aboveground water supply infrastructure. The proposed works would include installation of a new standpipe and connection to the existing Western Murray Irrigation pipeline. The area is currently not utilised (road reserve/verge) adjacent to Fletchers Lake Drive. It is estimated that, at peak construction, the site would accommodate up to around 20 loads per day (indicatively using between 15,000 and 40,000 litre water trucks).
Silver City Highway intersection with Milpara Road, Anabranch South	**Type**: Non-potable **Typical use**: Transmission line around Great Darling Anabranch **Description**: The site does not currently provide any existing aboveground water supply infrastructure. The proposed works would include the installation of a new standpipe and connection to the existing Broken Hill pipeline. The area is currently cleared and adjacent to Milpara Road on the western side of the Silver City Highway. It is estimated that, at peak construction, the site would accommodate up to around 20 loads per day (indicatively using between 15,000 and 40,000 litre water trucks).
River Drive, Buronga	**Type**: Potable **Typical use**: Buronga accommodation camp and construction compound **Description**: The site currently includes an access road to an existing overhead fill point of River Drive, Buronga. No new infrastructure would be required to allow for access to this water supply point. It is understood that the existing infrastructure is used on an infrequent basis, and the demand for the fill point demand fluctuates depending on what projects are taking place within the region. It is estimated that, at peak construction, the site would accommodate up to around two to three loads per day (indicatively using between 15,000 and 40,000 litre water trucks).

Location	Description of water supply point
Beverley Street, Wentworth	**Type**: Potable **Typical use**: Wentworth and Buronga accommodation camp and construction compounds, and concrete batching plants **Description**: The site currently includes an access road to an existing overhead fill point along Beverly Street, Wentworth. No new infrastructure would be required to allow for access to this water supply point. It is estimated that, at peak construction, the site would accommodate up to around two loads per day (indicatively using between 15,000 and 40,000 litre water trucks).
Wentworth accommodation camp and construction compound	**Type**: Non-potable **Typical use**: Wentworth accommodation camp and construction compound and transmission line (west of Wentworth) **Description**: The proposed location does not currently provide any existing aboveground water supply infrastructure. The proposed works would include installation of a piped connection between the pump station within the Fort Courage Caravan Park site and the proposed Wentworth construction compound and accommodation camp (including the need to continue the pipe under Renmark Road). The connection would consist of around 400 metres of new 450 millimetre diameter pipe to allow for water supply to be available to the camp as required. The pipe would be located within a corridor around six metres wide adjacent to the existing track. It is expected that this connection would meet a majority of the water requirement for the Wentworth construction compound and accommodation camp and western section of the transmission line.
690 Pomona Road, Pomona	**Type**: Non-potable **Typical use**: Typically the transmission line west of the Darling Anabranch **Description**: The site currently includes an access road to an existing water pump out point within the property of 690 Pomona Road, Pomona. No new infrastructure would be required to allow for access to this water supply point. It is estimated that, at peak construction, the site would accommodate up to around four to five loads per day (indicatively using up to 25,000 litre water trucks).

As described in Section 2.6.2 above, effluent from the wastewater treatment facilities at the Buronga and Wentworth accommodation camp sites would also would be collected and transported via water carts for reuse in dust suppression, compaction of materials or other construction activities which may require and can utilise grey water.

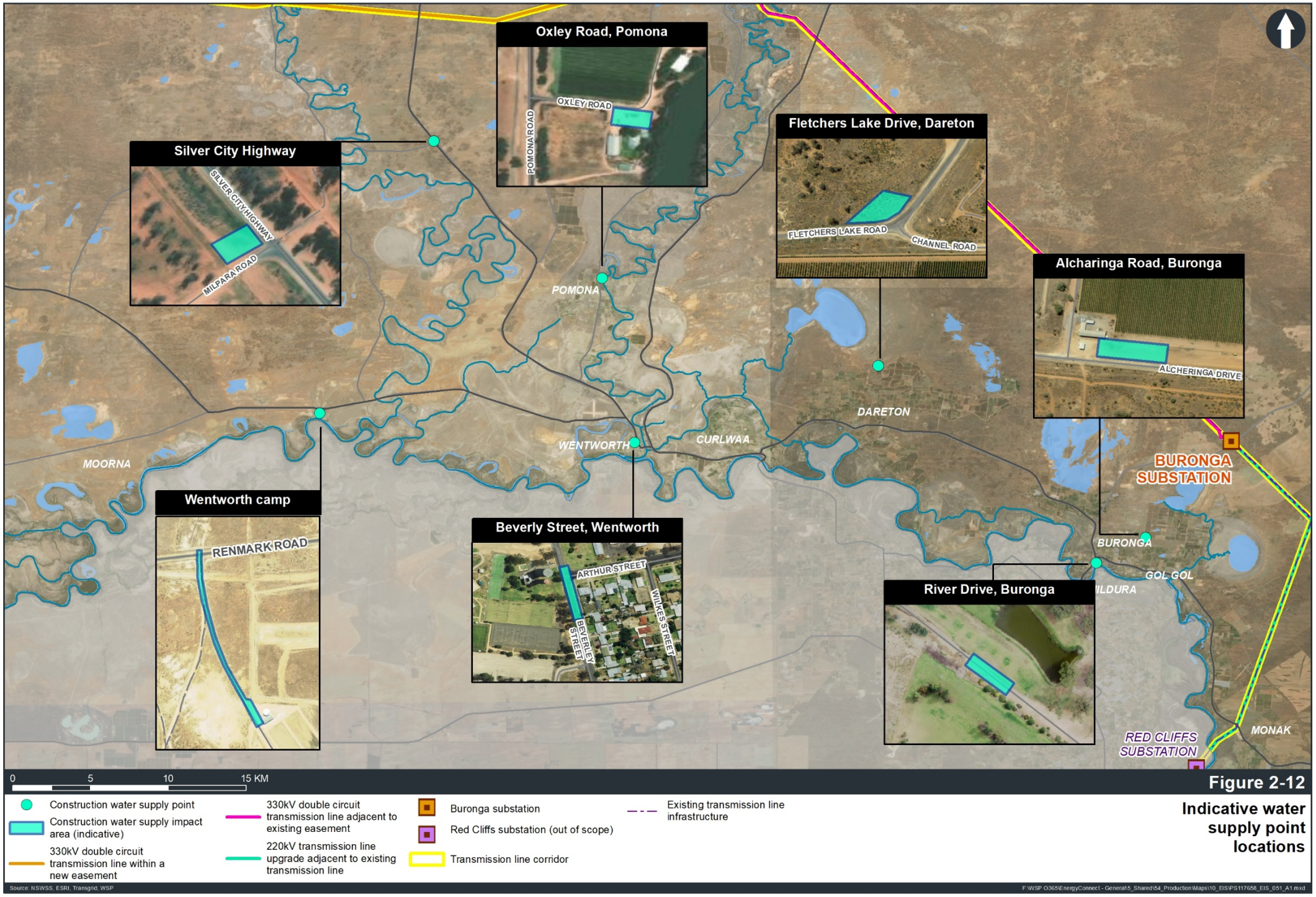

Figure 2-12

Indicative water supply point locations

Methodology

As described in Table 2-3 above, two new elements of infrastructure would be required to be constructed to provide water supply access points, including new standpipe infrastructure and a new pipeline to the Wentworth accommodation camp and construction compound. The key construction methodologies for each of element of infrastructure is provided in the following sections.

Method (new standpipe)

The construction methodology for the new standpipe infrastructure at the Alcheringa Road, Fletchers Lake Drive and Silver City Highway sites would generally be as follows (subject to development of a detailed construction methodology):

- remove topsoil and place in bund at edge of site (for re-use during rehabilitation)
- place around 300 millimetres of sub-base in two layers at the point of the proposed hydrant and truck stand area (existing drainage adjacent to each road to be maintained)
- construct hydrant to connect to existing pipe (around one week)
- on completion of the proposal the infrastructure would be removed and the area reinstated (unless otherwise agreed with the relevant landholder).

Method (new pipeline)

The construction methodology for the new pipeline to connect to the Wentworth construction compound and accommodation camp along Renmark Road would generally be as follows (subject to development of a detailed construction methodology):

- clear any vegetation adjacent to the existing track
- for the section adjacent to the existing track and within the Wentworth accommodation camp and construction compound (around a two week process):
  - the alignment would be trenched to a depth of around 600 millimetres below surface level and a poly pipe would be installed
  - the trench would be backfill with bedding sand and other site won material from the proposal.
- for the section required to cross under Renmark Road
  - the pipe would be installed in staged over a period of up to two days
  - the road surface would be removed (one lane at a time allowing for traffic control of the site) the alignment would be trenched to a depth of around 450 millimetres below the road surface level and a poly pipe would be installed
  - the trench would be backfill with bedding sand and other site won material from the proposal
  - the existing road surface of Renmark Road would be restored.

Additional water supply points may also be identified as the detailed design for the proposal is progressed in order to reduce distance for, and number of, vehicle movements associated with water supply. The ongoing development of the construction methodology and commercial discussions with suppliers will continue to consider opportunities to minimise the distance between the fill location and the point of use wherever possible. Should additional sites be identified, these would be in areas of minimal environmental significance. Where possible, additional location(s) would be provided to existing supply points within the indicative disturbance area.

2.8 Indicative disturbance area and transmission line corridor

2.8.1 EIS description of proposal

Chapter 8 of the EIS outlined the approach to assessment of the potential environmental impacts associated with the proposal, including the indicative disturbance area for required to construct and operate the proposal.

To achieve a level of flexibility while undertaking a rigorous level of impact assessment, the approach adopted for the EIS was to assess a 'worst case' impact. For a majority of the impact assessed (with the exception of biodiversity and heritage), it was conservatively assumed that any area could be impacted by the proposal within the transmission line corridor and areas identified for Buronga substation upgrade and expansion, the main construction compounds and accommodation camps. This provided an understanding of the 'worst case' impact as only a portion would be temporarily or permanently impacted by the proposal in reality. Some access tracks were identified as potentially being required outside of the transmission line corridor, however these locations would be within the broader proposal study area.

For biodiversity and heritage, an indicative disturbance area was assessed to provide a greater understanding of the likely magnitude of direct impacts expected from the proposal on these particular environmental issues. This approach was adopted to avoid the 'worst case' approach that would result in substantial overestimation of the likely biodiversity and heritage impacts (for example, assuming the whole of the transmission line corridor would be cleared of vegetation).

Indicative disturbance area

The indicative disturbance area identified in the EIS comprised varying degrees of physical disturbance along the transmission line alignment to reflect construction and operational requirements – specifically:

- **disturbance area A** – this is the area where ground disturbance would be required. It refers to an area around transmission towers and between transmission towers in which all vegetation would be removed during construction and subject to ongoing maintenance during operation (i.e. removal to ground level) for operational and safety requirements (including bushfire).
- **disturbance area B** – this is the area where ground disturbance would not be required except in limited circumstances. It refers to an area between transmission towers in which trimming of vegetation above about two metres in height would be required to meet the vegetation clearance heights.

Figure 8-1 of the EIS provided an overview of the key assumptions associated with the indicative disturbance area in a typical transmission line section (replicated below in Figure 2-13).

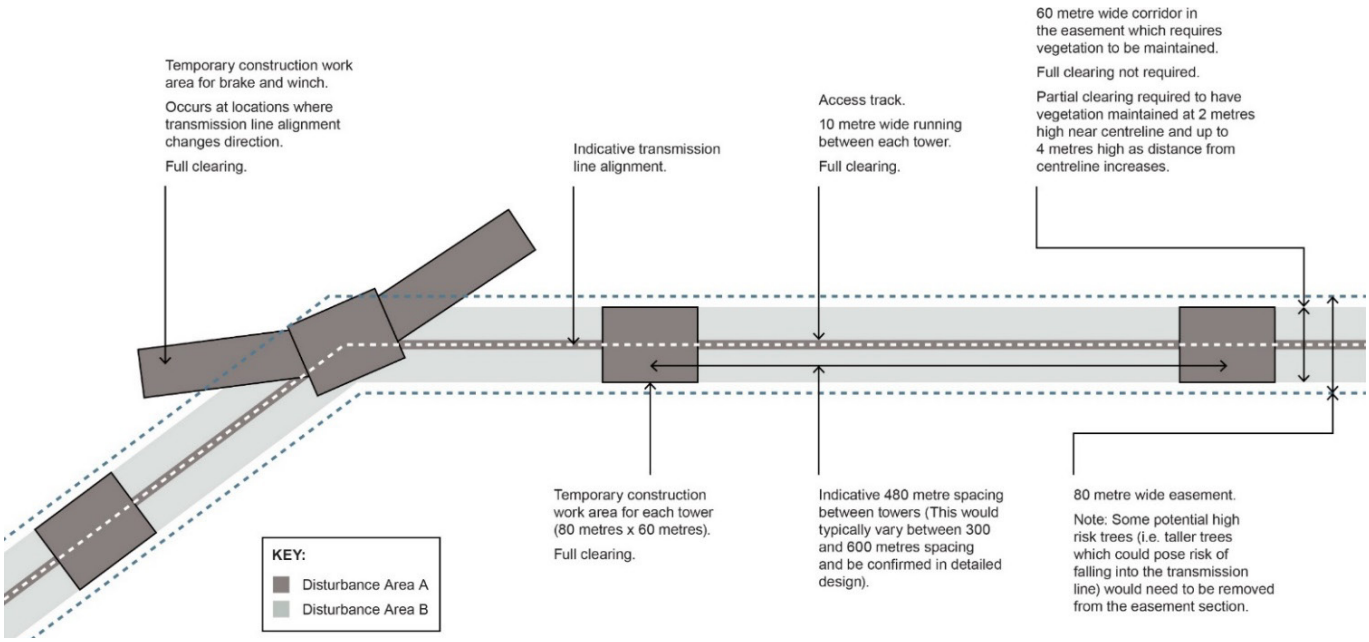

Figure 2-13 Indicative disturbance area definition for a typical transmission line section – as presented in the EIS

The indicative disturbance area for these impact assessments also included areas identified for Buronga substation upgrade and expansion and the main construction compounds and accommodation camps. These were identified as being contained within disturbance area A.

The area of the disturbance area as presented in the EIS was around 1,039 hectares.

Transmission line corridor

The proposed transmission line corridor was identified in the EIS as consisting of a 200-metre wide corridor in which the final transmission line easement and transmission line infrastructure would be contained within (noting the operational noise assessment was undertaken based on a slightly reduced 120-metre wide corridor). Construction activities associated with the transmission line were assumed to be contained within this area. The area was defined to provide flexibility to the detailed design of the transmission line.

The indicative alignment of the proposed transmission line corridor was shown in Figure 5-2a to Figure 5-2c of the EIS.

2.8.2 Description of the proposed amendment

It is proposed to amend the indicative disturbance area to take into account the following:

- refinement of the proposed transmission line structure locations and transmission line alignment, including the realignment of the transmission line to avoid an identified area of *A. nullanulla* vegetation (refer to Section 2.9.1 for details)
- refinement of the proposed transmission line structure footprint to reflect generally smaller structure footprints for most structures
- changes to the categorisation of disturbance along the transmission line alignment (refer below) to reflect refinements to the vegetation clearing strategy
- revision to the proposed access track strategy to make use of existing access tracks (wherever possible) in order to seek a reduction in the overall the amount of clearing required (refer below)
- inclusion of the temporary bypass transmission line
- avoidance of PAD 19 and PAD 25 through the amendment of proposed access requirements in order to minimise subsurface impacts.

These amendments are in response to submissions received during the exhibition of the EIS, and reflect further development of the proposal design and access strategy following the engagement of the preferred construction contractor.

The updated disturbance area is referred to as the ‘amended indicative disturbance area’, and also takes into account the amendments described in Section 2.2 to Section 2.5, and Section 2.7.

The amended indicative disturbance area would comprise about 1,189 hectares, which is about 150 hectares larger than the indicative disturbance area as described in the EIS.

Where relevant, and as discussed throughout Chapter 4 and the appendices to this amendment report, the amended indicative disturbance area has been used as a basis for the environmental assessment of the amended proposal.

Disturbance area categories

Following the exhibition of the EIS, disturbance area A and disturbance area B has been refined into the following categories:

- **disturbance area A** – this is the area where ground disturbance would be required. It refers to an area around the transmission line structures and for new/upgraded access tracks in which all vegetation would be removed during construction. It would include potential sub-surface impacts through construction activities such as grading, excavation, and full tree removal. Except in areas where only temporary disturbance is required (i.e. temporary access tracks), this area would also be subject to ongoing maintenance during operation (i.e. removal to ground level) for operational and safety requirements (including bushfire).

- **disturbance area A (centreline clearing)** – this is the area where ground disturbance would be minimised wherever possible. It refers to areas between the proposed transmission line structures in which all vegetation would be removed during construction to ground however topsoil materials and ground material would be retained (where possible) and would not require sub-surface impacts in these locations. This area would also be subject to ongoing maintenance during operation (i.e. removal to maintain vegetation clearance requirements) for operational and safety requirements (including bushfire).
- **disturbance area B** – this is the area where ground disturbance would not be required except in limited circumstances. It refers to an area between transmission structures in which vegetation growth heights have the potential for infringing on TransGrid's vegetation clearance requirements. This area has been assessed as including removal of vegetation using a transitional approach scaling from a four metre growth height potential at the middle of the easement, extending to a 10 metre growth height potential or higher at the outer extents of the easement (refer Figure 2-15 for explanation of transitional approach) (noting the EIS provided for clearing of vegetation with a growth height above two metres across the whole of the easement).

An overview of the amended indicative disturbance area is shown in Figure 2-14. A figure showing the indicative approach to vegetation clearing is shown in Figure 2-15 and Figure 2-16. These areas are indicative and may be subject to movement during the detailed design process.

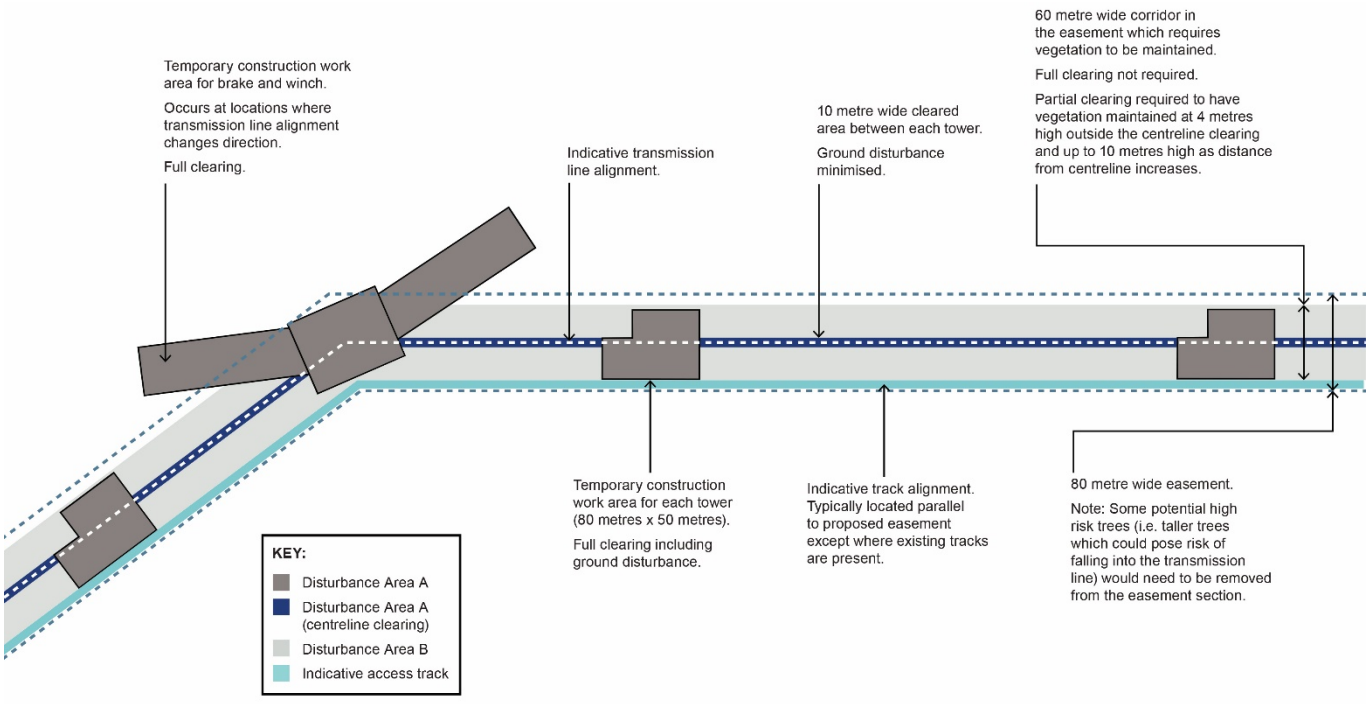

Figure 2-14 Amended indicative disturbance area definition for a typical transmission line section

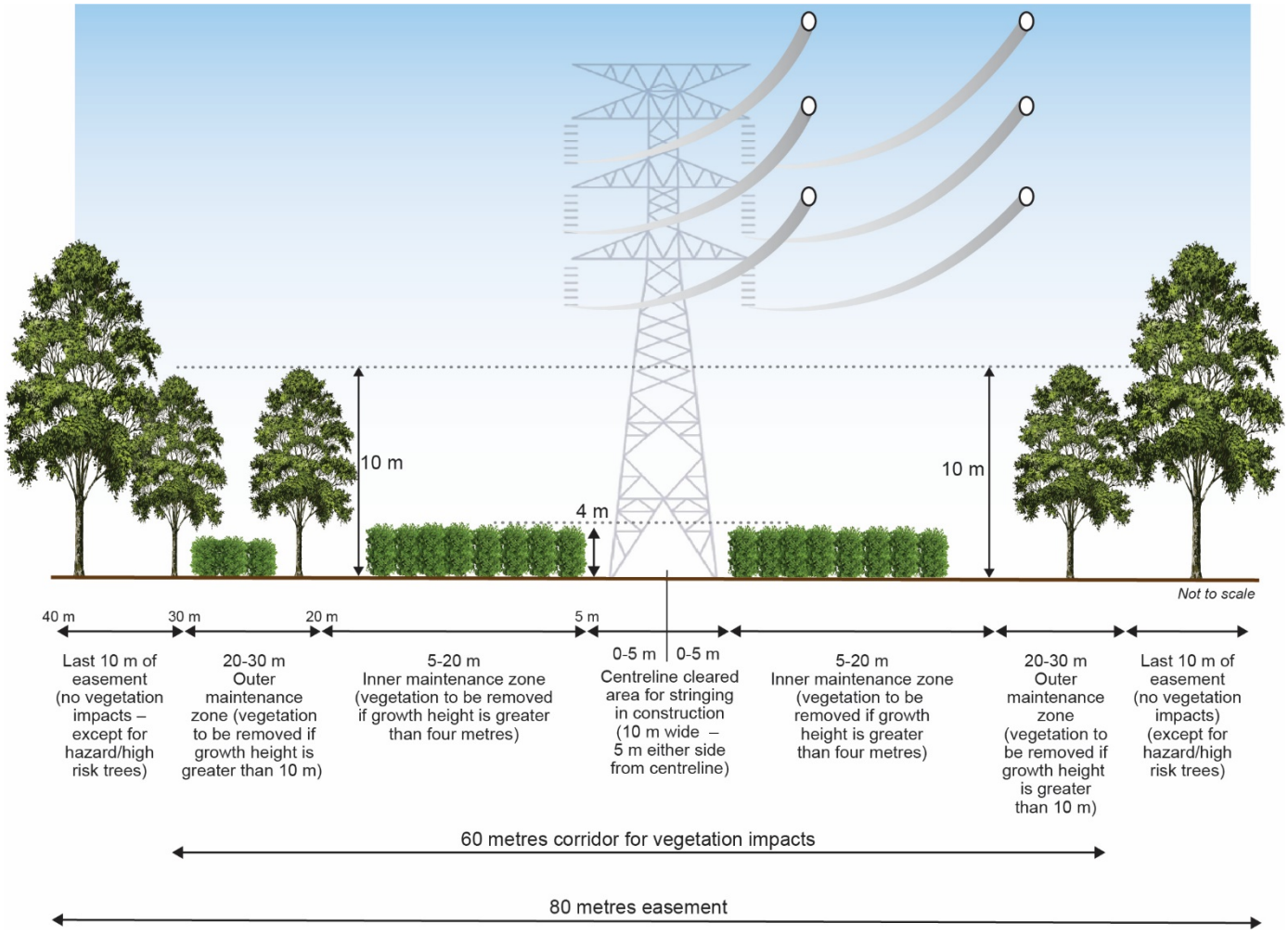

Figure 2-15 Indicative approach to vegetation clearing in construction for 330kv line mid easement between towers (elevation view)

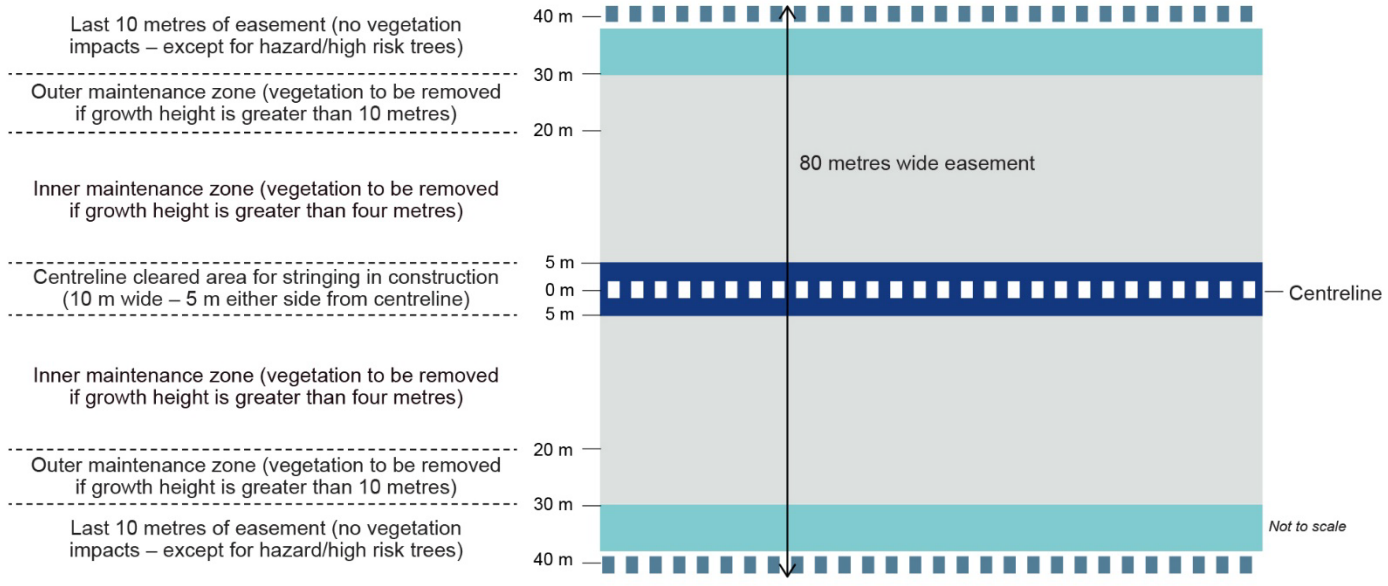

Figure 2-16 Indicative approach to vegetation clearing in construction for 330kv line mid easement between towers (plan view)

From time to time during construction and operation, hazard/high risk trees would also be removed from within, or adjacent to, the easement. Hazard/high risk trees are any tree or part of a tree that if it were to fall would infringe on the vegetation clearance requirements at maximum conductor sag of the transmission lines. Hazard/high risk trees would be identified during detailed designed based on the transmission line conductor profile.

Access track strategy

While the EIS identified that existing roads and access tracks would be preferentially used, it was assumed that access tracks would be contained within the centreline clearing area for assessment purposes (as shown in Figure 2-13). Following appointment of the preferred construction contractor, further refinement of the access track strategy for the proposal has been carried out.

This has resulted in:

- identification and focus on the use of existing access tracks to minimise additional disturbance to the transmission line easement wherever possible. This would include the use of existing farm track, alternative property access points and similar existing infrastructure. This has now been accounted for in the definition of disturbance area A
- reduction in the use of longitudinal access tracks where existing roads are located adjacent to the proposed transmission line alignment (such as along Renmark Road).

Details of the revised access track arrangements are shown on the mapping provided in the revised *Biodiversity Development Assessment Report* (Appendix D) and the revised *Cultural Heritage Assessment Report* (Appendix E).

This approach also allows for the management of potential traffic conflicts between construction vehicles and to ensure the efficient movement plant and materials between transmission line structure sites. By utilising existing road or track networks wherever possible, construction traffic can utilise existing, dual direction traffic lanes to pass, minimising the need for a wider centre line access track or multiple passing bay areas at regular intervals.

Single lane tracks would continue to be utilised in specific locations of higher environmental sensitivity to limit ground impact. Single lane tracks are however not considered to be practicable for long lengths of track due to the frequency of vehicles passing.

The revised access track strategy seeks to reduce the overall the amount of clearing required to effectively access transmission line structure sites. When combined with the opportunity to minimise disturbance to areas between structures to avoid sub-surface impacts (as described earlier in this section), it is considered that the revised access track strategy would result in an overall improved environmental outcome and greater construction efficiency for the proposal.

Transmission line corridor

The proposed transmission line corridor would retain the 200-metre wide corridor as proposed in the EIS. The proposed amendments as described in this Amendment Report would generally be contained within the transmission line corridor identified in the exhibited EIS with the following exceptions:

- realignment of the corridor to accommodate the proposed new alignment of the transmission line to avoid *Austrostipa nullanulla* (refer to Section 2.9.1)
- minor expansion of some temporary construction elements outside the transmission line corridor to allow for the construction areas associated with a series of break and winch sites along the transmission line alignment.

2.9 Clarifications and refinements

A number of clarifications and refinements have been identified as a result of ongoing design of the proposal, comments received during exhibition of the EIS and minor errors noted in the previous documentation. These clarifications and refinements are detailed in the following sections.

2.9.1 Realignment of the proposed transmission line to avoid *Austrostipa nullanulla*

The exhibited EIS identified that a section of the proposal would have the potential to result in the loss of up to 2.18 hectares of habitat for *Austrostipa nullanulla* (a threatened species and candidate for serious and irreversible impacts). The location of the identified species is along the proposed transmission line alignment around 9.5 kilometres to the north west of the intersection of Renmark Road and Nulla Road.

As part of their submission regarding the exhibition of the proposal, the NSW Department of Planning, Industry and Environment – Biodiversity Conservation Division (DPIE BCD) requested an explanation of why this vegetation could not be avoided. To address DPIE BCD submission, further design development of the alignment for the proposal at this location has been undertaken to reduce potential impacts within the vicinity of the *Austrostipa nullanulla*.

Design development has identified an alignment that would enable additional avoidance of this species and its habitat. The amended alignment would provide a deviation of the alignment to the east of the alignment previously proposed. The amended alignment would allow for the relocation of an existing transmission line structure to minimise impacts on recorded *Austrostipa nullanulla*. Refinement of the proposed access tracks has also been undertaken to avoid areas of recorded *Austrostipa nullanulla.* The revised design would still result in some impacts to the *Austrostipa nullanulla* including around 1.15 hectares of habitat (a decrease in impacts by around 0.97 hectares, refer to Section 6.2.2 for details). Ongoing detailed design would seek to further avoid impacts to this species. The revised alignment is shown in Figure 2-17.

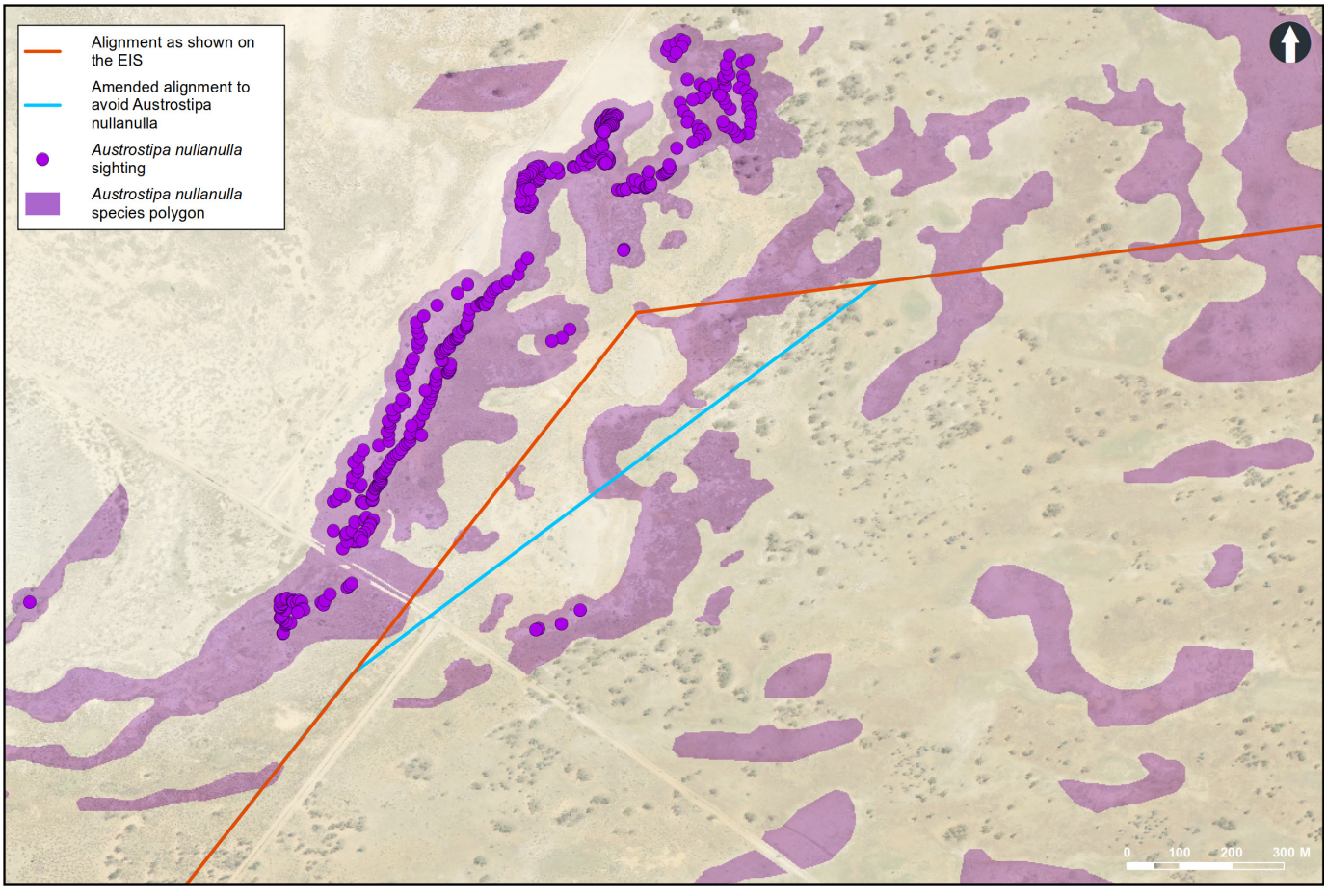

Figure 2-17 Revised alignment to avoid *Austrostipa nullanulla*

2.9.2 Construction traffic volumes

Section 6.11 of the EIS identified the estimated number of construction vehicle movements associated with the construction of the proposal. Following appointment of the preferred construction contractor and further development of the construction strategy, an increase in overall traffic volumes was identified due to:

- the overall increase in full-time equivalent construction workforce for the proposal from around 400 to 600 workers (refer to Section 2.1)
- increased clarity on the heavy vehicle volumes required to support transmission line works and the substation upgrade and expansion, including:
  - the amount of materials being delivered to site from the nominated port(s) as well as material being transported from the laydown yard(s) to sites along the transmission line alignment
  - peak activities that would occur concurrently. This would include transmission line structure foundations and structure assembly, specifically concrete trucks to backfill structure leg foundations, and crane trucks to off load transmission line structure materials to site.

A comparison of indicative vehicle movements between those exhibited in the EIS and the proposed revised vehicle movements is presented in Table 2-4. These revised volumes also account for the winning of earthwork material described in Section 2.4 of this report.

Table 2-4 Comparison of indicative vehicle movements – exhibited EIS and revised movements

Vehicle type	Phase	Indicative vehicle movements during construction (exhibited EIS) [1, 2]	Indicative vehicle movements during construction (revised) [1, 2]
Buronga substation upgrade and expansion site			
Light vehicles	Indicative daily movements (typical day)	50	80
Light vehicles	Maximum daily movements (critical/peak construction period)	100	200
Heavy vehicles	Indicative daily movements (typical day)	15	40
Heavy vehicles	Maximum daily movements (critical/peak construction period)	80	200[3]
Transmission line works			
Light vehicles	Indicative daily movements (typical day)	67	200
Light vehicles	Maximum daily movements (critical/peak construction period)	150	300
Heavy vehicles	Indicative daily movements (typical day)	15	100
Heavy vehicles[3]	Maximum daily movements (critical/peak construction period)	30	200

1. *Indicative daily movements based on current program of works (as at the time of the EIS and following identification of the preferred construction contractor respectively). These numbers are an average and there would be days of increased peak activities (or decreased activities) which may impact these average/indicative numbers.*
2. *Vehicle movements are each way (i.e. a heavy/light vehicle arriving and leaving a site within a day counts as two movements).*
3. *300 should the earthwork material sites described in section 2.3 not proceed.*

2.9.3 Oversize and overmass vehicle requirements and haulage routes

In response to the Transport for NSW submission (refer to section 6.9 of the Submissions Report), additional detail regarding the requirements for oversize and overmass vehicles during construction has been developed. The following sections provide an overview of the additional information since preparation of the EIS.

Large scale equipment requirements

Transport for NSW requested additional information regarding the number and size of the oversize and overmass vehicles required to deliver components, including substations. Based on the currently available information and design, an indicative overview of the potential extent of large scale equipment that would require oversize and overmass vehicles is provided in Table 2-5. This table also provides an anticipated port of delivery for these materials/equipment (subject to further confirmation with the relevant suppliers during detailed design).

Table 2-5 Indicative large scale equipment requirements for oversize and overmass vehicles

Materials	Estimated quantity (i.e. number of trucks)	Length (m)	Width (m)	Height (m)	Weight (t)	Anticipated delivery port
Large Scale Equipment (LSE)						
200 MVA 330/220 kV power transformers	3	9	3.5	4.5	145	Adelaide
200 MVA 330kV phase shifting transformers	5	10.1	3.3	4.2	160	Adelaide
Sychronous condenser	4	Various up to 8.3	Various up to 5.5	Various up to 4.6	Various up to 147	Adelaide
60 MV 330kV shunt reactors	4	5	3	4	68	Adelaide
50 MVr 330 kV capacitor banks	16	12.2	2.43	2.59	20	Adelaide
Substation materials – small HV circuit breakers / disconnectors / current transformers	220	12.2	2.43	2.59	20	Melbourne
Substation materials – containerised steel structures	55	12.2	2.43	2.59	20	Melbourne
Containerised materials						
Transmission line structure steelwork and stubs steelwork	348	12.2	2.43	2.59	20	Melbourne
Conductor	127	12.2	2.43	2.59	20	Melbourne
OPGW & earth wire	16	12.2	2.43	2.59	20	Melbourne
Insulators and fittings	67	12.2	2.43	2.59	20	Melbourne

Oversize and overmass vehicle haulage routes

In addition, a *Transport Route Study* (Rex Andrews, 2021) for the route between Port Adelaide and the Buronga Substation has been undertaken to provide an assessment of this particular route. The *Transport Route Study* provides an initial assessment this haulage route for oversize and overmass vehicles including consideration of factors such as:

- description of the port of import
- an overview of the proposed haulage route
- a summary of the transport approvals required
- an indicative travel schedule breakdown
- identification of potential pinch points and mitigation measures/ actions to be undertaken
- overviews for elements such as:
  - managing queued traffic
  - emergency stopping
  - interaction with roadworks.

The *Transport Route Study* demonstrates the feasibility for oversized/overmass vehicles and delivery of large-scale material and equipment to the Buronga substation upgrade and expansion site without requiring any adjustments to the road network. The *Transport Route Study* is attached as Appendix C of the Submissions Report.

The current investigation by TransGrid and the preferred construction contractor has utilised the Transport for NSW Overmass Oversize maps as well as advice from transport companies which has identified that, based on currently proposed equipment requirements, and the feasibility assessment of the Port Adelaide to Buronga haulage route, materials would be able to be suitably be transported without the need for road modifications or bridge strengthening along the proposed routes.

Should the detailed development of the construction methodology identify that movements would be required from other port(s), such as Melbourne, Sydney, Newcastle or Wollongong, a similar review would be carried with the intention that no works would be required to local or regional roads to facilitate movements.

Any of the proposed long distance haul routes required would be subject to permits granted by National Heavy Vehicle Regulator and would be assessed accordingly (refer to mitigation measure TA5).

2.9.4 Aboriginal heritage sites

As part of the ongoing site investigations, an additional site walkover of sections of the proposed easement was undertaken by the preferred construction contractor between 9 and 10 December 2020. This site walkover included two traditional owner representatives and representatives of the project team. During this walkover, the following sites were identified:

- a number of unidentifiable white fragments (interpreted at the time as human bone by one of the traditional owner representatives) at AHIMS site # 39-6-0021. Emu egg fragments and cow bone was also identified. The archaeological significance of this site has not been assessed at this time as the site was not ground-truthed in person by an archaeologist. The site is considered to have Aboriginal cultural significance.
- three scarred trees consisting of:
  - two which were considered to be new recordings (PEC-W-SE1 and PEC-W-SE2)
  - one which was already recorded as PEC-W-126 (in Technical paper *2 – Non-Aboriginal and Aboriginal Cultural Heritage Assessment Report*)
- one new recording of a stone artefact (PEC-W-SE3) located within previously identified PEC-W-PAD22.

The site walkover also identified the following historic site:

- one new recording of a survey marker tree (PEC-W-SE-H1).

Detailed descriptions, photos and maps of new recordings associated with additional assessments are provided in Appendix 5 of the revised *Non-Aboriginal & Aboriginal Cultural Heritage Assessment Report* (Navin Officer, 2021) (refer to Appendix E of this Amendment Report).

The mitigation measures as identified in Appendix C of this Amendment Report are considered to be suitable to manage potential impacts associated with the additional heritage sites.

2.9.5 Noise application of CNVG

As described in Section 6.10.2 of the EIS, construction work would be carried out seven days per week between 7:00am to 7:00pm, with accommodation camp sites operating 24 hours a day, seven days a week.

The assessment presented in Chapter 17 of the EIS and *Technical paper 8 – Noise and vibration impact assessment* identified that there would be the potential for exceedances at some sensitive receivers during these extended hours for certain activities (e.g. site establishment, earthworks and civil construction). However, the noise scenarios were based on conservative assumptions to understand the worst case impacts and would be reviewed based on the detailed design and final construction methodology by the preferred construction contractor.

The mitigation measures and out of hours work (OOHW) approach in Chapter 8 of Technical paper 8 provides possible approaches that could be implemented to mitigate and manage noise impacts during construction. The final suite of feasible and reasonable mitigation measures and OOHW protocol (including requirements for respite) would be confirmed during detailed design and based on the final construction methodology. Minor refinements to OOHW mitigation measure (NV6) have been made to acknowledge the commitment to consult with sensitive receivers.

Minor amendments to mitigation measure NV7 are also proposed (refer to Appendix C) to clarify that noise intensive equipment can be used within the proposed extended hours where it would not result in an exceedance of the applicable noise management level, or where an exceedance of the applicable noise management level (NML) occurs, consultation with sensitive receivers will take place.

2.9.6 Bushfire management procedure

Section 4.5.1 of *Technical paper 10 – Bushfire* identified a series of transmission line management procedures for the clearing and maintenance of vegetation within the transmission line easement to minimise potential risks during operation. Based on the clearing requirements presented in Table 4-1 of Technical paper 10, the following conclusions were made:

- In relation to the two transmission lines proposed, the clearance distances required are expected to be:
  - nine metre clearance between vegetation height and maximum conductor sag point for the 330kV line; and
  - 8.3 metre clearance between vegetation height and maximum conductor sag point for the 220kV line.
- Based on the expected tower and conductor heights vegetation with heights of between two and four metres from ground level is expected to be able to be retained in the easements. Noting that:
  - two metre tall vegetation would occur at the centre area of the easement and four metres tall vegetation could occur as distance from the centreline of the conductor (line) increases
  - for the 80 metre wide 330kV easement, this vegetation clearing would only be required for the centre 60 metre wide section.

Following exhibition of the EIS, it was identified that the statements provided in Section 4.5.1 were incorrect and should have referenced the distance between the ground and maximum conductor sag and not between vegetation height and maximum conductor sag.

The revised conclusion is provided below (bold text shown for emphasis of clarification)

In relation to the current design for the two transmission lines proposed, the following is expected:

- a nine metre clearance between **the ground** and maximum conductor sag point for the 330kV line; and
- a 8.3 metre clearance between **the ground** and maximum conductor sag point for the 220kV line.

Based on the current design maximum conductor sag heights, vegetation with growth heights generally below four metres from ground level would be able to be retained in centre section of the easements while still maintaining the required vegetation clearances identified in Table 4-1 of Technical paper 10. Vegetation taller than this at the maximum sag point (centre section of the easement) would be required to be cleared.

Based on the revised requirements and in consideration of the construction methodology for transmission line stringing methods (refer to Section 2.8), the following is confirmed in relation to vegetation clearing and retention in the easements:

- Centreline cleared area – a 10 metre wide cleared area directly underneath the centreline of the transmission line. This would be cleared to low ground level during construction. Vegetation with growth heights of up to four metres would be able to be retained during operation and maintenance activities (during operation this would be the same as the inner maintenance zone).
- Inner maintenance zone – vegetation with growth heights of up to four metres can be retained from the edge of the cleared centre line area out to 20 metres distance from the centreline (i.e. the five metres to 20 metres section of easement from the centreline on each side of the line).
- Outer maintenance zone – vegetation with growth heights of up to 10 metres would be able to be retained in the easement section which is 20 metres to 30 metres from the centreline. This is permitted as the maximum sag point height is increased at this greater distance for the centreline and therefore taller vegetation is permitted without impacting on the vegetation clearance requirements which are identified in Table 4-1 of Technical paper 10.
- For the 80 metre wide 330kV easement, vegetation clearing would generally only be required for the centre 60 metre wide section (which includes the centreline cleared area, inner and outer maintenance zones combined).
- All hazard/high risk trees located along the corridor would be removed.

A review of the amended clearance distance against potential bushfire risk was undertaken to confirm and potential change in impacts or residual risk. This review concluded that there would be no change to the overall residual risk of or from bushfires impacting the proposal as a result of the clarification.

2.9.7 Approach to environmental management

Following appointment of the preferred construction contractor, the approach to environmental management has been amended to more closely align with the typical requirements for Critical SSI projects and the proposed construction approach proposed by the preferred construction contractor. The key amendment to the previous approach (as outlined in Chapter 23 of the EIS) has been refined to manage the delivery of enabling works for the proposal.

The revised approach to environmental management is provided in Appendix C of this Amendment Report.

2.9.8 Additional items

Unexploded ordinance site

Following exhibition of the EIS, it was identified a potential unexploded ordinance (UXO) site that was not covered in the Phase 1 Site contamination assessment as part of the exhibited EIS. The assessment as presented identified that the proposal study area would crosses the Til Til (NSW) UXO area east of Pooncarie Road in which there is a slight occurrence of UXO reported. While the report noted that there were no other mapped UXO areas within the study area, the report omitted the Oak Plains UXO area to the east of the Til Til area.

The Oak Plains UXO area is located to the south east of Arumpo Road and the existing Buronga substation in which there is a substantial occurrence of UXO reported. The existing 220kV transmission line currently passes through the Oak Plains UXO area. The Oak Plains UXO area, in relation to the proposed transmission line corridor, is shown in Figure 2-18.

A revised mitigation measures, measure SCG16, has been identified to manage this potential risk (refer to Appendix C).

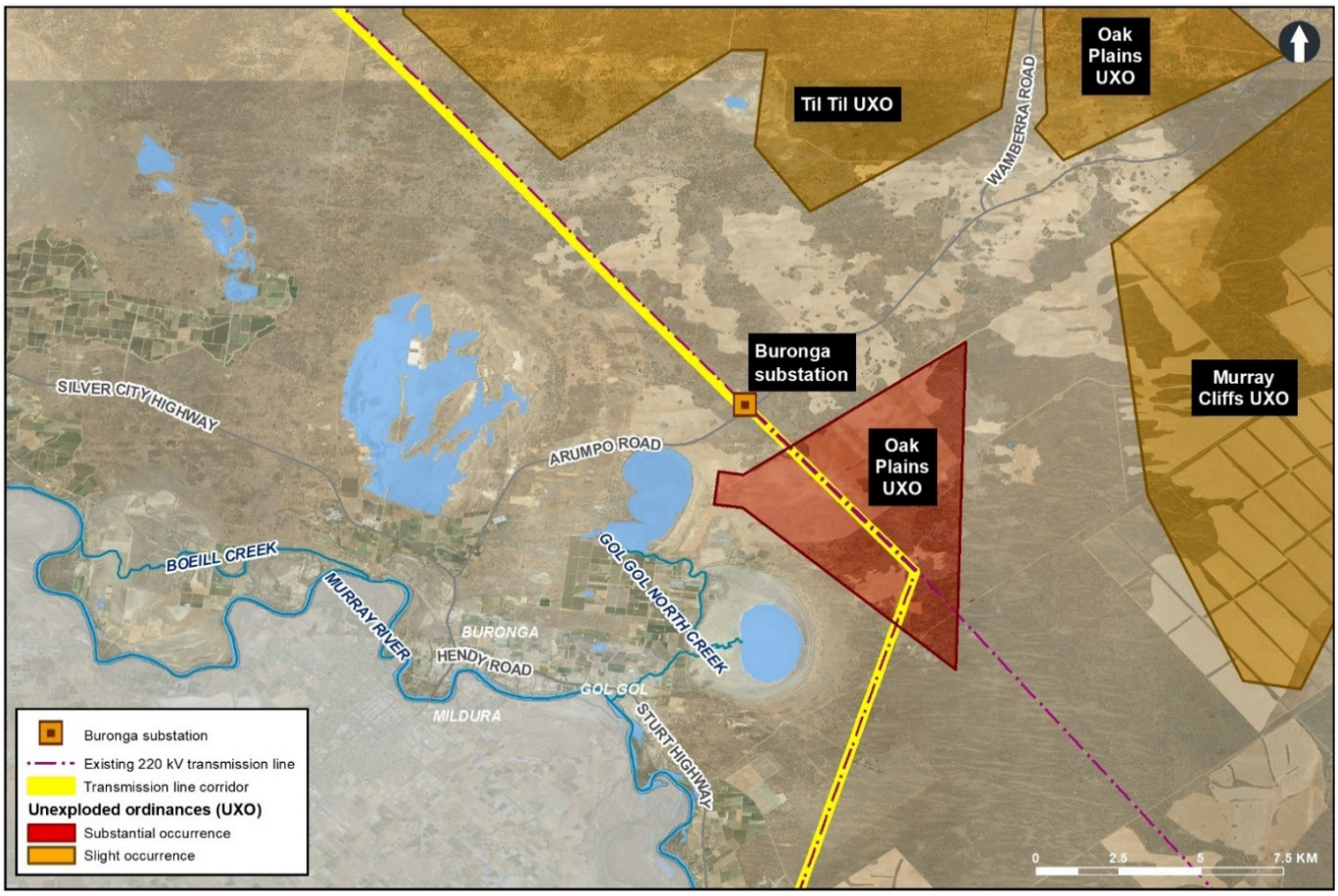

Figure 2-18 Oak Plains UXO area in relation to the proposal study area

NSW/Victorian border clarification

Following exhibition of the EIS, it was identified that a small area of the southern bank of the Murray River was required to be included as part of the indicative disturbance area for the NSW component of the proposal. The additional areas comprises around five metres of land (as measured from the riverbank) from the calculation of vegetation impacts associated with the Biodiversity Development Assessment Report (BDAR).

The revised BDAR has been updated to take into account the additional area however given the landform at this location it is expected that required clearing in this area would be minimal.

Realignment of the existing 220kV transmission line

Section 5.3.1 of the EIS identified that as part of the proposal, a short section of the existing Broken Hill to Buronga 220kV transmission line (Line X2) in proximity to the Darling River would be realigned to accommodate the new 330kV transmission line. As described in the EIS, this realignment would be for around 700 metres in length and require two new monopole structures to replace one existing transmission line structure with the redundant tower to be decommissioned and removed from the easement.

Following exhibition of the EIS it was noted that while the text provided in the EIS correctly identified the diversion as an around 700 metres, the extent of the realignment shown was not shown correctly on the corresponding figure (Figure 5-4). Figure 5-4 indicated a greater extent of proposed realignment than is actually proposed to occur.

This figure has now been corrected and is shown in Figure 2-19.

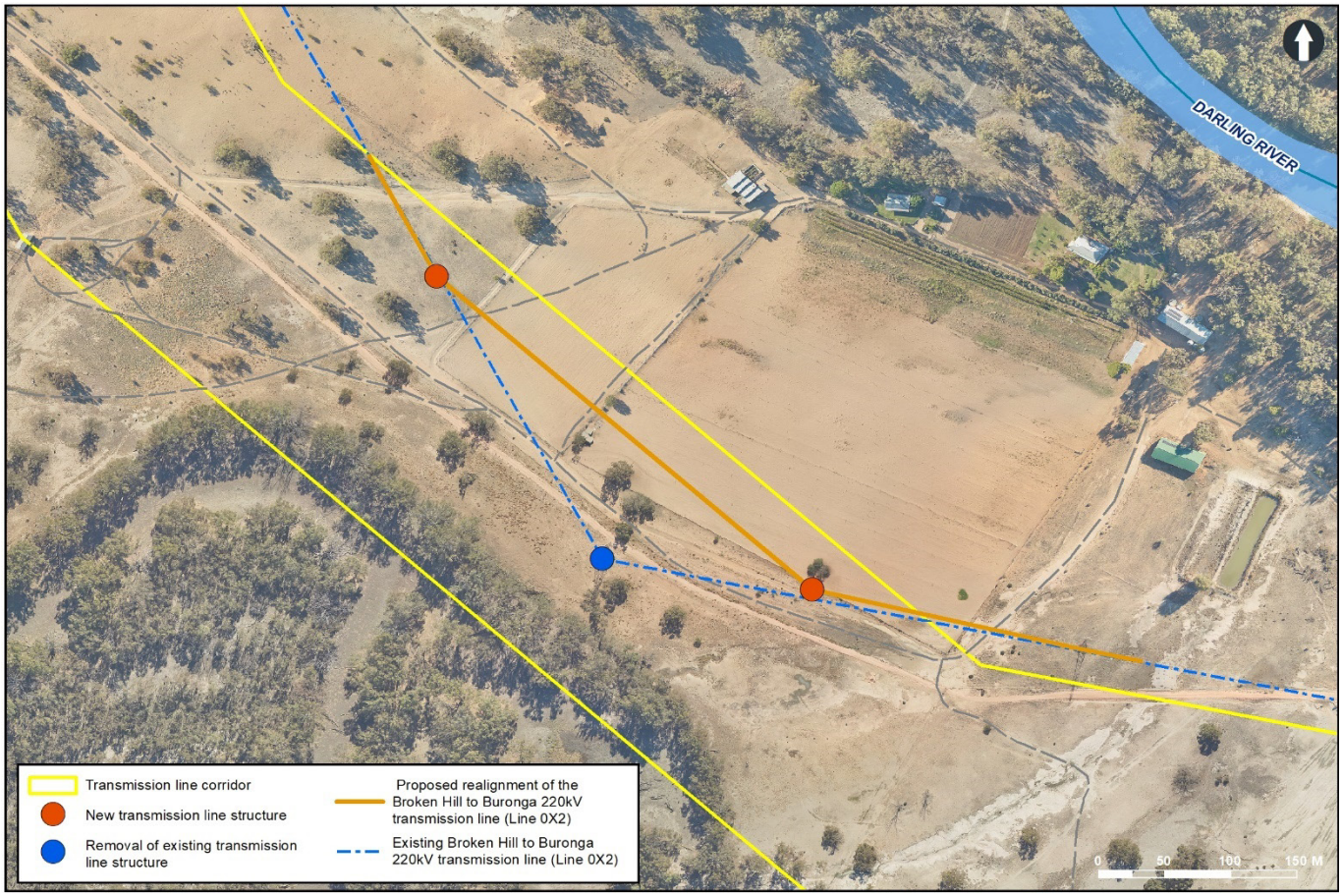

Figure 2-19 Revised EIS figure 5-4 showing corrected extent of proposed realignment of the Broken Hill to Buronga 220kV transmission line (Line 0X2)

Figure 5-4 in the final proposal description has also been updated to reflect the corrected extent of the proposed realignment in Appendix A.

Landscape character and visual impact assessment rating

As part of the update of the *Technical paper 4 – Landscape character and visual impact assessment* (Iris, 2020) to address the proposed amendments, an error was identified in the application of the assessment matrix (Table 3-9 of Technical paper 4) to the night-time visual impact assessment in the mallee shrubland and rural landscape character area.

Section 5.4.2 of Technical paper 4 (page 58) identified a moderate visual impact for views within the mallee shrubland and rural landscape. This was due to the proposed construction compound and accommodation sites that would contrast with the predominantly dark landscape during night-time periods.

The correct application of the matrix results in an increase from a moderate to a high night time visual impact in the mallee shrubland and rural landscape character area, at Buronga substation during construction. This impact would, however, be temporary and limited to a small number of receivers within this landscape area.

Similarly, the assessment of operational impacts was found to have the same error applied for this section of the report noting a low visual impact level which should have been shown as a moderate visual impact at night. Similarly, to the construction assessment, this is due to the high sensitivity of the predominantly dark landscape setting. This impact would not be experienced by a large number of receivers and would be localised to the substation and surrounding receivers (with the nearest being around two kilometres to the south west).

Road traffic noise assessment

As part of the update of the *Technical paper 8 – Noise and vibration impact assessment* to address the proposed amendments, an error in the nominated distances to the nearest receivers was identified for some roads that form part of the construction haulage route. The corrections to the distances have not altered the relative increase in road traffic noise as presented in the EIS (being the contribution of road traffic noise by construction vehicles) but has increased the predicted existing road traffic noise levels at the receiver (and therefore the road traffic noise levels with the proposal). However, these corrections have not changed the conclusions in the exhibited EIS concerning the impacts of construction vehicle noise levels against the applicable noise criteria of the NSW Road Noise Policy (RNP) (NSW Department of Environment, Climate Change and Water, 2011).

An error in the assignment of traffic volumes within the town of Wentworth was also identified in the traffic impact assessment and the road traffic noise assessment, in which volumes from a location around 50 kilometres to the north of Wentworth was applied to areas south of Renmark Road and north of Perry Street, Wentworth. For consistency, the (higher) volumes from Silver City Highway, Wentworth (located around one kilometre south of Perry Street) has now been applied to the Silver City Highway within Wentworth from Renmark Road in the north to Delta Road, Wentworth to the west. This has increased the base traffic volumes from around 360 vehicles per day to 2,560 vehicles per day. This does not alter the outcomes of the traffic impact assessment outcomes as per the exhibited EIS. It would increase the road traffic noise levels (with and without the proposal) predicted for residences between Perry and Renmark Road on the Silver City Highway would not change the noise contribution from construction vehicles.

Electrical testing and inspection

Section 4.4.5 of *Technical paper 10 – Bushfire impact assessment* noted that '*To reduce the level of risk equipment shall be checked weekly for potential faults*.'

Further refinement of the proposed construction methodology for the amended proposal following identification of the preferred construction contractor as identified a preference to manage this risk utilising relevant Australian Standards. The frequency of inspection and testing would vary depending on the nature of the workplace and the risks associated with the electrical equipment.

Maintenance of electrical equipment during construction would be in accordance with the following:

- AS/NZS 3760: 2010 – In service safety inspection and testing of electrical equipment
- AS/NZS 3012: 2010 – Electrical installations – Construction and demolition sites.

3. Strategic context

The strategic context for the proposal was detailed in Chapter 2 of the EIS. Section 2.1 of the EIS outlined the challenges facing the existing energy market and the need for future power generation to both reduce emissions and encourage a shift towards renewable energy opportunities.

Section 2.2 of the EIS outline the strategic planning response to the identified challenges including consideration of the proposal against both NSW and Australian Government policy contexts such as its alignment with the:

- NSW Transmission Infrastructure Strategy
- (NSW) State Infrastructure Strategy 2018-2038
- NSW Climate Change Policy Framework
- Australian government's Integrated System Plan
- Australian government's Climate change policy.

Section 2.5 also outlined the key benefits of EnergyConnect. This included the expectation that EnergyConnect will:

- deliver net market benefits of around $900 million over 21 years (in present value terms) including wholesale market fuel cost savings in excess of $100 million per year as soon as it is energised (primarily from avoided expensive gas-fired generation in SA)
- provide diverse low-cost renewable generation sources to help service NSW demand going forward, particularly as existing coal-fired generators retire
- avoid substantial capital costs associated with enabling greater integration of renewables in the NEM
- generate sufficient benefits to recover the proposal capital costs within nine years of completion
- deliver annual savings of $180 million for NSW households on power bills
- create economic benefits of around $4 billion in NSW (in present value terms)
- generate around 600 jobs (including around 80 regional jobs) during construction
- improve the security, reliability and resilience of the power network in SA and NSW
- improve the ability of parties to obtain hedging contracts in SA and help relieve the tight liquidity in hedging markets currently.

Overall, the proposed amendments identified in this report would fall within the same strategic context as was previously discussed in the EIS. The proposed amendments would also be consistent with seeking to achieve the overall benefits identified for the proposal.

4. Statutory context

This chapter provides an overview of the statutory context for the proposal and provides a summary of the statutory requirement changes that would occur as a result of the proposed amendments.

4.1 The assessment and approval process

The NSW Minister for Planning and Public Spaces declared the NSW portions of EnergyConnect to be Critical State significant infrastructure (CSSI) under section 5.13 of the *Environmental Planning and Assessment Act* 1979 (EP&A Act) and by amendment to Schedule 5, clause 15 of the *State Environmental Planning Policy (State and Regional Development) 2011* (SRD SEPP). As CSSI, the proposal requires approval from the NSW Minister for Planning and Public Spaces under Division 5.2, Part 5 of the (NSW) EP&A Act.

An EIS was prepared to support TransGrid's application for approval of the proposal in accordance with the requirements of Division 5.2 of the EP&A Act (refer to Section 1.2.1). During the exhibition period, interested stakeholders and members of the community were able to review the EIS online or at display locations, participate in consultation and engagement activities, and make a written submission to the DPIE for consideration in its assessment of the proposal.

In accordance with clause 192(2) of the Environmental Planning and Assessment Regulation 2000 (NSW) (EP&A Regulation), an application may, with the approval of the Planning Secretary, be amended at any time before the application is determined. This Amendment Report outlines the proposed design and construction changes to the proposal (the amended proposal) and assesses the associated environmental impacts.

An overview of the planning approvals process and current status of the proposal is shown in Figure 4-1.

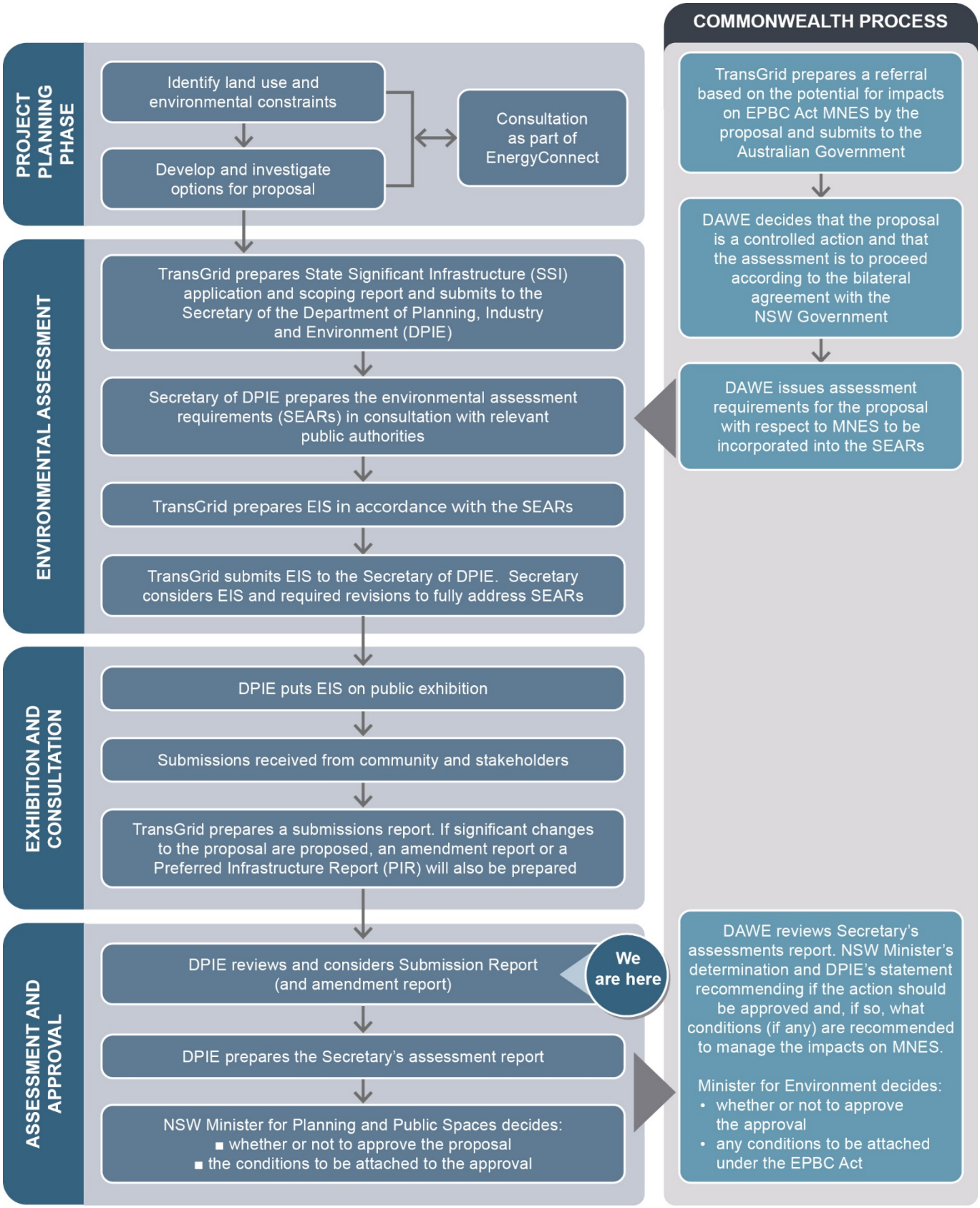

Figure 4-1 Planning approvals process

4.2 Protection of the Environment Operations Act 1997

The *Protection of the Environment Operations Act 1997* (PoEO Act) establishes, amongst other things, the procedures for issuing licences for environmental protection on aspects such as waste, air, water and noise pollution control. An environment protection licence (EPL) is required under Chapter 3 of the POEO Act to undertake a scheduled activity or scheduled development work.

As described in Section 2.4.2 of this Amendment Report, the amended proposal would include a proposed crushing and screening plant as part of the earthworks to occur at the Buronga substation upgrade and expansion site. Crushing, grinding or separating is listed as scheduled activity 16 under the Schedule 1 of the *Protection of the Environment Operations Act 1997* (POEO Act):

> *16 Crushing, grinding or separating*
>
> *(1) This clause applies to crushing, grinding or separating, meaning the processing of materials (including sand, gravel, rock or minerals, but not including waste of any description) by crushing, grinding or separating them into different sizes.*
>
> *(1A) However, this clause does not apply to the processing of materials by crushing, grinding or separating that occurs as part of an activity that is declared to be a scheduled activity by—*
>
> *(a) clause 33 (Railway activities—railway infrastructure construction), or*
>
> *(b) clause 35 (Road construction).*
>
> *(2) The activity to which this clause applies is declared to be a scheduled activity if it has a capacity to process more than 150 tonnes of materials per day or 30,000 tonnes of materials per year.*

Based on the currently proposed crushing and screening daily rates (as described in Section 2.4), criteria (2) would be exceeded and the proposed crushing and screening activities would trigger the need for an EPL.

Section 5.24(e) of the EP&A Act identifies approvals or authorisations that cannot be refused if they are necessary for carrying out approved SSI and are substantially consistent with the Part 5.2 approval, including:

- an environment protection licence under Chapter 3 of the *Protection of the Environment Operations Act 1997* (for any of the purposes referred to in section 43 of that Act).

4.3 Roads Act 1993

The principal object of the *Roads Act 1993* of relevance to the proposal is the regulation of the carrying out of various activities on public roads. Part 9 of the *Roads Act 1993* nominates the requirements for undertaking works within a public road, including the requirement to obtain consent under section 138 for carrying out works in, on or over a public road (this includes the erection of structures), and the digging up or disturbance of the surface of a public road.

As described in Section 2.7.2 of this Amendment Report, the amended proposal would include construction of a new water supply pipeline across Renmark Road to provide construction water. This would require temporary/partial closure of this road while the pipe is constructed. TransGrid will require consent to undertake this work given Renmark Road is identified as a classified road.

Section 5.24(f) of the EP&A Act identifies approvals or authorisations that cannot be refused if they are necessary for carrying out approved SSI and are substantially consistent with the Part 5.2 approval, including:

- consent (Road Occupancy Licence) under Section 138 of the *Roads Act 1993* from the relevant roads authority for the erection of a structure, or the carrying out of work in, on or over a public road, or the digging up or disturbance of the surface of a road.

However, Clause 5(1) of Schedule 2 of the Roads Act notes that TransGrid is not required to obtain consent to carry out work on unclassified roads.

4.4 Local Government Act 1993

Section 68 of the *Local Government Act 1993* specifies a range of activities where approvals are required to be obtained from the local council. Activities generally require approval under Section 68 include

- water supply, sewerage and stormwater work
- management of waste
- temporary structures and places of public entertainment
- works or activities conducted on community land
- other activities such as operating a public car park or a caravan park or camping ground.

With respect to the amended proposal Section 68A provides for operating a system of sewage management. Section 68A(1) notes that:

> *In this Part,* ***operate a system of sewage management*** *means hold or process, or re-use or discharge, sewage or by-products of sewage (whether or not the sewage is generated on the premises on which the system of sewage management is operated).*

As described in Section 2.6.2 of this Amendment Report, the amended proposal would include the provision of wastewater treatment plants at both the Wentworth and Buronga construction compound and accommodation camp sites to provide for the management of sewage and other wastewater associated with these facilities. TransGrid will require approval of Wentworth Shire Council in order to operate this system. TransGrid would continue to consult with Wentworth Shire Council regarding the requirements for this approval as part of the detailed design of the proposal.

5. Engagement

This chapter describes the stakeholder engagement and other consultation activities undertaken following the exhibition of the EIS and development of the proposed amendments.

5.1 Consultation during development of the proposed amendments

Chapter 7 of the EIS described the consultation that was carried out prior to the exhibition of the EIS and the consultation activities that were proposed as part of the exhibition of the EIS. Further details of community consultation during the exhibition of the EIS are described in Chapter 3 of the Submissions Report.

This chapter provides a summary of the consultation that has been carried out following the exhibition of the EIS on the proposed amendments and refinements described in Chapter 2. A number of consultation and engagement activities have been carried out following the exhibition of the EIS with a range of stakeholders including the directly impacted landholders and residents, government authorities, Wentworth Shire Council, water providers, and Aboriginal stakeholders.

Key consultation activities that have been carried out with are summarised in the following sections.

5.1.1 Community consultation

Following exhibition of the EIS, there have been no further widespread engagement activities with the wider public. Community engagement has focused on direct liaison with impacted property owners and government agencies and other relevant parties in relation to acquisition, design refinement and proposed changes to the proposal.

Section 5.2 of this Amendment Report outlines the proposed ongoing community consultation for the proposal (subject to approval).

5.1.2 Directly impacted landholders and residents

In addition to the land identified as being impacted by the proposal as described in the EIS, additional areas of privately owned land would be impacted in order to accommodate the amended proposal as described throughout Chapter 2. TransGrid provided written notification to all impacted and potentially impacted landholders of the proposed amendments in mid-February, with direct follow up by telephone completed by mid- March.

From the consultation/notification undertaken with impacted landholders, the following responses/issues were received:

- no specific concerns were raised by property owners regarding the proposed amendments, with feedback provided being typically positive
- three property owners affected by the Buronga to Red Cliffs section of the proposed amendment raised the following:
  - query regarding direct impact to their properties as a result of the proposed bypass line. TransGrid advised that the properties to which the query related were not implicated by the amendment
  - question whether vegetation clearance would be required on the impacted properties. TransGrid advised that in order to rebuild the new line and dismantle the existing line, a corridor cleared of vegetation would be required and that existing cleared corridors and access tracks would be used in preference to additional clearing
- the property owners on which the proposed construction compounds and accommodation camps (including the additional site at Wentworth) did not raise any specific issues and have since agreed to hosting the facilities during the construction period.

As described in section 5.5 of the EIS, all acquisitions of privately owned land would be carried out in consultation with the landholders through the private treaty process or in accordance with the requirements of the *Land Acquisition (Just Terms Compensation) Act 1991* and the supporting NSW Government Land Acquisition Reform 2016.

5.1.3 Public authorities

Heritage NSW

Discussions and briefings and have been undertaken between the project team and NSW Heritage during and following exhibition of the EIS.

A discussion with Heritage NSW and Navin Officer Heritage Consultants on behalf of the project team on 30 November 2020 to clarify the submission issue relating to survey information being missing from the heritage technical report. The discussion clarified that the required survey details were provided in Appendix 4 of the ACHA (pages 334-354) and it was agreed that the survey information in the report was sufficient and satisfied Requirements 5 to 10 of the Code, and that the location of these in the appendices was not originally sighted during Heritage NSW's review process.

A briefing with Heritage NSW was also held on 31 March 2021 to discuss the outcomes of the additional impact assessment associated with the proposed amendments and to outline the proposed response to the other issues raised by Heritage NSW in their submission (refer to Section 6.1 and Section 6.2 of the Submissions Report). Key outcomes/issues raised as a result of the meeting included:

- how the design development process has progressed and enabled some reduction from proposal impacts and how this will continue to be a focus through detailed design
- explanation of the proposed adoption of an approach to delay test excavations for PADs until the next stage of design development to enable more targeted test excavations to areas where impact is more likely
- discussion regarding the revised mitigation measures and the additional detail that has been included in the revised measures to provide greater certainty regarding proposed processes for ongoing engagement and additional surveys
- description of the ongoing Aboriginal group engagement process and outcomes of the additional RAP consultation undertaken in March 2021.

NSW Department of Planning, Industry and Environment – Biodiversity Conservation Division

A number of briefings and discussions have been undertaken between the project team and DPIE – BCD following exhibition of the EIS.

Formal briefings have been held on 23 February and 5 March 2021 to discuss the outcomes of the additional impact assessment associated with the proposed amendments and to outline the proposed response to the other issues raised by DPIE – BCD in their submission (refer to Section 6.3 of the Submissions Report). Key issues/outcomes raised as a result of the meetings have included:

- discussion on the vegetation clearing assumptions applied for the proposal, including the proposed amended approaches to permitted easement vegetation heights (refer to Section 2.8.2) and inclusion of connectivity corridors at strategic points in the transmission line easement
- explanation of the design refinement which has enabled reduction in impact to *Austrostipa nullanulla*. This change has allowed for avoidance of all known populations of the species and minimisation of the extent of impact to potential habitat. This change was positively received by DPIE – BCD
- discussion on and agreement on an acceptable revised approach to determining prescribed impacts and required offsets associated with avifauna in relation to potential EMF and line strike impacts
- discussion on the proposed revised approach to Category 1 land assessment within the BDAR
- explanation of the native vegetation categorisations adopted within the BDAR and how these would be altered in the revised BDAR in response to DPIE – BCD comments in their submission

- explanation on the Threatened flora survey effort presented in the BDAR and rationale for adoption of the alternate method. Discussion was had on the additional information required to be included in the revised BDAR to further justify and explain this approach
- clarification on the extent of influence of drought conditions and survey data in relation to assessed vegetation conditions in the original BDAR
- presentation of the revised impact levels for the amended proposal and associated calculated biodiversity credit obligations.
- Further correspondence has subsequently occurred with DPIE-BCD during March 2021 and April 2021 with specific focus on elements such as calculation of impacts in the easement and vegetation clearing requirements.

NSW Department of Planning, Industry and Environment – Water and the NSW Natural Resources Access Regulator

TransGrid offered to undertake a briefing with NSW DPIE – Water and the NSW Natural Resources Access Regulator to discuss the outcomes of the additional impact assessment and modelling for the proposal. NSW DPIE – Water acknowledged the offer for the briefing and indicated a preference to defer any further consultation until after submission of the Response to Submissions Report and Amendment Report to DPIE for assessment.

Transport for NSW

An initial meeting with Transport for NSW was held on 16 November 2020 to discuss Transport for NSWs' submission regarding the exhibition of the EIS. Key issues raised as part of the meeting included:

- the need to provide additional detail regarding transport route(s) from the nominated port(s) and to provide additional analysis of the feasibility of these routes
- provision of additional detail regarding the elements such as the size, weight, mass etc of the proposed oversize vehicles
- provision of additional detail regarding issues such as pinch points, swept paths etc for transport haulage routes
- additional details regarding construction camp traffic.

A briefing with Transport for NSW was also held on 24 March 2021 to discuss the outcomes of the additional impact assessment associated with the proposed amendments and outline the proposed response to the issues raised during the initial discussion with Transport for NSW and detailed in their submission (refer to Section 6.9 of the Submissions Report). Key issues raised/outcomes of the meeting included:

- description of the proposed amendments that have been made to the proposal since exhibition of the EIS (such as the removal of the accommodation component of the Anabranch South site and confirmation of the Wentworth construction compound and accommodation camp site) providing an overview of the impacts these amendments are anticipated to have on traffic and transport
- discussion regarding details on the proposed access arrangements to the construction compound and accommodation camps due to the existing posted speed limits along the affected roads including proposed to be separate ingress/egress points and the number of access points along the Silver City Highway
- discussion regarding consultation regarding traffic impacts for oversize and overmass vehicle movements outside of NSW
- explanation regarding the revised access track strategy for the amended proposal including discussion regarding elements such as sealing access points from existing roads and access tracks where transmission line works are occurring over existing highways
- discussion regarding the proposed approach to assessing oversize and overmass haulage routes for the amended proposal.

NSW Environment Protection Authority

Initial consultation was undertaken with the NSW Environment Protection Authority (EPA) regarding the proposed amendment to include temporary crushing and screening activities as part of the inclusion of two earthwork material sites at the Buronga substation (refer to Section 2.4 of this Amendment Report). The advice received noted that an expectation that the assessment would include dispersion modelling for dust and particulates.

A briefing with NSW EPA was also held on 30 March 2021 to discuss the outcomes of the additional impact assessment and modelling for the proposal (refer to Section 6.9 of this Amendment Report). Key items discussed at the briefing included:

- explanation regarding the assumptions made in the air quality modelling, including the reason for selecting the year 2018 for dispersion modelling as being representative of long-term meteorological conditions and conservative for dust dispersion modelling
- explanation regarding the rational for the proposed duration of crushing and screening activities (i.e. the assumption of only allowing for crushing and screening activities for a five-hour period each work day). Rationale discussed related to elements such as the proposed construction program and the need to manage balance between crushing products, stockpiling storage and land use (i.e. not impacting more heritage or ecology than needed for extra stockpiles and limiting dust from massive amounts of stockpiles).

Wentworth Shire Council

TransGrid met with Wentworth Shire Council staff on 10 February to discuss the range of amendments relevant to Wentworth Shire Council assets including roads and water infrastructure, along with Wentworth Shire Council's submission regarding the Renmark Road.

Wentworth Shire Council was also advised via email of the proposed amendments on 26 February 2021.

Wentworth Shire Council largely acknowledged most amendments resulted from further design work and resulted in positive outcomes for the community and the organisation. TransGrid will continue to maintain contact with the Wentworth Shire Council regarding any matters related to the proposal as part of the ongoing detailed design of the proposal.

5.1.4 Aboriginal stakeholders

As part of the ongoing development of the amended proposal, consultation has continued to be undertaken with representatives of the Aboriginal community in accordance with the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2020* (Office of Environment and Heritage, 2020). As part of this process, the Registered Aboriginal Parties (RAPs) who were involved with the development of the EIS were provided the opportunity to take part in the additional cultural surveys of the locations for the amended proposal.

The RAPs were provided with a draft copy of the revised *Non-Aboriginal and Aboriginal Cultural Heritage Assessment Report* (Navin Officer, 2021) with an invitation to provide comment on the outcomes of the revised cultural heritage assessment for the amended proposal between 1 March 2021 and 29 March 2021. Overall, the additional consultation did not raise any substantial issues from the RAP members. Further detail regarding the additional consultation and feedback received from RAPs as part of the amended proposal is provided in Section 5.4 of the revised *Non-Aboriginal and Aboriginal Cultural Heritage Assessment Report* (Appendix E).

TransGrid will continue to consult with the Aboriginal community throughout the proposal, including (but not limited to) if any Aboriginal objects are unexpectedly found during construction.

5.1.5 Business and industry stakeholders

Fort Courage Caravan Park

Following exhibition of the EIS, TransGrid has engaged with the owner/operators of the Fort Courage Caravan Park (the Wentworth Angling Club) regarding the proposed location of the proposed construction compound and accommodation camp facility along Renmark Road, Wentworth.

As part of the consultation, TransGrid addressed a meeting of the Wentworth Angling Club Committee on 14 March 2021. Key outcomes/issues raised as a result of the meeting included:

- no specific concerns were raised by the committee regarding the proposed location for the Wentworth construction compound and accommodation camp
- concern regarding potential dust and associated air quality issues at the Fort Courage Caravan Park were raised. The proposed mitigation measures to mitigate these impacts (as presented in Section 8.1 of Technical paper 7) were provided to the Committee
- some concern regarding the potential for cultural heritage impacts as a result of the on the proposal were raised
- an interest regarding the potential socio-economic benefits for Fort Courage as a result of the amended construction compound and accommodation camp location were noted.

TransGrid will continue to maintain contact with the Wentworth Angling Club Committee regarding any matters related to the proposal's interaction with and effect on Fort Courage as part of the ongoing detailed design of the proposal.

Water suppliers

Following exhibition of the EIS and engagement of the preferred construction contractor, ongoing discussions have continued with a range of potential water suppliers to provide additional clarity in relation to access to potable and non-potable water during construction.

While TransGrid and the preferred construction contractor are yet to enter into formal agreement(s) with these regulators, consultation to date has identified that the necessary water volumes to provide sufficient water entitlements are likely to be available when required from the identified supply points. TransGrid and the preferred contractor are continuing to liaise with all water providers in relation to securing sufficient water entitlements and formalise agreements for water licencing and access arrangements.

5.2 Ongoing consultation

Consultation with the community and key stakeholders will be ongoing in the lead up to and during construction of the proposal. The consultation activities will aim to provide:

- a high level of awareness of all processes and activities associated with construction of the proposal
- accurate and accessible information and a timely response to issues and concerns raised by the community
- opportunities for feedback and input.

The EnergyConnect phone number (1800 490 666) and email address (pec@transgrid.com.au) would continue to be available during construction. Targeted consultation methods, such as letters, notifications, signage and face-to-face communications, would also continue to occur. The TransGrid website and social media platforms would also include updates on the progress of the proposal.

The preferred construction contractor engaged to construct the proposal would be required to prepare and implement a community communications strategy and complaints management procedure during construction to manage communications with the community and any community concerns or feedback. This strategy and procedure would be approved by TransGrid prior to construction commencing.

6. Assessment of additional impacts

This chapter provides a summary of the additional assessments undertaken to assess the amended proposal. These additional assessments have been carried out to identify and assess the potential construction, operational and cumulative impacts associated with the amended proposal, focusing on potential changes to the expected impacts as a result of the changes to the proposal discussed in Chapter 2. Where required, additional or revised environmental management measures are proposed.

6.1 Assessment approach

Part C of the EIS provided an assessment of the key environmental issues for the project as identified in the SEARs. These assessments were carried out on the proposal as described in Chapter 5 and Chapter 6 of the EIS.

The amended proposal, as described in Chapter 2, was assessed against each of the key issues and other issues as set out in the SEARs issued for the proposal on 31 July 2020 by the Secretary of DPIE. A meeting was held between the project team and DPIE representatives on 28 January 2021 to discuss the proposed amendments. In response, DPIE confirmed that an amendment report was appropriate to address the environmental impacts associated with the amended proposal. No additional or updated SEARs were issued by DPIE. This Amendment Report and its appendices have been prepared in consideration of with the previous SEARs issued for the proposal. DPIE also determined that the Amendment Report would not require exhibition on the basis that TransGrid have completed targeted consultation with the relevant stakeholders on the proposed amendments. The outcomes of that engagement have been documented in the Amendment Report.

Consideration of the potential environmental impacts of each proposed amendment was undertaken as part of the development of the revised proposal. Consideration of key and non-key environmental, social and economic issues was undertaken and an assessment made of the potential changes as compared to the environmental impacts described in the EIS. Evaluation of the proposed amendment for the amended proposal also provided an opportunity to identify potential reduction in environmental impact and other benefits.

A summary of the potential environmental aspects potentially affected by each of the proposed amendments is provided in Table 6-1. The aspects selected were those considered to have a change in impact from those described in the EIS. Impacts associated with other aspects would be unchanged from those assessed in the EIS.

These assessments are supported by detailed investigations and have been documented in the updated/supplementary technical assessment memorandums and reports in Appendix D to Appendix K.

Table 6-1 Summary of environmental aspect considered to be potentially affected by the proposal amendments

Proposal amendment	Environmental aspect													
	Biodiversity	Aboriginal heritage	Non-Aboriginal heritage	Land use and property	Landscape character and visual amenity	Social and economic	Hydrology, flooding and water quality	Air quality	Noise and Vibration	Traffic and access	Hazards and risks	Soils, contamination and groundwater	Waste management and resources	Cumulative impacts
Construction compound and accommodation camp sites	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓		
Buronga substation layout		✓												
Buronga substation earthworks	✓	✓		✓	✓		✓	✓	✓	✓		✓		
Temporary bypass transmission line	✓			✓	✓				✓	✓				
Onsite wastewater treatment					✓		✓	✓	✓					
Construction water supply	✓	✓	✓	✓	✓				✓	✓				
Indicative amended disturbance area	✓	✓	✓	✓	✓				✓	✓		✓		

6.2 Biodiversity

A revised *Biodiversity Development Assessment Report* (BDAR) (WSP, 2021a) has been prepared following the exhibition of the EIS. The revised BDAR has been prepared in order to respond to both:

- the submission from the NSW Department of Planning, Industry and Environment – Biodiversity Conservation Division (DPIE BCD)
- assessment of the potential change in impacts associated with the amended proposal (including the amended indicative disturbance area).

The biodiversity offsets calculations for the amended proposal to reflect the above has also been completed.

A summary of the revised impacts compared to those presented in the EIS is provided below. Further details regarding the specific changes as a result of the amended proposal are provided in the revised BDAR attached as Appendix D of this Amendment Report.

6.2.1 Assessment methodology

The assessment approach methodology for the assessment of biodiversity impacts for the amended proposal was consistent with the methodology presented in Chapter 3 of *Technical paper 1 – Biodiversity Development Assessment Report* (WSP, 2020a). The assessment of the proposed amendments also included:

- additional field survey of the Wentworth main construction compound and accommodation camp site and Buronga substation upgrade and expansion site
- desktop review of the additional construction water supply sites
- identification of any required additional mitigation measures.

6.2.2 Construction assessment

Direct impacts to native vegetation

Section 9.4.1 of the EIS provided an overview of the potential impacts of the proposal with respect to direct impacts on native vegetation. Additional impacts to native vegetation as a result of the amended proposal would largely be associated with:

- the Wentworth main construction compound and accommodation camp
- the earthwork material sites at the Buronga substation expansion and upgrade site which would impact on an increased area of threatened ecological community in the form of Sandhill Pine Woodland
- the additional corridor required for the proposed temporary bypass line to the south of the Buronga substation.
- Table 6-2 provides a comparison between the impacts to native vegetation as described in the EIS and the amended proposal.

Table 6-2 Direct impacts on native vegetation – EIS proposal and amended proposal

	Total direct impacts (ha)	Full disturbance (Area A)	Partial disturbance (Area B)	Number PCTs impacted	Impact to EECs
EIS proposal	607	314	293	20	Around 14 hectares comprising the Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions
Amended proposal	641.6	398.76	242.84	23	Up to 19.02 hectares of threatened ecological community in the form of Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions

While the amended proposal would result in an overall increase in vegetation impacts due to the elements identified above, some reductions have also been achieved as a result of other components of the amended proposal which have assisted in minimising the total potential change in impact of the amended proposal.

These include:

- the revised clearing methodology outlined in Section 2.8.2
- the amended access track strategy to provide for a greater use of existing access tracks and roadways and revised access strategy for the using the transmission centre line where possible.

Consistent with the assessment presented previously in the EIS, this native vegetation has been subject to ongoing historical agricultural use, primarily for grazing, and the effects of semi-regular clearing combined with this grazing (sometimes in drought conditions) has resulted in an overall landscape that while mostly comprised of native vegetation is not high quality undisturbed native vegetation or habitat. This includes the Sandhill Pine Woodland EEC, all of which occurs in zones identified as 'modified' vegetation.

Direct impacts to threatened flora species

Four threatened flora species would be directly impacted by the amended proposal, as detailed in Table 6-3 which provides a comparison between the impacts as described in the EIS and the amended proposal.

For EPBC listed flora species, of which *Atriplex infrequens* is the single flora species, the direct impacts would be unlikely to have a significant impact on the species as described in the revised BDAR (Appendix D).

This comparison shows that the impacts of the amended proposal on flora species would:

- result in slightly greater impact on:
  - Harrow Wattle (*Acacia acanthoclada*)
  - A saltbush (*Atriplex infrequens*)
- result in slightly lesser impact on:
  - A spear-grass (*Austrostipa nullanulla*)
  - Bitter Quandong (*Santalum murrayanum*).

Table 6-3 Direct impacts on threatened flora species (species credit species) due to the clearing – EIS proposal and amended proposal

Species name	Common name	BC Act[1]	EPBC Act[2]	Direct impact (area / individuals)	
				Impact as shown in EIS	Impact as a result of the amended proposal
Acacia acanthoclada	Harrow Wattle	E		0.01 ha	0.04 ha
Atriplex infrequens	A saltbush	V	V	0.26 ha	0.32 ha
Austrostipa nullanulla	A spear-grass	E		2.18 ha	1.15 ha
Santalum murrayanum	Bitter Quandong	E		18 individuals	14 individuals

(1) V = vulnerable, E = endangered, CE = critically Endangered under the BC Act

(2) V = vulnerable, E = endangered under the EPBC Act.

Direct impacts to threatened fauna species

Direct clearing impacts on threatened species listed under the BC Act and EPBC Act within the amended indicative disturbance area are presented in Table 6-4 (including comparison of the change in impact between the impacts as described in the EIS and the amended proposal). This comparison shows that the impacts of the amended proposal would be the same as previously assessed in the EIS.

Table 6-4 Direct impacts on threatened fauna species (species credit species) due to the clearing – EIS proposal and amended proposal

Scientific name	Common name	BC Act[1]	EPBC Act	Impact (hectares)	
				Impact as shown in EIS	Impact as a result of the amended proposal
Polytelis anthopeplus monarchoides	Regent Parrot (eastern subspecies)	E	V	6.91	6.91

(1) V = vulnerable, E = endangered, CE = critically endangered under the BC Act

(2) V = vulnerable, E = endangered, CE = critically endangered under the EPBC Act.

Indirect impacts

The assessment of indirect impacts was been prepared in accordance with section 9.1.4 of the Biodiversity Assessment Method. Indirect impacts have been considered in terms of the nature, extent and duration of impacts on native vegetation, threatened ecological communities and threatened species habitats likely to be affected. A range of potential indirect impacts as a result of the proposal were discussed in Section 9.4.2 of the EIS. These indirect impacts included:

- inadvertent impacts on adjacent habitat or vegetation (low potential consequence)
- reduced viability of adjacent habitat due to edge effects (negligible potential consequence)
- reduced viability of adjacent habitat due to noise, dust or light spill (negligible potential consequence)
- transport of weeds and pathogens from the site to adjacent vegetation (negligible potential consequence)
- increased risk of starvation, exposure and loss of shade or shelter (negligible potential consequence)
- loss of breeding habitats (low potential consequence)
- trampling of threatened flora species (low potential consequence)
- increased risk of fire (low potential consequence).

As a result of the amended proposal indirect impacts on native vegetation are still considered to be unlikely due to the retention of shrub and ground stratum native vegetation retention to a height of up to four meters in areas buffering direct permanent loss. The mitigation measure identified for the amended proposal would further minimise any residual indirect impact to native vegetation is managed during both the construction and operational phases.

Serious and irreversible impacts

Section 9.4.4 of the EIS described the potential impact of the proposal on one entity currently listed as serious and irreversible impacts (SAIIs) in the Threatened Biodiversity Data Collection (EES, 2020) being an impact on *Austrostipa nullanulla.*

As described in Section 2.9.1 of this Amendment Report, further design development of the alignment for the proposal at this location has reduced the potential impacts to the *Austrostipa nullanulla* (refer to Figure 2-17) through the re-positioning of transmission line structures and use of existing access tracks. However, the revised design would still result in some impacts to the *Austrostipa nullanulla* (such as for brake and winch sites) and further detailed design would seek to further avoid impacts to this species. The revised impact of the amended proposed, in comparison to the previously proposed alignment is outlined in Table 6-5.

Overall, the amended proposal would reduce impacts on the *Austrostipa nullanulla* by around 1.03 hectares (around 47 per cent reduction in impact). The vast majority of the *Austrostipa nullanulla* recorded, and its habitat, would not be impacted by the amended proposal.

Further detail is provided in Table 9.17 of the revised BDAR (Appendix D).

Table 6-5 SAII entities recorded within the proposal disturbance area – EIS proposal and amended proposal

SAII entity	BC Act	Threshold	Impact (hectares)	
			Impact as shown in EIS	Impact as a result of the amended proposal
Austrostipa nullanulla (A Spear Grass)	E	Not listed	2.18 ha	1.15 ha

Consistent with the commitment in the EIS, the amended proposal would provide biodiversity offsets for this species impact. The proposal is not expected to have a substantial impact on this species.

An additional recorded SAII threatened flora species, being *Dodonaea stenozyga* (Desert Hopbush), was recorded within the proposal study area as part of the exhibited proposal. The potential impacts of the amended proposal would be consistent with those previously presented in the EIS and would not result in any changes to the impacts as previously described on this species.

Key threatening processes

Consideration of key threatening processes (KTP) applicable to the proposal were considered in Table 9-6 of the EIS. A review of these KTP has been undertaken following exhibition of the EIS. The potential impacts of the amended proposal would be consistent with those previously presented in the EIS and would not result in any changes to the impacts as previously described.

Assessment of impacts of groundwater dependent ecosystems

The EIS identified that no high priority GDEs were documented in either of the previous groundwater related water sharing plans. However, GDE information obtained through the National Groundwater Information System (NGIS) (BOM, 2020) identified six GDEs with high potential for groundwater interaction within the proposal study area.

Consistent with the assessment presented in the EIS, no impacts direct or indirect are expected as a result of the amended proposal. Subsurface interaction or modification of groundwater interaction with the GDEs and RAMSAR wetlands are expected to be nil to negligible.

Impacts on aquatic species and habitat

Section 9.4.7 of the EIS discussed the potential impacts of the proposal on aquatic species and habitat. It is considered that the amended proposal would not result in any change to the assessment completed for the exhibited proposal with respect to potential impacts on aquatic species and habitat.

Migratory species

Section 9.4.8 of the EIS discussed the potential impacts of the proposal on migratory species. The amended proposal would not result in any change to the potential impacts on migratory species.

Wetlands of national and international importance

Consistent with the assessment presented in Section 9.4.9 of the EIS, the Riverland RAMSAR wetland complex in the Chowchilla Game Reserve is located around three kilometres to the south west of the SA/NSW state border and the Banrock Station wetland complex is located 40 to 50 kilometres downstream of the proposal study area. These wetlands would not be directly or indirectly impacted by the amended proposal.

6.2.3 Operational assessment

Consistent with the assessment presented in Section 9.5 of the EIS, the amended proposal would have limited ongoing biodiversity impacts once operational. The key potential operational impacts are the following:

- ongoing regular access requirements for maintenance of the infrastructure – impacts of infrastructure maintenance are expected to be negligible as access would occur via access tracks
- ongoing vegetation maintenance to ensure that TransGrid maintenance requirements and the required bushfire protection aspects are implemented. The impacts of this activity, including the amended vegetation height clearances as discussed in Section 2.8.2 of this Amendment Report, have been factored into the construction assessment through the predicted impacts. Existing procedures would ensure retained biodiversity values are adequately protected during maintenance activities
- increased potential for bird collision – impacts are expected to be low, with the proposed transmission lines likely to be below flight paths for a majority of species. Revised mitigation measures have been developed to ensure the likely impacts would be minimised
- impacts of electric and magnetic fields (EMF) to local fauna populations. However, as outlined in Technical paper 11, most studies indicate that EMF exposure of birds generally changes, but not always consistently in the effect or in direction, bird behaviour, reproductive success, growth and development, physiology and endocrinology, and oxidative stress under EMF conditions. Additional mitigation measures have been developed to minimise impacts.

6.2.4 Mitigation and management measures

Mitigation and management measures were previously identified for both construction and operation phases of the proposal in Section 11 of Technical paper 1 and summarised in Chapter 23 of the EIS.

A number of the previously proposed mitigation measures have been updated to respond to the submission from the DPIE BCD and the amended proposal. As part of the revised mitigation measures, additional measures were included regarding:

- a monitoring program to better understand interactions of bird species with transmission lines and towers
- a funding contribution towards further research into further scientific study into the impact of EMF on birds in Australia
- establishment of a series of connectivity corridors.

The consolidated list of mitigation measures for the amended proposed is provided in Appendix C of this Amendment Report.

Biodiversity offset credit report

Chapter 12 of revised BDAR (Appendix D) addresses Section 11 of the BAM and provides information on the application of the no net loss standard and the project biodiversity offset obligations. The offset obligation for the amended proposal has been calculated to require the following biodiversity credits as a result of the increase in impacts resulting from the amended proposal:

- 10,019 ecosystem credits (8,845 credits previously identified as part of the EIS proposal)
- 1,545 species credit (254 credits previously identified as part of the EIS proposal).

As previously identified in the EIS, the biodiversity offset strategy comprises the following key options:

- purchasing and retirement of existing biodiversity credits currently available on the biodiversity credit register
- establishing a biodiversity stewardship site(s) on lands with like for like biodiversity values to those impacted by the proposal
- making a payment into the Biodiversity Conservation Fund
- alternative strategic offset outcome.

The final obligation for the amended proposed would be confirmed as the design is further refined and the amended disturbance area is confirmed.

6.3 Aboriginal heritage

A revised *Non-Aboriginal and Aboriginal Cultural Heritage Assessment Report* (Navin Officer, 2021) has been prepared to respond to the issues raised regarding Aboriginal heritage impacts identified in the NSW Heritage submissions and assess the impacts associated with the amended design, in comparison to those of the proposal as described in the EIS. The revised heritage assessment report is provided in Appendix E, and a summary of the revised impacts, compared to those presented in the EIS is provided below. This section should be read in conjunction with Chapter 10 of the EIS.

6.3.1 Assessment methodology

The assessment approach methodology for the assessment of Aboriginal heritage impacts for the amended proposal was consistent with the methodology presented in Chapter 2 of *Technical paper 2 – Non-Aboriginal and Aboriginal Cultural Heritage Assessment Report* (Navin Officer, 2020).

The assessment of the proposed amendments also included undertaking:

- additional field survey of the Wentworth main construction compound and accommodation camp site and Buronga substation upgrade and expansion site, including field participation from Registered Aboriginal Parties (RAPs) on 17 November 2020
- revised literature and database review, including a desktop review of the proposed construction water supply points
- review of results received from additional survey undertaken by the preferred construction contractor following exhibition of the EIS
- additional consultation with RAPs including consultation on the draft revised *Non-Aboriginal and Aboriginal Cultural Heritage Assessment Report* (Navin Officer, 2021)
- consideration of the need for further mitigation measures.

6.3.2 Construction assessment

Wentworth main construction compound and accommodation camp

No unlisted sites of Aboriginal heritage significance and no previously recorded sites were identified as being listed within the vicinity of the Wentworth main construction compound and accommodation camp. This area was therefore assessed as having low potential for subsurface archaeological deposits. Additionally, no additional sites were identified as part of the site walkover in November 2020.

The proposed construction works in these areas are therefore considered to be consistent with the overall Aboriginal heritage impacts as previously described in Section 10.4 the EIS.

Anabranch South main construction compound and accommodation camp

As a result of the reduced size of the Anabranch South main construction compound, the proposal would no longer impact on two previously identified Aboriginal heritage isolated finds, being sites PEC-W-74 and PEC-W-76. Site PEC-W-76, consisting of an additional isolated find, would however still be located within the retained area of the proposed Anabranch South site (as described in the EIS and Technical paper 2).

Amended layout for the Buronga substation upgrade and expansion site

Section 10.4 of the EIS identified that the Buronga substation upgrade and expansion had the potential to directly impact on an area of Potential Archaeological Deposit (PEC-PAD-27).

As part of the refinement of the overall footprint for the Buronga upgrade and expansion site, direct impacts to this PAD have now been avoided (refer to Figure 2-7). This would result in a reduced overall impact to Aboriginal heritage items at this location compared to the impacts identified in the EIS and Technical paper 2.

No other potential impacts were previously identified at this site.

Earthwork material sites

No unlisted sites of Aboriginal heritage significance and no previously recorded sites were identified within the proposed earthwork material sites adjacent to the proposed Buronga substation upgrade and expansion area as previously described in the EIS. The locations for the earthwork materials sites were therefore assessed as having low potential for subsurface archaeological deposits.

The proposed construction works in these areas are therefore considered to be consistent with the overall Aboriginal heritage impacts as previously described in Section 10.4 the EIS.

Construction water supply points

A summary of the potential Aboriginal heritage impacts associated with each of the construction water supply points is provided in Table 6-8. This assessment is based on a desktop assessment of each site.

Further details regarding the potential impacts is provided in section 8.5.3 and Appendix 5 of the revised *Non-Aboriginal and Aboriginal Cultural Heritage Assessment Report* provided in Appendix E.

Table 6-6 Potential Aboriginal heritage impacts associated with the proposed construction water supply points

Water supply point	Predicted archaeological potential	Assessment of potential Aboriginal heritage impact
Alcheringa Road, Buronga	Moderate to high	The nearest AHIMS sites is about 230 metres north west of the proposal water supply point. Based on the predicted sensitivity of the landform sensitivity, proximity to former water bodies and AHIMS listed sites, and past and current land disturbance, this area is assessed to have moderate to high potential for archaeological items in a disturbed context.
River Drive, Buronga	Moderate	The closest recorded AHIMS site is 700 metres to the southwest. The most common AHIMS sites types in similar contexts along the river include scarred trees, middens, artefacts, and burials. Based on the predicted sensitivity of the landform sensitivity, proximity to the Murray River, proximity to AHIMS listed sites and their relative density, and past and current land disturbance, this area is assessed to have moderate potential for archaeological items in a disturbed context. However the use of existing infrastructure is unlikely to impact the significance of any potential archaeological items or deposits at this location.
Fletchers Lake Drive, Dareton	Moderate	The closest recorded AHIMS site is about 1.2 kilometres to the north. The most common AHIMS site types around Fletchers Lake are artefacts, followed by burials, and scarred trees. Based on the predicted sensitivity of the landform sensitivity, proximity to the Fletchers Lake and the margin of Bulgamurra and Roo Roo land systems, proximity to AHIMS listed sites and their relative density, little aerial evidence of land disturbance, this area is assessed to have moderate potential for archaeological items and deposits.
Beverly Street, Wentworth	Low	The nearest AHIMS listed site is over 500 metres to the southwest. Based on the predicted landform sensitivity, proximity to the confluence of the Darling and Murray Rivers, distance from AHIMS listed sites and their relative density, urban context, previous ground disturbance, this area is assessed to have low potential for archaeological items in a disturbed context. Additionally, the use of existing infrastructure is unlikely to impact the significance of any potential archaeological items or deposits at this location.

Water supply point	Predicted archaeological potential	Assessment of potential Aboriginal heritage impact
Milperra Road (and Silver City Highway corner), Anabranch South	Low	The nearest AHIMS sites are about 2.5 kilometres southeast and associated with the edge of the banks Anabranch. Based on the predicted landform sensitivity, distance from the Anabranch, distance from AHIMS listed sites and their relative density, previous ground disturbance associated with previous installation of the pipeline, this area is assessed to have low potential for archaeological items in a disturbed context.
690 Pomona Road, Pomona	Low to moderate	The nearest AHIMS listed site is over one kilometre to the northeast. Based on the predicted sensitivity of the landform sensitivity, proximity to the Murray River, proximity to AHIMS listed sites and their relative density, and past and current land disturbance, this area is assessed to have moderate potential for archaeological items and deposits. However the use of existing infrastructure is unlikely to impact the significance of any potential archaeological items or deposits at this location.
Wentworth construction compound and accommodation camp	Moderate	The nearest AHIMS site 1.6 kilometres to the southwest. The most common site types of the nearest AHIMS site include middens, burials, and stone artefacts. Based on the predicted sensitivity of the landform sensitivity, proximity to the Murray River, proximity to AHIMS listed sites and their relative density, and past and current land disturbance, this area is assessed to have low to moderate potential for archaeological items and deposits.

Amended indicative disturbance area

Mitigation measure AH-1 of the EIS identified that the final disturbance area for the proposal would be designed to avoid impacts to Aboriginal sites as far as practical with the avoidance of sites of moderate or higher archaeological significance being prioritised. In addition to the avoidance of potential impacts to PAD PEC-PAD-27 within the Buronga substation and expansion site (refer to Figure 2-7), the amended indicative disturbance area (through the refinement of the access track strategy as described in Section 2.8.2) has also allowed for minimising impacts to the previously impacted sites:

- PEC-W-PAD19 (proposed access track arrangement to avoid PAD impact)
- PEC-W-PAD25 (proposed access track arrangement to avoid PAD impact).

The revised access tracks proposed to avoid these PAD sites are shown in Figure 6-1.

The proposed change to the proposed disturbance area categories to include a separate disturbance area A (centreline) area (as outlined in Section 2.8.2) is also expected result in reduced impacts during construction. This additional centreline category would not require sub-surface impacts during construction which would assist in minimising impacts to known (and potential) items of heritage in these locations.

A summary of the change in potential Aboriginal heritage impacts associated with the amended proposal (including amended indicative disturbance area) against each of the amended disturbance area categories is provided in Table 6-8.

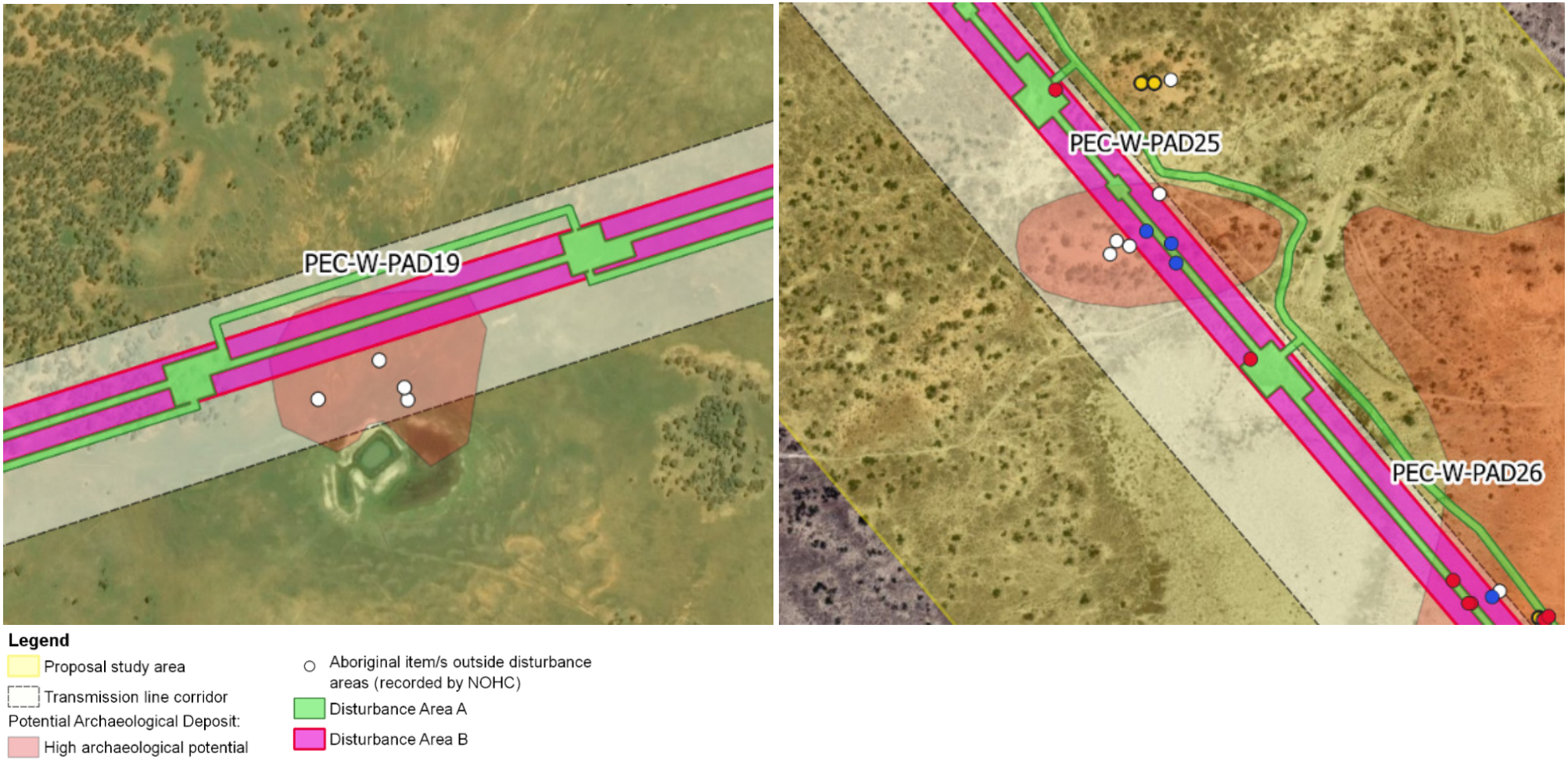

Figure 6-1 Revised access tracks proposed to avoid identified PAD sites PEC-W-PAD19 and PEC-W-PAD25

Table 6-7 Summary of potential Aboriginal heritage impacts within the indicative disturbance area

Site features and significance	Impacts as a result of the proposal (EIS)				Impacts as a result of the amended proposal					
	Impact type			Total number of sites potentially impacted	Impact type					Total number of sites potentially impacted
	Direct (disturbance area A)	Potential direct (Disturbance area B)	Direct/ Potential direct[1]		Direct (Area A)	Potential direct impact (Area A centreline clearing)	Potential direct impact only (Area B)	Direct and potentially direct (Area A & B)	Potential direct impact only (A centreline clearing & B)	
Artefact										
Low scientific significance	6	6	1	13	1	4	7	-	1	13
Moderate scientific significance	10	11	5	26	8	3	10	3	1	25
Hearth										
Low scientific significance	1	2	-	3	-	-	3	-	-	3
Moderate scientific significance	1	3	-	4	-	-	4	-	-	4
Hearth, Artefact										
Moderate scientific significance	2	-	2	4	1	2	-	-	2	5
Midden										
Low scientific significance	1	2	1	4	1	-	3	-	-	4

Site features and significance	Impacts as a result of the proposal (EIS)				Impacts as a result of the amended proposal					
	Impact type			Total number of sites potentially impacted	Impact type					Total number of sites potentially impacted
	Direct (disturbance area A)	Potential direct (Disturbance area B)	Direct/ Potential direct[1]		Direct (Area A)	Potential direct impact (Area A centreline clearing)	Potential direct impact only (Area B)	Direct and potentially direct (Area A & B)	Potential direct impact only (A centreline clearing & B)	
Midden, Artefact										
Low scientific significance	-	-	1	1	-	-	-	-	1	1
Moderate scientific significance	-	1	3	4	-	-	2	-	2	4
Midden, Hearth, Artefact										
Moderate scientific significance	-	1	-	1	-	-	1	-	-	1
Scarred tree										
Potential scarred trees	3	142	-	17	5	4	8		-	17
Total	23	39	13	77	16	13	38	3	7	77

Note:
(1) Direct / Potential direct relates to sites that extend across disturbance area A and B.
(2) For scarred trees, impacts in disturbance area B would be considered direct.

Other proposed amendments

Impacts as a result of the other proposed amendments are not anticipated to impact on items of Aboriginal heritage during construction.

6.3.3 Operational assessment

Consistent with the assessment presented in Section 10.5 of the EIS, operation of the amended proposal is not anticipated to result in direct impacts to known or previously unrecorded Aboriginal sites. Whilst some disturbance may be required as part of routine maintenance and repair activities, these activities would be contained within areas previously disturbed during construction. Recorded sites remaining after the construction period would be mapped and potential impacts avoided.

Indirect impacts from the presence of infrastructure, including visual impacts, would continue during operation of the proposal. The indirect impacts associated with the amended proposal would be consistent with those identified previously in the EIS.

6.3.4 Mitigation and management measures

No additional mitigation measures are required to address the potential impacts specific to the proposed amendments (noting that some measures have been updated to respond to submission(s) made as part of the exhibition of the EIS).

With respect to the proposed water supply points, it is recommended that archaeological survey is conducted in areas where ground disturbance in required for pipe infrastructure, as per existing mitigation measure AH3, at the following locations:

- Alcheringa Road
- Fletchers Drive
- Milpara Road and
- Wentworth construction compound and accommodation camp.

The consolidated list of mitigation measures for the amended proposed is provided in Appendix C of this Amendment Report.

6.4 Non-Aboriginal heritage

A revised *Non-Aboriginal and Aboriginal Cultural Heritage Assessment Report* (Navin Officer, 2021) has been prepared to respond to the issues raised regarding non-Aboriginal heritage impacts identified in the NSW Heritage submissions and assess the impacts associated with the amended design, in comparison to those of the proposal as described in the EIS. The revised heritage assessment report is provided in Appendix E, and a summary is provided below. This section should be read in conjunction with Chapter 11 of the EIS.

6.4.1 Assessment methodology

The assessment approach methodology for the assessment of non-Aboriginal heritage impacts for the amended proposal was consistent with the methodology presented in Chapter 2 of *Technical paper 2 – Non-Aboriginal & Aboriginal Cultural Heritage Assessment Report* (Navin Officer, 2020). The assessment of the proposed amendments also included undertaking:

- additional field survey of the Wentworth main construction compound and accommodation camp site and Buronga substation upgrade and expansion site
- review of results received from additional survey undertaken by the nominated construction contractor following exhibition of the EIS
- revised literature and database review, including the proposed construction water supply points
- consideration of the need for further mitigation measures.

6.4.2 Construction assessment

Wentworth main construction compound and accommodation camp

As identified in Section 11.4 of the EIS, impacts to recorded heritage items from construction of the proposal can include direct (disturbance) and indirect impacts. Direct impacts generally result from changes to site environment, including vegetation removal, excavation or impacts from vibration caused by construction plant and equipment, which can result in a loss of heritage value. Indirect impacts may occur where views to and from significant sites are altered, resulting in a loss of the heritage value of the site.

The Moorna Station Woolshed (listed on the Wentworth LEP) is located directly across the road from the Wentworth main construction compound and accommodation camp (refer to Figure 6-2). This camp would not directly impact on the listed curtilage of the site and would not impact the woolshed itself nor diminish its heritage significance.

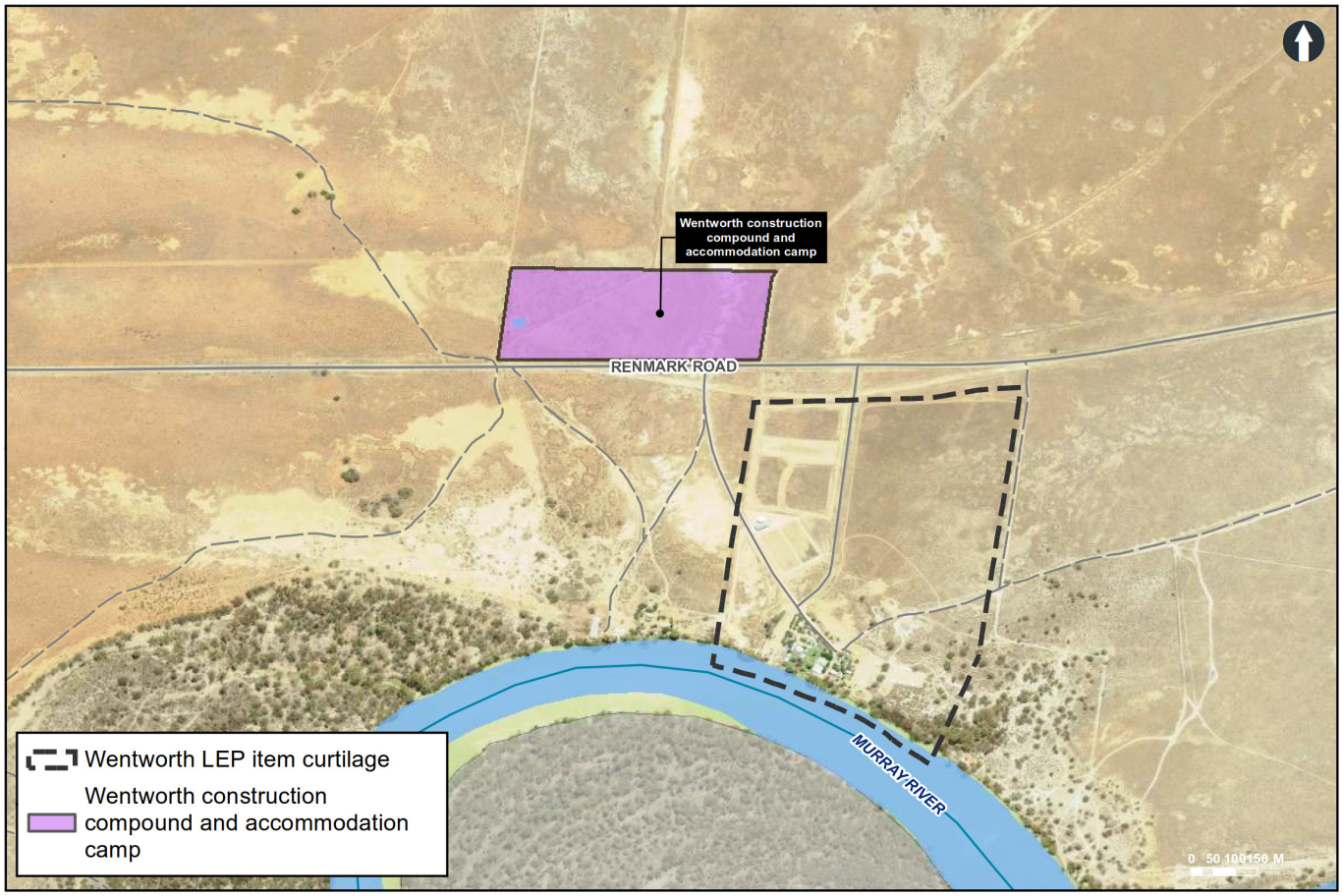

Figure 6-2 Non-Aboriginal heritage in relation to the Wentworth construction compound and accommodation camp

Construction water supply points

A summary of the potential non-Aboriginal heritage impacts associated with each of the proposed construction water supply points is provided in Table 6-8.

Table 6-8 Potential non-Aboriginal heritage impacts associated with the proposed construction water supply points

Water supply point	Potential non-aboriginal heritage impact
Alcheringa Road, Buronga	No non-Aboriginal heritage items have been identified within the vicinity of this site.
River Drive, Buronga	No non-Aboriginal heritage items have been identified within the vicinity of this site. The Old Mildura Bridge (listed on the Wentworth LEP) is located 800 metres to the south. This site would not be impacted as no works are required at this location.
Fletchers Lake Drive, Dareton	No non-Aboriginal heritage items have been identified within the vicinity of this site
Beverly Street, Wentworth	The Old Wentworth Gaol (listed on the State Heritage Register SHR#01982) is located around 100 metres to the north of the proposed water supply point of this site. The water supply point at this location is an existing overhead fill point. No impacts are expected to this item.
Milperra Road (and Silver City Highway corner), Anabranch South	No non-Aboriginal heritage items have been identified within the vicinity of this site
690 Pomona Road, Pomona	No non-Aboriginal heritage items have been identified within the vicinity of this site
Wentworth main construction compound and accommodation camp	As noted earlier, Moorna Station Woolshed (listed on the Wentworth LEP) is located directly across the road from the Wentworth main construction compound and accommodation camp. The works for the water supply would be within the listed curtilage of the site but would not impact the woolshed itself nor diminish its heritage significance as the pipe would be located below ground following completion of construction.

Amended indicative disturbance area

As a result of an additional site walkover by the preferred construction contractor in December 2020, an additional survey marker tree (recorded as PEC-W-SE-H1 in Appendix E) was identified. The additional survey marker tree is located with the transmission line corridor but is immediately adjacent (10 metres) to the indicative disturbance area B (refer to Figure 10.28 of Appendix E). As such, the unlisted heritage item could be at risk of inadvertent impacts, if not protected. To avoid potential impacts the site would be delineated and protected during construction and identified on relevant GIS systems maintained by TransGrid to ensure ongoing protection during operations. The proposal would not impact the significance of this heritage item.

The proposed amendment to indicative disturbance area would not result in any additional changes to historic heritage impacts compared to those previously presented in the EIS.

Other proposed amendments

Impacts as a result of the other proposed amendments, including the proposed amendments to the transmission line corridor, are not anticipated to impact on items of non-Aboriginal heritage during construction.

6.4.3 Operational assessment

The impacts of the operation of the proposal on non-Aboriginal heritage items is not expected to change as a result of the proposed amendments to the proposal. As described in section 11.5 of the EIS, maintenance activities required for operation of the proposal would not result in disturbance of additional areas.

As such, no additional direct impacts to non-Aboriginal heritage would occur during operation of the proposal (inclusive of the proposed amendments).

6.4.4 Mitigation and management measures

No additional mitigation measures have been identified as being required to address the potential impacts for the proposed amendments. The consolidated list of mitigation measures for the amended proposed is provided in Appendix C of this Amendment Report.

6.5 Land use and property

6.5.1 Assessment methodology

The assessment approach methodology for the assessment of land use and property impacts as detailed in Section 12.2 of the EIS was generally applied to the assessment of the proposed amendments, consisting of a desktop assessment of the potential land use impacts. Given the nature of the proposed impacts, no additional specialist agricultural assessment was undertaken with the results of the previous assessment being considered consistent with the proposed amendments.

6.5.2 Construction assessment

Property impacts

Property impacts as a result of the construction of the proposal were detailed in Section 12.4.1 of the EIS. This primarily identified the need to acquire and/or temporary lease land within the proposal study area for construction of both transmission line structures and land for the upgrade and expansion of the Buronga substation. No residential dwellings would be subject to acquisition for the proposal, however there may be impacts on other infrastructure (such as agricultural sheds, fencing and gates).

Of the proposed amendments, the following would have potential additional property impacts:

- around 10.2 hectares of additional land to be leased to provide for the confirmed main construction compound and accommodation camp site at Wentworth
- a widened area to allow for the construction of the temporary 220kV transmission line bypass to the south of the Buronga substation during construction would be temporarily leased
- additional areas to accommodate the proposed construction water supply points would be temporarily leased or other negotiated agreements with the landholder. The area required would typically consist of an area around 0.1 hectares in size for each water supply point
- minor amendments to areas required to be temporarily leased during construction to account for the change to the indicative disturbance area for the proposal along the transmission line alignment.

While the specific area of impact would be slightly altered as a result of the proposed amendments, the overall impact resulting from the potential property impacts during construction would however be consistent with those identified in Section 12.4.1 of the EIS including potential for temporary reduction in production capacity due to the restriction on farming activities or adjustments to existing infrastructure such as fences, dams, access tracks or other property infrastructure.

Similarly to the assessment provided in the EIS, additional areas within the final construction footprint that have been identified as a result of the amended proposal, and that are not required for operation of the proposal, would be rehabilitated at the completion of construction to a similar condition as the existing land. This would include:

> any additional access tracks proposed as part of the revised access track strategy
> the Wentworth main construction compound and accommodation camp
> the proposed construction water supply points.

Land use changes

Section 12.4.2 of the EIS identified potential land use changes during construction as including potential:

> land use and productivity loss and restrictions including:
  – temporary access restrictions, which may require landholders to access sections of their properties via alternative routes
  – noise created by the construction activities, which may be an issue during calving and lambing as livestock
  – damage to existing fences or stock water pipelines, or gates accidentally left open leading to loss of livestock during construction
  – potential indirect impacts to water sources such as farm dams
> impacts to existing mining operations
> biosecurity risks including risk of weed spread and risk of livestock or other pest disease spread as a result of movement of vehicles and equipment during construction.

Of the proposed amendments, the following would have potential additional property impacts:

> the Wentworth main construction compound and accommodation camp site would result in a temporary change in land use during the construction period from the existing open grazing land
> a majority the proposed construction water supply points are currently located within existing road verges. Following installation of the required infrastructure (where required) the proposed construction water supply points would generally not result in a change in the existing land use of these areas.

While the specific locations of the proposed impacts would be slightly altered as a result of the proposed amendments, the overall impact resulting from the potential land use impacts during construction would however be consistent with those identified in Section 12.4.2 of the EIS. Where feasible, the proposed amendments have sought to minimise additional impacts to areas of agricultural productivity or associated agricultural infrastructure.

6.5.3 Operational assessment

Property impacts

The Wentworth main construction compound and accommodation camp site and water supply points would be removed following the completion of the proposal. There would be no ongoing property impacts to these sites during operation.

The proposed amendment to reduce the size of the permanent footprint at the Buronga substation would further reduce any residual impacts to land use at this location.

The remaining proposed amendments would not significantly alter the operational land use and property impacts compared to those identified in the EIS. Overall, the level of impact associated with the amended proposal would generally remain unchanged from those identified in Section 12.5 of the EIS during operation.

Land use changes

The Wentworth main construction compound and accommodation camp site and water supply points would be removed following the completion of the proposal. Provided the site is reinstated to match pre-construction conditions, there would be no long-term land use changes for these sites during operation of the proposal.

Section 12.5 of the EIS identified potential land use changes during operation as including potential:

> ongoing productivity loss and restrictions on agricultural uses
> impacts to future mining operations
> biosecurity risks including risk of weed spread and risk of livestock or other pest diseases.

The proposed amendments would not significantly alter the operational land use changes likely to occur as a result of operation of the amended proposal compared to those identified in the EIS. Overall, the level of impact associated with the land use changes occurring for the amended proposal would generally remain unchanged from those identified in Section 12.5 of the EIS during operation.

6.5.4 Mitigation and management measures

No additional mitigation measures have been identified as being required to address the potential impacts for the proposed amendments. The consolidated list of mitigation measures for the amended proposed is provided in Appendix C of this Amendment Report.

6.6 Landscape character and visual amenity

An addendum *Landscape and Visual Impact Assessment* (Iris, 2021) has been prepared to respond to assess the impacts associated with the amended design in comparison to those of the proposal as described in the EIS. The revised visual assessment report is provided in Appendix F, and a summary of the assessment is provided below. This section should be read in conjunction with Chapter 13 of the EIS.

6.6.1 Assessment methodology

The assessment approach methodology for the assessment of landscape and visual impacts as detailed in Chapter 3 of *Technical paper 4 – Landscape and Visual Impact Assessment* (Iris, 2020) and summarised in Section 13.2 of the EIS was applied to the assessment of the proposed amendments. The assessment of the proposed amendments included:

> revised assessment of landscape impact during construction and operation
> revised assessment of the daytime visual impact during construction and operation
> general assessment of night-time visual impact during construction and operation
> consideration of the need for further mitigation measures.

Landscape impact assessment – overview

The proposed amendment changes are located across all three landscape character areas described in the EIS and Technical paper 4, which are:

> the Lake Victoria cultural landscape and semi-arid plains
> Mallee shrubland and rural
> Murray River plain rural landscape character area.

The existing environment for the proposed amendments is consistent with the existing environment description provided in Technical paper 4.

Visual impact assessment – overview

Technical paper 4 included a selection of representative viewpoints across each landscape character area. A number of these previously identified viewpoints are relevant to the proposed amendments.

Where these would change due to the amendment, discussion of these viewpoints have been provided. Where the proposed amendment was not adequately covered within an existing view, additional viewing location(s) were identified and assessed.

6.6.2 Construction assessment

Landscape impacts

The landscape impacts would generally be consistent with the impact levels identified in the EIS.

The track strategy would reduce the length of access tracks, and consequently would reduce the impact on vegetation, which provides landscape amenity and screening across all landscape character areas. This would provide particular benefit in the Mallee shrubland and rural landscape character area where there is more tree cover.

During construction, the EIS identified an overall moderate landscape impact for the Lake Victoria cultural landscape and semi-arid plains landscape character, noting that this impact would however be experienced over a large area. It is considered that the additional construction compound and accommodation site west of Wentworth would not impact this overall moderate landscape impact.

In the Mallee shrubland and rural landscape character area, while there would be less trees and landform change at Anabranch South, and improvements as a consequence of the revised access track strategy, there would be additional clearing required for the temporary bypass transmission line and water supply pipeline, and an increased landscape change at the Buronga main construction compound and accommodation site due to the additional earthworks material sites. On balance these changes would offset each other and would not change the overall low landscape impact level identified in the EIS.

While there would be some improvements to the Murray River plain rural landscape character area due to the revised access track strategy, the impact level would not change from the assessment in the EIS.

A summary of the change in landscape impacts during construction as a result of the proposed amendments in Table 6-9.

Table 6-9 Landscape impact summary – construction

		Construction (as presented in th exhibited proposal)		Construction (including the proposed amendments)	
Landscape character area	**Landscape sensitivity**	**Magnitude of change**	**Landscape impact**	**Magnitude of change**	**Landscape impact**
Lake Victoria cultural landscape and semi-arid plains	State (south of Renmark Road)	Negligible	Negligible	Negligible	Negligible
	Regional (north of Renmark Road)	Moderate	Moderate	Moderate	Moderate
Mallee shrubland and rural landscape	Local	Moderate	Low	Moderate	Low
Murray River plain rural landscape	Local	Low	Low	Low	Low

Further detailed discussion regarding the specific changes to the landscape impacts during construction as a result of the proposed amendments is provided in in Section 4 of the revised *Landscape and Visual Impact Assessment* (Iris, 2021) (refer to Appendix F of this Amendment Report).

Visual impacts

The visual impact levels associated with the amended proposal would generally be consistent with the impacts identified in the EIS as a majority of the proposed changes would occur where previous construction works of a comparable nature were proposed to occur. However, with respect to the additional views associated with the proposed amendment compared to those identified in the EIS, there would be some impact additional impact to views from Renmark Road and the Fort Courage Caravan Park to the proposed Wentworth main construction compound and accommodation camp. This would result in a low and moderate visual impact during construction.

The moderate visual impact identified in views from Arumpo Road to the Buronga main construction compound and accommodation camp site is consistent with the impact level identified in the EIS, however, this impact would be experienced over a marginally longer section of Arumpo Road due to the increased size of the disturbance area (as the proposed material earthwork site would be located between the previously proposed substation upgrade and expansion site and construction compound and accommodation camp site).

A summary of the change in daytime visual impacts during construction as a result of the proposed amendments in Table 6-10.

Table 6-10 Daytime visual impact summary – construction

		Construction (as presented in the exhibited proposal)		Construction (including the proposed amendments)	
Landscape character area	**Visual sensitivity**	**Magnitude of change**	**Visual impact**	**Magnitude of change**	**Visual impact**
Lake Victoria cultural landscape and semi-arid plains					
Viewpoint 1 View east from Renmark Road	Local	Moderate	Low	Moderate	Low
Viewpoint 5: View north from Renmark Road, near intersection with Nulla Road	Local	Moderate	Low	Moderate	Low
View to the Wentworth main construction compound and construction camp from Renmark Road	Local	Impact not previously assessed as part of EIS		High	Moderate**
View to the Wentworth main construction compound and construction camp from Fort Courage Caravan Park	Local	Impact not previously assessed as part of EIS		Moderate	Low**
Mallee shrubland and rural landscape					
Viewpoint 7: View south from Silver City Highway	Local	Moderate	Low	Moderate	Low
Viewpoint 9: View northeast from Arumpo Road to proposed Buronga substation upgrade and expansion site.	Local	High	Moderate	High	Moderate

** *Impact in addition to those identified in the EIS.*

Further detailed discussion regarding the specific changes to the daytime visual impacts during construction as a result of the proposed amendments is provided in in Section 5 of the revised *Landscape and Visual Impact Assessment* (Iris, 2021) (refer to Appendix F of this Amendment Report).

Night-time visual impacts

There would be additional visual impacts at night, with a temporary high visual impact during construction at the additional Wentworth construction compound and accommodation camp where there would be 24 hour operations, seven days a week in a predominantly dark environment. This impact would be temporary, localised and not seen by a large number of receivers. It is not considered to be significant.

A summary of the change in night-time visual impacts during construction as a result of the proposed amendments in Table 6-11.

Table 6-11 Night-time visual impact summary – construction

			Construction (as presented in the exhibited proposal)		Construction (including the proposed amendments)	
No.	**Location**	**Visual sensitivity**	**Magnitude of change**	**Visual impac**	**Magnitude of change**	**Visual impact**
1	Lake Victoria cultural landscape and semi-arid plains – Wentworth construction compound and construction camp	High (A1 Dark)	Impact not previously assessed as part of EIS		Moderate	High**
	Lake Victoria cultural landscape and semi-arid plains – All other areas	High (A1 Dark)	Negligible	Negligible	Negligible	Negligible
2	Mallee shrubland and rural landscape – Buronga Substation	High (A1 Dark)	Moderate	Moderate*	Moderate	High*
	Mallee shrubland and rural landscape – All other areas	High (A1 Dark)	Negligible	Negligible	Negligible	Negligible

** *Impact in addition to those identified in the EIS.* * *Impact level not changed; clarification of error identified in EIS*

Further detailed discussion regarding the specific changes to the construction night-time impacts as a result of the proposed amendments is provided in in Section 5 of the revised *Landscape and Visual Impact Assessment* (Iris, 2021) (refer to Appendix F of this Amendment Report).

6.6.3 Operational assessment

Landscape impacts

During operations the negligible and low landscape impacts would remain as identified in the EIS as all of the proposed amendments that would have a potential to result in visual impacts would occur during the construction of the amended proposal.

A summary of the change in landscape impacts during operation as a result of the proposed amendments in Table 6-12.

Table 6-12 Landscape impact summary – Operation

		Operation(as presented in the exhibited proposal)		Operation (including the proposed amendments)	
Landscape character area	**Landscape sensitivity**	**Magnitude of change**	**Landscape impact**	**Magnitude of change**	**Landscape impact**
Lake Victoria cultural landscape and semi-arid plains	State (south of Renmark Road)	Negligible	Negligible	Negligible	Negligible
	Regional (north of Renmark Road)	Low	Low	Low	Low
Mallee shrubland and rural landscape	Local	Moderate	Low	Moderate	Low
Murray River plain rural landscape	Local	Low	Low	Low	Low

Further detailed discussion regarding the specific changes to the landscape impacts during operation as a result of the proposed amendments is provided in in Section 4 of the revised *Landscape and Visual Impact Assessment* (Iris, 2021) (refer to Appendix F of this Amendment Report).

Visual impacts

During operations the low and moderate visual impacts would remain as identified in the EIS as the additional viewpoints would only be impacted during construction.

A summary of the change in daytime visual impacts during operation as a result of the proposed amendments in Table 6-13.

Table 6-13 Daytime visual impact summary – Operation

		Operation (as presented in the exhibited proposal)		Operation (including the proposed amendments)	
Landscape character area	**Visual sensitivity**	**Magnitude of change**	**Visual impact**	**Magnitude of change**	**Visual impact**
Lake Victoria cultural landscape and semi-arid plains					
Viewpoint 1 View east from Renmark Road	Local	Moderate	Low	Moderate	Low
Viewpoint 5: View north from Renmark Road, near intersection with Nulla Rd	Local	Moderate	Low	Moderate	Low
View to the Wentworth construction compound and construction camp from Renmark Road	Local	Not previously assessed		Negligible	Negligible**
View to the Wentworth construction compound and construction camp from Fort Courage Caravan Park	Local	Not previously assessed		Negligible	Negligible**
Mallee shrubland and rural landscape					
Viewpoint 7: View south from Silver City Highway	Local	Moderate	Low	Moderate	Low
Viewpoint 9: View northeast from Arumpo Road to proposed Buronga substation upgrade and expansion site.	Local	High	Moderate	High	Moderate

** *Impact in addition to those identified in the EIS.*

Further detailed discussion regarding the specific changes to the daytime visual impacts during operation as a result of the proposed amendments is provided in in Section 5 of the revised *Landscape and Visual Impact Assessment* (Iris, 2021) (refer to Appendix F of this Amendment Report).

Night-time visual impacts

During operations the negligible and moderate visual impacts would remain as identified in the EIS.

A summary of the change in night-time visual impacts during operation as a result of the proposed amendments in Table 6-14.

Table 6-14 Night-time visual impact summary – operation

			Construction (as presented in the exhibited proposal)		Construction (including the proposed amendments)	
No.	**Location**	**Visual sensitivity**	**Magnitude of change**	**Visual impac**	**Magnitude of change**	**Visual impact**
1	Lake Victoria cultural landscape and semi-arid plains - Wentworth construction compound and construction camp	High (A1 Dark)	Not previously assessed		Negligible	Negligible**
	Lake Victoria cultural landscape and semi-arid plains – All other areas	High (A1 Dark)	Negligible	Negligible	Negligible	Negligible
2	Mallee shrubland and rural landscape – Buronga Substation	High (A1 Dark)	Low	Low*	Low	Moderate*
	Mallee shrubland and rural landscape – All other areas	High (A1 Dark)	Negligible	Negligible	Negligible	Negligible

** *Impact in addition to those identified in the EIS.* * *Impact level not changed; clarification of error identified in EIS*

Further detailed discussion regarding the specific changes to the operational night-time impacts as a result of the proposed amendments is provided in in Section 5 of the revised *Landscape and Visual Impact Assessment* (Iris, 2021) (refer to Appendix F of this Amendment Report).

6.6.4 Mitigation and management measures

No additional mitigation measures have been identified as being required to address the potential impacts for the proposed amendments. The consolidated list of mitigation measures for the amended proposed is provided in Appendix C of this Amendment Report.

6.7 Socio-economic

An addendum *Socio-economic impact assessment* (WSP, 2021b) has been prepared to respond to assess the impacts associated with the amended design in comparison to those of the proposal as described in the EIS. The revised visual assessment report is provided in Appendix G, and a summary of the assessment is provided below. This section should be read in conjunction with Chapter 14 of the EIS.

6.7.1 Assessment methodology

The impact assessment methodology adopted for the social impact assessment of the proposed amendments was the same as described in *Technical paper 5 – Social Impact Assessment report* (WSP, 2020b). It is noted that the social impact assessment as provided in the EIS had considered the presence of a main construction compound and accommodation camp (with 100 FTE workers) to the north of Wentworth in addition to the Anabranch South and Buronga sites.

The revised social impact assessment has considered the assessment outcomes of other impact assessments completed to support the Amendment Report, as well as the outcomes of the consultation as documented in Chapter 5. It has considered the amendments that would result in a potential material change to the social impacts as identified in the exhibited EIS (being the increase in employment and change in traffic generation, the confirmation of the Wentworth main construction compound and accommodation camp sites, and change in the construction activities at Buronga).

6.7.2 Construction assessment

Way of life

- Way of life is a broad category of social impact, defined as how people live, work, recreate and interact with each other on a daily basis. With respect to the amended proposal:
- the redistribution and increase in the construction workforce would proportionally increase demand for goods and services in nearby communities, including Mildura. Social impacts (positive and negative) to the community at Pomona as identified in the exhibited EIS are unlikely given the confirmed location of the Wentworth site and the removal of the Anabranch accommodation camp
- the increase in the workforce may increase demand in local housing, noting existing pressures on housing availability. However, the increase in camp accommodation would assist in addressing these potential impacts
- the increase in the construction workforce would provide increased opportunities for local workforce participation, as well as potential strain on social services following the completion of the construction phase.

The impact assessment for the exhibited proposal concluded that the impacts would be moderate and reduced to low following the implementation of the mitigation measures. The impacts of the proposed amendments would be proportionate to the increase and redistribution of the workforce in the vicinity of these communities but are considered remain as a low impact with the implementation of mitigation measures.

Table 6-15 Way of life

Social impact category	Description	Impact rating (post mitigation)	
		Exhibited proposal	Amended proposal
Way of life	The completion of construction would see the conclusion of certain casual, full-time and contracted employment positions, which may cause a spike in localised unemployment, placing potential strain on social services and decrease in community social and economic capital.	Low	Low
Way of life	Increased demand for goods and services may result in certain products or services becoming difficult to access for some residents due to increased costs, while reduction in demand (and cost) following construction may have a commercial impact to local businesses and service providers.	Low	Low
Way of life	An increase in competition for temporary accommodation or rental housing may result in unavailability of accommodation for certain user groups.	Low	Low

Community

Community impacts refer to aspects of population composition, cohesion, character, function and sense of place. It is recognised that this category of impact involves a level of uncertainty because socio-economic environments and the processes that affect them are constantly changing and can vary from place to place and over time.

With respect to the amended proposal, the increase in the construction workforce either residing in local towns or visiting while off-shift would increase the interaction with local communities and may exacerbate the potential social impacts outlined in the EIS. However, this increase in the total workforce would not alter the impact rating as identified in the exhibited EIS (moderate (pre-mitigation), and low (post-mitigation)) and would be managed by the implementation of the mitigation measures as provided in the EIS.

Table 6-16 Community

Social impact category	Description	Impact rating (post mitigation)	
		Exhibited proposal	Amended proposal
Community	The sudden increase to the residential population would change the composition of the community and has the potential to change the character of the community.	Low	Low
Community	The change in resident population would diversify existing community composition, bringing new and skilled people of working age into the town which can improve social and human capital within the community.	High (positive)	High (positive)

Health and wellbeing

Health is defined as a state of complete physical, mental and social wellbeing. Social impacts have the potential to result in poor health outcomes if it causes affected individuals or groups significant stress and anxiety. The exhibited EIS identified that the proposal has the potential to affect levels of stress for some individuals and groups, for both the construction workforce (due to social isolation from their social networks) and local communities. The increase in the workforce population may exacerbate these concerns within the local community and as such the potential impacts (once mitigation has been implemented) is considered to increase from low to low-moderate.

Since the exhibition of the EIS, an additional potential social impact has been identified with respect to the ongoing risk of restrictions on travel between states and countries due to COVID-19. Border closures can cause high levels of uncertainty leading to stress and anxiety for any interstate or international workers. This impact is considered to be high without mitigation and reduced to moderate with the implementation of mitigation measures. The significance of this impact should reduce over time as vaccination availability increases.

Table 6-17 Health and wellbeing

Social impact category	Description	Impact rating (post mitigation)	
		Exhibited proposal	Amended proposal
Health and wellbeing	Decrease in sense of public safety due to anti-social behaviour in townships near accommodation camps.	Low	Low – moderate
Health and wellbeing	Restricted travel across state and national borders in event of COVID-19 outbreak in in worker home location	N/A	Moderate

Surroundings

Surroundings refers to access to and use of ecosystem services, public safety, access to and use of nature and the built environment, and aesthetic value and/or amenity. With respect to the amended proposal, there would be changes to amenity-based impacts to existing receivers, and the receivers that would experience amenity impacts due to the confirmation of the Wentworth main construction compound and accommodation camp.

This includes, increased road traffic noise, impacts to receivers at Fort Courage and the nearby residence due to the establishment and use of the construction compound and accommodation camp, and additional emissions to air due to earthwork activities at the Buronga substation upgrade and expansion. Collectively the impact rating would remain low as a result of the proposed amendments with the existing mitigation measures being extended to apply to these changes, and the inclusion of additional air quality mitigation to address the additional potential earthwork activities at the Buronga substation upgrade and expansion site.

Table 6-18 Surroundings

Social impact category	Description	Impact rating (post mitigation)	
		Exhibited proposal	Amended proposal
Surroundings	Amenity impacts including noise, vibration, light spill, dust generation and reduced air quality may cause irritation or result in changes in day-to-day activities.	Low	Low

Access to and use of infrastructure services and facilities

The increased construction workforce's presence in local townships would affect the level of pressure on local services and facilities. This additional pressure would be addressed through implementation of the mitigation measures presented in the EIS, and as such, the conclusions of the social impact assessment as presented in the EIS remains unchanged.

Personal and property rights

The confirmed location of the Wentworth main construction compound accommodation camp location on Renmark Road would affect one additional landholder. Consultation with this landholder has indicated they have raised no specific concern in relation to the location of the Wentworth construction compound and accommodation camp, and would enter into a temporary lease for the use of this area.

The revised access strategy would create new tracks or use existing tracks and access points, where available, to minimise disturbance to the transmission line easement. The revised strategy would reduce the overall amount of clearing required to effectively access transmission line structures. Landholders were consulted on the revised access track strategy and raised no concerns.

As such, the conclusions of the social impact assessment as presented in the EIS remains unchanged.

6.7.3 Operational assessment

The social impacts of the operation of the proposal would not change as a result of the proposed amendments to the proposal.

6.7.4 Mitigation and management measures

No additional mitigation measures have been identified as being required to address the potential impacts for the proposed amendments. In particular, the redistribution and increased workforce would be managed through mitigation measure SE4 (Workforce Management Plan), which would also address any increased stress of anxiety with respect to COVID-19 and ongoing border closure risks.

The consolidated list of mitigation measures for the amended proposed is provided in Appendix C of this Amendment Report.

6.8 Hydrology, flooding and water quality

An assessment of hydrology, flooding and water quality impacts associated with the amended design in comparison to those of the proposal as described in the EIS. The revised assessment report is summarised below. This section should be read in conjunction with Chapter 15 of the EIS.

6.8.1 Assessment methodology

The impact assessment methodology adopted for the assessment of the hydrology and flooding impacts associated with the proposed amendments was the same as described in *Technical paper 6 – Hydrology and Flooding Impact Assessment report* (WSP, 2020c).

6.8.2 Construction assessment

Flooding

Buronga substation upgrade and expansion site and temporary bypass line works

As identified in Section 5.1 of Technical paper 6, the Buronga substation is not affected by flooding and subsequently there would be no impact to flood behaviour from construction works at the site and no impact to flood behaviour beyond the construction works site. The proposed amendments at the Buronga substation and the temporary bypass transmission line would continue to be located outside flood prone land and as such are unlikely to have significant impacts to, or from, flooding.

During construction, the impacts on drainage behaviour are likely to be localised and insignificant as a result of the proposed change in local topography due to the proposed material earthwork sites. Construction planning during detailed design would consider management of how impacts to overland flow paths would be managed to limit impacts to flows downstream. Risks to the camp and infrastructure, including the wastewater treatment plans, would be managed in line with the CEMP, specifically the Flood Emergency Management Plan(s).

Wentworth main construction compound and accommodation camp

The confirmed location for the construction compound and accommodation camp site at Wentworth is in the NSW Murray and Lower Darling catchment about 600 metres north of the Murray River and about three kilometres west of the Great Darling Anabranch.

The Wentworth main construction compound and accommodation camp site is located within the flood prone land to the north of the Murray River as identified by the *Wentworth Local Environmental Plan 2011* (Wentworth LEP). Renmark Road, which would provide access to the site, is also mapped by the Wentworth LEP as being flood affected (see Figure 6-3).

As described in Section 5.1 of Technical paper 6, components of the amended proposal which would occur in flood plain areas, including earthworks and stockpiles would have the potential to divert overland flows and/or displace floodwaters and worsen flooding in adjacent land. The proposed construction compound and accommodation camp site is located away from the main channel of the Murray River but would have the potential to impact local overland flow paths. Additionally, any elements of the construction compound and accommodation camp may be impacted during a flood event.

The nearest buildings to the Wentworth main construction compound and accommodation camp are associated with the Fort Courage Caravan Park located around 500 metres to the south of the site. Potential changes as a result of the Wentworth main construction compound and accommodation camp include redistribution and redirection of floodwaters resulting in localised increases in flood depth.

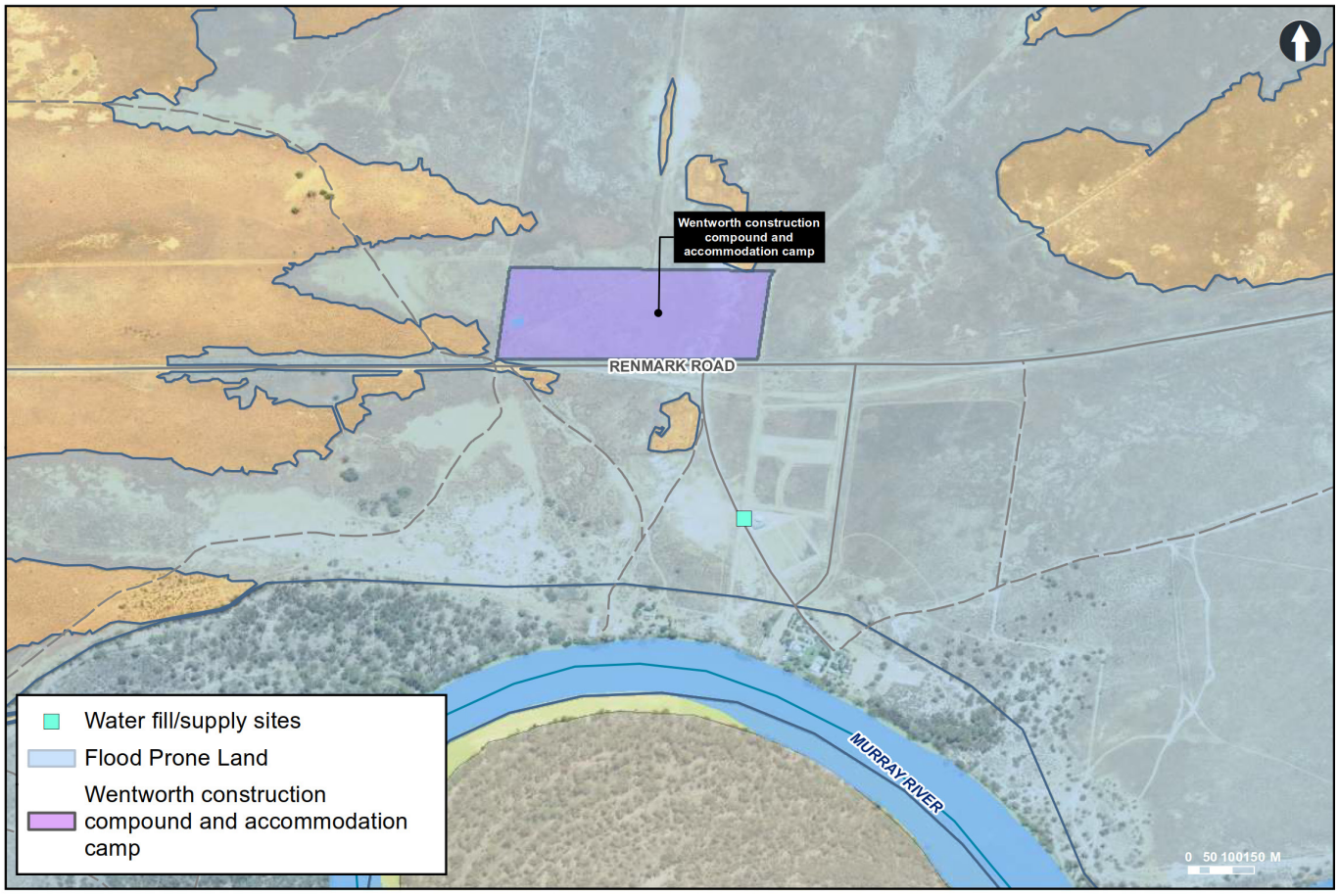

Figure 6-3 Flood prone land (Wentworth construction compound and accommodation camp)

Site specific soil, water and flood management practices would need to be considered during detailed design and construction planning (refer to consolidated mitigation measures in Appendix C).

Overall, the level of impact associated with the amended proposal would generally remain unchanged from those identified in Technical paper 6 and the EIS.

Water quality

The proposed amendments may degrade water quality if not properly managed which may subsequentially have impacts to surrounding ecology, sensitive receivers and other water uses. The potential water quality pollutants identified in Section 5.4 of Technical paper 6 would continue to be applicable to the proposed amendments.

Wentworth construction compound and accommodation camp

The construction of the Wentworth construction compound and accommodation camp site and the amended construction works as part of the Buronga substation upgrade and expansion would have impacts similar to those identified in sections 5.4.1 to 5.4.4 of Technical paper 6 including impacts in relation to:

- earthworks
- stockpiling and spoil handling
- potential for spills and litter.

Construction activities at the Wentworth construction compound and accommodation camp site that may result in impacts to water quality would include vegetation clearing, topsoil clearing and earthworks, as well as other activities like vehicle movements and changes to natural drainage lines may lead to increased erosion and export of sediment to waterways during construction. The potential impacts would be limited to the duration of construction. As such, the construction of the proposal would not cause significant long-term changes to the water quality environment.

Consistent with the assessment presented in Technical paper 6, the potential impacts from the confirmed Wentworth site would be accounted for in the CEMP. These would include requirements implementation of appropriate soil and water construction management measures to minimise impacts to water quality impacts from construction of the proposal.

Buronga substation upgrade and expansion site and temporary bypass line works

At the Buronga substation, the construction and use of the additional earthwork material sites would result in additional earthworks and movement of materials and subsequent risk of mobilisation of sediments and contaminants. It is anticipated that given correct implementation of appropriate soil and water construction management measures (as identified in Technical paper 6) there would be minimal to negligible additional impacts to water quality impacts from construction of the proposed amendments.

Wastewater treatment facilities

Effluent from the wastewater treatment facilities would be discharged to a small, lined basin type structure (turkey's nest), following which greywater would be collected and transported via water carts for reuse in dust suppression, compaction of materials or other construction activities which may require and can utilise grey water. Subject to detailed design, it is anticipated that the turkey nests would include:

- Buronga accommodation camp: around 20 metres by 20 metres by two metres deep providing around 800,000 litres of storage.
- Wentworth accommodation camp: around 13 metres by 13 metres by two metres deep providing around 338,000 litres of storage.

The proposed facilities are not expected to result in wastewater discharges to watercourses as part of their operation. As such there would be no anticipated impacts to existing water quality from the wastewater treatment plants.

As described in Section 2.6.2 previously, the wastewater treatment system would be designed, maintained and monitored in accordance with *AS/NZS 1547 On-site domestic wastewater management, Designing and Installing On-Site Wastewater Systems* (WaterNSW, 2019) and the *Australian Guidelines for Water Recycling: Managing Health and Environmental Risks (Phase 1)* (National Resource Management Ministerial Council, Environment Protection and Heritage Council and Australian Health Minister's Conference, 2006).

The wastewater treatment facilities would be designed to produce effluent that meets the requirement for dust suppression and other construction related activities.

Geomorphology

The Wentworth main construction compound and accommodation camp would be located about 600 metres north of the Murray River within flood prone land as identified by the Wentworth LEP. Construction planning during further design phases would consider management of flooding and overland flow paths. This would be managed to limit impacts to flow and flooding downstream and as such limit impacts to geomorphology.

For all elements of the amended proposal located out of flood prone area there would not be any geomorphological impacts.

Overall, the level of impact associated with the amended proposal would generally remain unchanged from those identified in Technical paper 6 and the EIS.

6.8.3 Operational assessment

Flooding

Technical paper 6 identified that there would be only insignificant impacts to flooding as a result of the proposal. The Wentworth main construction compound and accommodation camp site would be removed following the completion of the proposal and would therefore be consistent with the previous assessment.

As the Buronga substation site is not within an identified flood prone area, the proposed change to the localised topography (as a result of the proposed material earthwork sites to be used during construction) would not have any ongoing flood impacts.

Overall, the level of impact associated with the amended proposal would generally remain unchanged from those identified in Technical paper 6 and the EIS.

Water quality

Overall, the level of impact associated with the amended proposal would generally remain unchanged from those identified in Technical paper 6 and the EIS. The proposed amendment to reduce the size of the permanent footprint at the Buronga substation would result in a minor reduction in the potential for run off and any associated residual impacts to water quality.

Geomorphology

The level of impact associated with the amended proposal would generally remain unchanged from those identified in Technical paper 6 and the EIS with respect to potential geomorphology impacts.

6.8.4 Mitigation and management measures

No additional mitigation measures have been identified as being required to address the potential impacts for the proposed amendments. These would be documented in the proposal Construction Environmental Plan and Soil and Water Management Plan The consolidated list of mitigation measures for the amended proposed is provided in Appendix C of this Amendment Report.

6.9 Air quality

An assessment of the potential air quality impacts associated with the amended design in comparison to those of the proposal as described in the EIS assessment has been undertaken. This assessment included preparation of an addendum *Air Quality Impact Assessment* (WSP, 2021c) to provide a quantitative assessment of dust generating activities that would occur at the Buronga substation upgrade and expansion site as a result of the earthworks and associated potential crushing and screening activities. The addendum air quality assessment is provided in Appendix H, and a summary is provided below. This section should be read in conjunction with Chapter 15 of the EIS.

6.9.1 Assessment methodology

The impact assessment methodology adopted for assessment of the air quality impacts associated with the proposed amendments (excluding the proposed earthworks at the Buronga substation upgrade and expansion site) was the same as described in *Technical paper 7 – Air Quality Impact Assessment report* (WSP, 2020d). This included a qualitative desktop assessment. A quantitative assessment was also undertaken for the proposed earthworks at the Buronga substation upgrade and expansion site (refer below).

Buronga substation upgrade and expansion site

The quantitative assessment (dispersion modelling) of the Buronga substation upgrade and expansion site considered the potential dust generating activities that would occur at the site as a result of the proposed earthworks and associated crushing and screening activities, as well as other concurrent operations (e.g. haulage on unpaved roads).

The key methodology of the quantitative assessment included:

- selection of the year 2018 for dispersion modelling as representative of long-term meteorological conditions and slightly conservative for dust dispersion modelling
- site-specific meteorological files for 2018 were generated using CALMET with prognostic data generated by The Air Pollution Model (TAPM) and observational data collected at Mildura Airport Automatic Weather Station
- background data collected at the Buronga ambient air quality monitoring station for 2018 were processed and adopted as background for this assessment
- an emission inventory was developed for the following sources:
  - machinery operation (i.e. excavators, scrapers, dozers and graders)
  - materials handling (loading and unloading trucks)
  - wheel generated dust from unpaved roads
  - crushing, screening and associated activities
  - wind erosion from stockpiles and other exposed areas
- dispersion modelling was conducted using CALPUFF, with consideration of Total Suspended Particles (TSP), particulates (PM_{10} and $PM_{2.5}$) and deposited dust.

Assessment criteria

The relevant criteria for the proposed amendment are presented in Table 6-19.

Table 6-19 Air quality impact assessment criteria for relevant pollutants

Pollutant	Averaging period	Criteria[1]
TSP	Annual	90 µg/m^3
PM10	24 hours	50 µg/m^3
	Annual	25 µg/m^3
PM2.5	24 hours	25 µg/m^3
	Annual	8 µg/m^3
Deposited dust	Annual	2 g/m^2/month (increase) 4 g/m^2/month (cumulative)

Note 1: µg/m^3 – Microgram per cubic meter

Further detail regarding the methodology and modelling assumptions used for the dispersion modelling assessment is provided in Chapter 3 and Chapter 5 of the addendum *Air Quality Impact Assessment* (WSP, 2021c). Further information regarding the assessment criteria are provided in Chapter 2 of the addendum *Air Quality Impact Assessment*.

6.9.2 Construction assessment

Wentworth construction compound and accommodation camp

Consistent with the assessment presented in Section 5.2.2 of Technical paper 7, both particulate matter (dust[1]) and gaseous emissions would be generated from the establishment and use of the Wentworth construction compound and accommodation camp. These pollutants would include:

- dust comprising of:
  - total suspended particulates (TSP)
  - particulate matter with an aerodynamic diameter of less than 10 micrometres (PM_{10})
  - particulate matter with an aerodynamic diameter of less than 2.5 micrometres ($PM_{2.5}$)
  - deposited dust[2]
- carbon monoxide (CO)
- oxides of nitrogen (NO_x) [comprising of nitrogen monoxide (NO) and nitrogen dioxide (NO_2)]
- sulphur dioxide (SO_2)
- volatile organic compounds (VOCs)
- polycyclic aromatic hydrocarbons (PAHs).

1 Particulate matter and dust are often used interchangeably. For the purposes of this memo the term 'dust' has been used to include particles that give rise to soiling and to human health effects.

2 Dust that is longer suspended in the air and has settled onto a surface.

Potential emission sources from construction of the Wentworth main construction compound and accommodation camp include:

- vegetation clearing and earthwork activities
- the operation of a concrete batching plant (dust)
  - sand and aggregate unloading and transferring to elevated bins
  - fugitive emissions from conveyors
  - weigh hopper loading and mixer loading
  - sand and aggregate spillage on the road and within the construction compound
  - wind erosion from stockpiles, bunkers and other exposed surfaces
- vehicle movements on unsealed roads/surfaces (dust)
- wind erosion of unsealed surfaces (dust)
- materials drop off and loading at the construction compound and accommodation camp site (dust)
- engine combustion emissions from on-site machinery operation and vehicles travelling within the site (PM_{10}, $PM_{2.5}$, CO, NO_x, SO_2, VOCs and PAHs)
- fugitive emissions from on-site chemical/fuel storage and handling (VOCs).

The Institute of Air Quality Management's (IAQM) risk assessment methodology (IAQM, 2014) was adopted for the assessment of air quality impacts for the proposal during construction (WSP, 2020d). Where there are no sensitive receivers located within 500 metres of the construction site boundary, the risk from dust impacts is considered to be negligible and the impact would be not of significance.

The nearest sensitive receivers to the Wentworth construction compound and accommodation camp is the Fort Courage Caravan Park, approximately 600 metres south. It is therefore considered that the potential dust impacts associated with the construction and operation of the Wentworth main construction compound and accommodation camp would not be of significance.

Combustion emissions from operation of plant and equipment, and vehicle movements are not expected to affect local air quality, given the anticipated duration of works, the likely number of emission sources and the scheduling of activities (i.e. not all machinery would be operating at the same location simultaneously).

Overall, the identified impacts for the Wentworth main construction compound and accommodation camp are consistent with the previous assessment provided in Technical paper 7 (WSP, 2020d).

The mitigation measures previously proposed in Section 8 of Technical paper 7 (WSP, 2020d) would be implemented during construction of the Wentworth construction compound and accommodation camp. These mitigation measures are suitable to ensure dust impacts are minimised (refer to Appendix C for consolidated set of proposed measures).

Activities at the Buronga substation upgrade and expansion site

Fill material for the Buronga substation upgrade and expansion site would be sourced from two earthwork material sites located adjacent to the site as part of the amended proposal. The following activities as part of the amended proposed at the Buronga substation upgrade and expansion site have the potential to generate air emissions:

- striping of topsoil and excavation of the earthwork material (dust)
- crushing and screening excavated material using a mobile crushing and screening plant (dust)
- material transfer to the substation (dust)
- restoration/rehabilitation of the earthwork material sites (dust)
- vehicle movements on unsealed roads/surfaces (dust)
- wind erosion of unsealed surfaces (dust)
- engine combustion emissions from vehicles movements and on-site machinery operation (PM_{10}, $PM_{2.5}$, CO, NO_x, SO_2, VOCs and PAHs).

The maximum predicted incremental concentrations for total suspended particulates (TSP), PM_{10}, $PM_{2.5}$ and deposited dust for averaging periods consistent with the assessment criteria were extracted at modelled sensitive receptors. Background data were added to incremental concentrations to assess compliance of cumulative concentrations with relevant impact assessment criteria.

The modelling results indicate that:

- Total suspended particulates: the total annual average TSP concentrations is predicted to be below the impact assessment criterion of 90 µg/m^3 and the highest incremental annual average at receptors is predicted to be 0.09 per cent of the criterion.
- PM_{10}: the highest predicted incremental 24-hour average at all receptors is be 17.5 per cent of the criterion and the highest incremental annual average PM_{10} is to be 1.8 per cent of the criterion. One day of additional exceedance is predicted to occur at R1 (residential shed around 1.5 kilometres from the substation site) and R3 (potential residential dwelling around 39 kilometres from the substation site) over the modelled 365 days (up to 0.2µg/m^3 above the criterion). Of this, the background levels accounted for around 96.1 per cent of the criterion and maximum contribution from the substation site accounted for around 4.1 per cent of the criterion.
- $PM_{2.5}$: the highest predicted incremental 24-hour average at all receptors is 5.2 per cent of the criterion and the highest incremental annual average $PM_{2.5}$ is 0.9 per cent of the criterion. No additional exceedances would occur as a result of the amended proposal. Cumulative concentration exceedances would all caused by existing background exceedances.
- Deposited dust: maximum incremental monthly dust deposition concentrations at all receptors are below the assessment criterion, with the maximum of 0.06 g/m^2/month accounting for around three per cent of the criterion.

Overall, the predicted particulate matters impact at the modelled sensitive receptors as a result of the proposed crushing, screening and all other construction activities within the Buronga substation upgrade and expansion site during construction were predicted to be low. Additionally, due to the nature of the proposed construction activities, air quality impacts associated with the earthworks would likely be transient given the contribution would only be for the duration of the particular activities in order to construct the substation pad and would not be an ongoing emission source.

Further detail regarding the dispersion modelling results for the activities proposed at the Buronga substation upgrade and expansion site as part of the amended proposal are provided ins section 5.5 of the addendum *Air Quality Impact Assessment* (WSP, 2021c) (Appendix H).

Vehicle movements

As a result of further development of the construction strategy following identification of the preferred construction contractor, an increase in the overall traffic volumes than presented in the EIS has been identified. A comparison of indicative vehicle movements is presented in Table 2-4 of this Amendment Report.

Vehicle movements are proposed to increase with the maximum movements at least double during the peak construction period for the amended proposal. The dust emission magnitude from track out are categorised as large. However, there are no sensitive receivers identified within 50 metres of the haulage roads and up to 500 metres from each site entrance. Therefore, the risk of dust impacts from track out are not considered to be of significance.

Overall, the identified impacts from the increased number of vehicles in operation during the construction period are not expected to change given there are no sensitive receivers within 50 metres of the haulage routes and 500 metres from each site entrance. The assessment outcomes are consistent with those detailed in Technical paper 7 (WSP, 2020d).

Wastewater treatment facilities

Wastewater treatment facilities are proposed to be constructed at Wentworth and Buronga main construction compound and accommodation camp to reuse the effluent and greywater produced by the construction compound and accommodation camp and minimise water usage during construction. The proposed wastewater treatment plants are anticipated to consist of a generally contained system and would include biological and chemical treatment, filtration and disinfection (refer to Section 2.6).

The treatment system would be mainly in enclosed tanks with the following potential odour sources:

- wastewater screening to remove inorganics
- screened material stored in waste bins
- sludge storage.

In an event that inorganic materials accumulate on the screens, waste bins are not emptied regularly or not properly closed, or waste sludge is not appropriately stored before off-site removal to a licensed facility, odour emissions may potentially impact on the receiving environment.

The most potentially affected receivers are on-site workers living within the accommodation area of the construction compound and accommodation camp. In general, there is low potential for odour generation at the wastewater facilities, given the relatively small scale of the treatment plants with no large open sources. If odour emissions do occur, they are likely to be infrequent, of short duration and of low intensity. Potential odour impacts on workers within the accommodation area of the construction compound and accommodation camp are anticipated to be of low significance.

Off-site receivers are not expected to be adversely impacted by odour emissions given the approximate distance of the wastewater treatment plant to the Buronga (1.7 kilometres) and Wentworth (around 600 metres) construction compound and accommodation camps. Potential odour emissions from the wastewater treatment plants at each of the construction compound and accommodation camps are not of significance.

Other air emission sources

The following sources have the potential to generate dust emissions:

- construction of the temporary bypass transmission line from Buronga substation
- construction of new standpipe and new pipelines at specific locations along the transmission line.
- Given the nature of these activities, dust emissions are expected to be low. Previously identified mitigation measures outlines in Section 8 of Technical paper 7 (WSP, 2020d) would ensure potential impacts are not of significance (refer to Appendix C for consolidated set of proposed measures).

6.9.3 Operational assessment

The proposed amendments would not alter the operational air quality impacts identified in the EIS. Overall, the level of impact associated with the amended proposal would generally remain unchanged from those identified in Technical paper 7 and the EIS during operation.

6.9.4 Mitigation and management measures

Based on the assessment of amendments outlined in this report, it is anticipated that, in general, the air quality measures would remain consistent with Technical paper 8 and summarised in Chapter 23 of the EIS.

With respect to the impacts associated with the proposed crushing and screening plant, the following additional mitigation measures are proposed for the to minimise dust emissions:

- ensure screen covers are fitted to the screening operations
- control dust emissions from crushing operations using water sprinklers where required and appropriate
- inspect the water sprinklers on a regular basis to ensure operational efficiency
- where practicable, install wind breaks in appropriate locations adjacent to the dust generating equipment and processes
- prior to crushing, dampen the rocks during dry weather conditions.

To ensure potential odour emissions from the wastewater treatment plants are minimised, the following additional management measures would be implemented:

- prevent excessive inorganic material accumulating on the screens by disposing of screened material in waste bins on a regular basis
- place waste bins containing screened material and sludge as far away as practicable from the construction compound and accommodation sites
- ensure waste bins are fully closed at all times
- remove screened material and sludge from site at regular intervals and dispose in an appropriate manner.

These measures have been included as part of the consolidated list of mitigation measures for the amended proposal in Appendix C of this Amendment Report as new mitigation measures AQ4 and AQ5 respectively.

6.10 Noise and vibration

An addendum *Noise and Vibration Impact Assessment Report* (WSP, 2021d) has been prepared to respond to assess the impacts associated with the amended design in comparison to those of the proposal as described in the EIS. The revised noise and vibration assessment report is provided in Appendix I, and a summary is provided below. This section should be read in conjunction with Chapter 17 of the EIS.

6.10.1 Assessment methodology

The impact assessment methodology adopted for the assessment of the noise and vibration impacts associated with the proposed amendments was the same as described in *Technical paper 8 – Noise and vibration impact assessment* (WSP, 2020e).

Based on the potential impacts associated with the amendments, the assessment considered the construction and operational noise and vibration impacts, and road noise impacts from the proposed amendments outlined in Chapter 2 of this Amendment Report. The assessment did not assess cumulative noise or blasting impacts as they would be unchanged from the assessment presented in Technical paper 8.

6.10.2 Construction noise assessment

Buronga substation earthworks

Additional earthwork impacts

The earthwork material sites are located to the north-east and north-west of the Buronga substation upgrade and expansion site, and further from the nearest potentially affected sensitive receiver. Site works from the substation earthworks are likely to result in minimal impacts to this receiver, as any construction related activities at this location would be masked by other works associated with construction at the Buronga upgrade and expansion and the Buronga main construction compound.

Section 5.2.2 of Technical paper 8 found that construction works at the Buronga substation upgrade and expansion site would comply with relevant noise levels at the nearest sensitive receivers for all construction work phases, with noise levels less than 30 dBA to the nearest sensitive receiver. The impacts of this amendment would see a negligible change in impacts to these predicted noise levels at the nearest sensitive receivers as a result of additional earthwork material sites and additional plant activity associated with removal of fill.

Crushing activities

The proposed amendment would include the potential for some crushing and screening to occur within the site using a mobile crushing and screening plant. These activities would present a significant acoustic contributor compared to other activities, and have potential to generate adverse impact sensitive receivers. Crushing and screening activities would be undertaken (as required) between 7:00am and 7:00pm seven days per week for the duration of the earthworks at this site.

Based on the indicative locations of the potential crushing and screening equipment, it is anticipated that rock crushing, being the most acoustically significant activities, would not generate adverse impact at the nearest sensitive receivers (due to the distance to the nearest sensitive receivers and masking from other earthworks equipment). Based on the available information, it is considered that rock crushing would not generate adverse impact where a buffer distance of 500 metres can be maintained between equipment and the nearest sensitive receiver (approximately two kilometres south-west at 694 Arumpo Road).

Overall impacts of the earthworks and crushing and screening activities would see a negligible change in impacts to predicted noise levels at the nearest sensitive receivers compared to the results presented in Section 5.2.2 of Technical paper 8.

Amended indicative disturbance area

As discussed in Section 5.2.2.1 of Technical paper 8, the noise levels along the transmission line corridor has been modelled assuming all construction activities occur simultaneously, and results presented as a range based on the proximity to sensitive receivers. As described in Section 2 of the Amendment Report, the amended indicative disturbance area extends marginally outside the transmission line corridor in limited circumstances.

Based on the proposed amendments, the impacts of the amended indicative disturbance area are likely to be minor and largely confined to the original impact affectation area outlined in Technical paper 8.

A summary of the potential noise impacts where it extends beyond the transmission line corridor is presented in Table 6-20.

Table 6-20 Potential for construction noise impact – amended indicative disturbance area

Affected area	Distance to nearest sensitive receiver	Description of works	Potential construction impact compared to previous assessment
Palinyewah Public School	>2000 m	Haul route passes outside the modelled affectation area	Negligible – no sensitive receivers located within 2 km of this location.
Receivers South east of Buronga substation	>2000 m	Brake and winch site extends 60 m outside the footprint; there are no receivers in the vicinity of this location	Negligible – no sensitive receivers located within 2 km of this location.
Receivers near Psyche Bend	>200 m	An access road passes from Psyche Bend to the Stuart Highway in the vicinity of receivers 959, 960 and 961	Negligible – sensitive receivers located over 200 m from an access road.

Table 6-20 shows that impacts predicted in Technical paper 8 are predicted to be largely unchanged as a result of the amended proposal. Negligible changes may be expected at receivers in the vicinity of Buronga substation and Psyche Bend.

The impacts at these receivers would largely be associated with the construction of access tracks / ancillary works, and impacts are likely to be minimal and of short duration as a result of these works. Noise impacts from the ongoing use of these tracks are predicted to be negligible.

Onsite wastewater treatment

The potential impacts of the amendments to Buronga construction compound have been assessed in Table 6-21. The potential impacts for the Wentworth construction compound have been presented as part of the assessment of the Wentworth construction compound and accommodation camp site.

Table 6-21 Potential for construction noise impact – wastewater systems

Water supply location	Distance to nearest sensitive receiver (m)	Description of works	Potential construction impact compared to previous assessment
Buronga accommodation camp	3.6 km from receiver on Silver City Highway (receiver 2037)	Proposed contained system which would include biological and chemical treatment, filtration and disinfection	Minimal due to distance to receiver* Plant to be selected to achieve the relevant noise goals outlined in Technical paper 8

** Impacts to workers in the accommodation camps have not been assessed as they are not considered noise sensitive receivers under the ICNG due to their association with the project*

Based on the large distances to the nearest sensitive receivers, impacts from the wastewater systems at the Buronga accommodation camp site would be able to be managed by equipment selection to achieve the relevant noise goals outlined in Technical paper 8.

Construction works associated with the amendments are located at sufficient distance that construction noise levels would generate minimal impacts compared to construction works from other construction activities at Buronga construction compound, which were predicted to be less than 30 dBA for all activities during all assessment periods (refer to Table 5.9 of Technical paper 8).

Cumulative impacts from construction works would comply with relevant noise goals at the nearest sensitive receivers. compared to the noise results presented in Table 5.9 of Technical paper 8.

Construction water supply

Based on the indicative location for water supply points and distance to sensitive receivers, a qualitative assessment of potential impacts from construction activities has been completed, as presented in Table 6-22. This assessment considers the water supply points alone. The impacts of heavy vehicle movements associated with the water supply points have been discussed separately later in this section as part of the assessment of construction traffic.

Table 6-22 Potential for construction noise impact – water supply points

Water supply location	Status	Distance to nearest sensitive receiver (m)	Construction works required? Description of works	Potential construction noise impacts of proposed amendments Compared to Previous Assessment
Alcheringa Road, Buronga	New	Around 2m to utility station Around 700m to Alcheringa Street (receiver 3430)	Yes – The proposed works would include installation of a new standpipe and connection to the existing Western Murray Irrigation pipeline. The area is currently cleared and adjacent to Alcheringa Road.	Minimal impact (<2 dBA) due to distance to receiver from construction activities and vehicle movements.

Water supply location	Status	Distance to nearest sensitive receiver (m)	Construction works required? Description of works	Potential construction noise impacts of proposed amendments Compared to Previous Assessment
Fletchers Lake Drive, Dareton	New	Around 255m to 82 Channel Road	Yes – Proposed works would include installation of a new standpipe and connection to the existing Western Murray Irrigation pipeline. The area is currently not utilised (road reserve/verge) adjacent to Fletchers Lake Drive.	Minimal impact (<2 dBA) due to distance to receiver from construction activities and vehicle movements.
Silver City Highway intersection with Milpara Road, Anabranch South	New	Around 3.6km from Silver City Highway (receiver 2037)	Yes – Proposed works would include the installation of a new standpipe and connection to the existing Broken Hill pipeline.	Minimal impact (<2 dBA) due to distance to receiver from construction activities and vehicle movements.
River Drive, Buronga	Existing	Around 50m from 48 River Drive	No – No new infrastructure would be required to allow for access to this water supply point.	Negligible from construction activities.
Beverley Street, Wentworth	Existing	Around 45m to receiver 3566 Around 6m to 42 Arthur Street	No – No new infrastructure would be required to allow for access to this water supply point.	Negligible from construction activities.
Wentworth main construction compound and accommodation camp	New	Around 320m to receiver 3144 Around 200m to 1703 Old Renmark Road	Yes – The proposed works would include installation of a piped connection between the pump station and the Wentworth main construction compound and accommodation camp	Minimal due to distance to receiver.
690 Pomona Road, Pomona	Existing	Around 10m to 690 Pomona Road	No – No new infrastructure would be required to allow for access to this water supply point.	Negligible from construction activities.

Wentworth main construction compound and accommodation camp site

Consistent with the methodology of Technical paper 8, noise levels the construction works at main construction compounds and accommodation camps have been predicted to the nearest receiver during standard hours of work and out-of-hours work (OOHW) periods.

The closest receivers to the Wentworth main construction compound and accommodation camp are around 570 metres from the site (Forth Courage Caravan Park and an additional residential receiver). The results of this assessment are presented in Table 6-23.

Table 6-23 Predicted noise level ranges per construction work phase – main construction compound and accommodation sites – Wentworth

Construction work phase	Period[1]	ICNG NML, $L_{eq\ 15\ min}$ dBA[2]	Predicted noise levels, $L_{eq\ 15\ min}$ dBA	Exceedance of ICNG NMLS, $L_{eq\ 15\ min}$ dBA	Highly Noise affected NML 75dBA or greater $L_{eq\ 15min}$
Enabling works	SH Day	45	Up to 39	–	–
	OOHW D	40		–	–
	OOHW E/N	35		Up to 4	–
Enabling works – site establishment of the compound and accommodation camp	SH Day	45	Up to 48	Up to 3	–
	OOHW D	40		Up to 8	–
	OOHW E/N	35		Up to 13	–
Operation of the compound	SH Day	45	Up to 39[3]	–	–
	OOHW D	40[3]		–	–
	OOHW E/N	35[3]		–	–
Operation of the accommodation camp[4]	SH Day	45	Up to 35	–	–
	OOHW D	40		–	–
	OOHW E/N	35		–	–
Demobilisation / rehabilitation	SH Day	45	Up to 43	–	–
	OOHW D	40		Up to 3	–
	OOHW E/N	35		Up to 8	–

1. *SH Day = recommended standard working hours, OOHW E/N = outside of recommended standard hours work as defined in Section 5.2 of Technical paper 8.*
2. *ICNG NMLs defined in Section 5.2 of Technical paper 8.*
3. *Works outside standard hours to be conducted in accordance with the OOHW protocol for night works.*
4. *The accommodation camp would operate 24 hours, seven days a week and would not be subject to OOHW protocols.*

Based on the distances to the nearest sensitive receiver, adverse impacts during construction are not anticipated during standard hours. However, out of hours works are likely to result in exceedances of NMLs for the majority of construction stages associated with the compound.

This is due to the use of acoustically significant plant such as:

> during enabling works and site establishment including geotechnical boring rigs, dozers, and excavators
> during demobilisation: including excavators, cranes and dumper trucks.
> Noise generating equipment associated with the operation of the accommodation camps (e.g. generators) can be managed by the appropriate siting of equipment, equipment selection and screening.

Further assessment of the level of these exceedances, the affected receiver and recommended mitigation measures are presented in Section 6.10.5. It is noted the sensitive receivers identified are associated with the same caravan park, which may contain permanent residents and it is recommended that mitigation and management be implemented during out of hours works.

Anabranch South accommodation camp site

The Anabranch South accommodation camp site would no longer be required as a result of the changes to the construction accommodation strategy for the proposal. The Anabranch South construction compound site would however be retained as an ancillary construction site to allow for activities such as laydown areas, vehicle and equipment storage, maintenance sheds, potential stockpile areas, and demountable offices and parking.

As discussed in Section 5.2.2.2 of Technical paper 8, construction noise and vibration impacts for the Anabranch South compound areas are located within the proposal study area. The nearest receivers to the previously assessed Anabranch South and accommodation camp site are around 1.8 kilometres from the proposed site boundary. Noise levels were predicted to be less than 30 dBA as a result of activities, including accommodation camp activities. These levels would be reduced further as a result of removal of accommodation camp activities.

Temporary bypass transmission line

The temporary bypass line is located within the impact affectation area assessed in Technical paper 8, and proposed amendments are generally within the worst-case noise affectation area modelled as part of that paper. As a result, impacts predicted in Technical paper 8 are predicted to be largely unchanged as a result of the temporary bypass transmission line.

Construction traffic volumes

As discussed in Section 5.4 of Technical paper 8, a peak of 250 light vehicle movements and 80 heavy vehicle movements per day was anticipated for construction of the proposal. Following development of the construction strategy, an increase in overall traffic volumes was identified. Further description is provided in Section 2.9.2.due to:

- the overall increase in construction workforce for the proposal from 400 to 600 (full time equivalent – FTE)
- increased clarity on the heavy vehicle volumes required to support transmission line works and the substation upgrade and expansion.

A comparison of indicative vehicle movements between those exhibited in the EIS and the proposed revised vehicle movements has been described in Section 2.9.2.

The methodology presented in Section 5.5 of the Technical paper 8 have been modified to reflect the modified construction traffic volumes outlined in this report. The assessment has been conducted assuming peak hour volumes to provide a conservative estimate of potential noise impact, noting that actual construction generation would fluctuate over the course of the day and according to the construction program.

The revised traffic volumes would generate a peak of 200 light vehicle movements per day and 200 heavy vehicle movements per day on the road network for vehicles supporting the proposed works at the Buronga substation upgrade and expansion site. Transmission line works would see peak vehicle movements of 300 light vehicles and 200 heavy vehicle movements per day.

Table 6-24 presents the construction traffic noise assessment for the proposal on the key haulage routes adopting traffic volumes for the transmission line works, being the more conservative assumption for the purpose of this assessment. It presents the results of the assessment as exhibited and as amended.

Table 6-24 Predicted road traffic noise levels and impacts – Addendum traffic volumes

Road name and location	Distance to nearest receiver (metres)	RNP classification	RNP management levels[1]	Predicted noise level of base traffic, dBA	Exhibited proposal		Amended proposal		
					Predicted noise level of base traffic with construction traffic, dBA	Increase in noise level generated by construction traffic, dB	Predicted noise level of base traffic with construction traffic, dBA	Increase in noise level generated by construction traffic, dB	Compliant with RNP management level?
Silver City Highway (B79) – Ellerslie between Broken Hill and Wentworth (from Broken Hill to Renmark Road, Wentworth)	60 (1000)[2]	Sub–arterial	60	45 (29)[2]	48 (32)[2]	2.9	50	5.5	Yes
Silver City Highway (B79) – Wentworth Town Centre (from Renmark Road, Wentworth to Delta Road in Wentworth)	20 (100)[2]	Sub–arterial	60	55 (47)[2]	56 (48)[2]	0.5	57	1.6	Yes
Silver City Highway (B79) – between Dareton and Buronga (from Fletchers Lake Road to Corbett Avenue)	20 (100)[2]	Sub–arterial	60	58 (50)[2]	59 (50)[2]	0.7	60	1.6	Yes
Silver City Highway (B79) – within Buronga Town Centre (from Corbett Avenue to Sturt Highway)	20	Sub–arterial	60	59	59	0.2	59	0.8	Yes

Road name and location	Distance to nearest receiver (metres)	RNP classification	RNP management levels[1]	Predicted noise level of base traffic, dBA	Exhibited proposal		Amended proposal		
					Predicted noise level of base traffic with construction traffic, dBA	Increase in noise level generated by construction traffic, dB	Predicted noise level of base traffic with construction traffic, dBA	Increase in noise level generated by construction traffic, dB	Compliant with RNP management level?
Sturt Highway (A20) George Chaffey Bridge – between Mildura and Silver City Highway, Buronga	20	Sub–arterial	60	64	64	0.1	65	0.4	Yes
Sturt Highway (A20) within Buronga (between Silver City Highway and Knights Road in Gol Gol)	20	Sub–arterial	60	56	56	0.5	57	1.5	Yes
Arumpo Road (north of Mourquong Road, Mourquong)	30 (100)[2]	Sub–arterial	60	47 (41)[2]	50 (44)[2]	2.6	53	5.5	Yes
Renmark Road	70 (800)[2]	Sub–arterial	60	38 (24)[2]	45 (31)[2]	7.1	49	11.0	Yes

Notes

1. *Day 7 am – 10 pm, night 10 pm – 7am*
2. *The distances and corresponding noise levels as identified in the exhibited EIS is provided in brackets (refer to Section 2.9.8 of this report)*

The results in Table 6-24 indicate that, with respect to construction traffic increases:

- Noise levels as a result of the amended proposal are predicted to comply with relevant RNP noise criteria at all affected roads.
- There would be a general increase in the noise contribution from construction vehicles when compared to the exhibited proposal. Noise level increases are predicted to be generally limited to below 2 dB on sub-arterial roads (which would be a minor impact that is likely to be barely perceptible). The exception to this would be on the Silver City Highway, Arumpo Road and Renmark Road.
- The Silver City Highway (between Broken Hill to Renmark Road) is expected to experience nearly a doubling in traffic volumes. However, noise impacts are still predicted to be below road noise criteria due to existing low levels of traffic.
- Regional roads such as Arumpo Road and Renmark Road are predicted to experience notable increases in traffic noise with increases of 5.5 dB and 11.0 dB respectively. This would be a further increase of around 3 to 4 dB in comparison to the exhibited proposal (however noise levels would remain below the applicable RNP management levels). These increases would be associated with the peak construction periods each day and would be expected to reduce in accordance with the overall level of activity outside of these times.

The amended proposal would also increase the contribution of road traffic noise on the Sturt Highway (between Mildura and Silver City Highway, Buronga), with a predicted increase in noise level by 0.4 dB. However, as highlighted in the EIS, the existing noise levels are in the order of 64 dBA at receivers in the vicinity of this road, which exceeds the applicable RNP management level.

With respect to vehicle movements associated with water supply points, the impacts of additional traffic on these roads is anticipated to be negligible due to the low number of vehicle movements associated with these works in the context of other vehicle movements on these roads.

6.10.3 Construction vibration

Section 5.3.5 of Technical paper 8 summarises the relevant minimum working distances for certain vibration generating activities with regard to cosmetic damage and human comfort impacts outlined in relevant guidelines.

The nearest sensitive receiver to the Buronga substation upgrade and expansion works is around 2.3 kilometres from the site. As a result, no vibration related impacts are anticipated as a result of construction works at the substation.

With regard to the transmission line construction affectation area, the nearest sensitive receivers to the works are the Buronga and Ellerslie substation facilities, located within around 70 metres of the amended indicative disturbance area. As a result, there may be exceedances of human comfort criteria within the facilities themselves, however vibration levels are expected to remain below the levels for building damage. Given the active roles of most staff at these sites, human comfort impacts are expected to be minor. All other sensitive receivers are located outside the minimum safe working distances for vibration generating plant.

As discussed in Section 5.3.5.1 of Technical paper 8, no works are proposed within the minimum working distances for cosmetic damage, human response and heritage sensitivity, based on the assessment of the safe working distances for vibration generating plant within the transmission line corridor to relevant vibration sensitive receivers.

Based on the amended proposal, it is anticipated that impacts as a result of the revised indicative disturbance area are likely to be consistent with those identified previously in Technical paper 8.

6.10.4 Operational assessment

Buronga substation layout

As discussed previously, the overall footprint of the Buronga substation has been reduced from the area shown in the EIS. The amendment results in a decrease in the overall footprint of the proposed substation upgrade and expansion by around 11.9 hectares to 21.6 hectares (from 33.5 hectares in the EIS), with the revised affectation area limited to 470 metres by 630 metres at its the greatest extents.

The impacts of this amendment would see a reduction in the potential noise impact at the nearest sensitive receivers. With reference to Section 6.1.5 of Technical paper 8, operational noise levels were predicted to comply with relevant noise limits under calm and noise enhancing meteorological conditions.

Noise impacts would be further reduced as a result of the amendments due to the reduction in the footprint.

Transmission line

Operational transmission line impacts are not anticipated as a result of these amendments. Noise impacts would therefore be unchanged from Technical paper 8.

Traffic noise

Operational road traffic noise impacts are not anticipated as a result of these amendments. Noise impacts would therefore be unchanged from Technical paper 8.

6.10.5 Mitigation and management measures

Due to the localised nature of the construction activities associated with the Wentworth main construction compound and accommodation camp, and the low number of receivers potentially impacted by the works, it is considered that the implementation of a number of site-specific measures and scheduling controls would be sufficient to reduce noise levels to comply with relevant noise goals during out of hours periods.

Existing mitigation measure NV3 requires the investigation and implementation of feasible and reasonable measures or construction methodologies to minimise noise levels during construction. This measure would apply to the Wentworth main construction compound and accommodation camp site.

All out of hours works would also be conducted with reference to the Out of Hours Works protocol required by existing mitigation measure NV6.

The revised set of consolidated measures is provided in Appendix C of this Amendment Report.

6.11 Traffic and access

An addendum *Traffic and access Impact Assessment* (WSP, 2021e) has been prepared to respond to assess the impacts associated with the amended design in comparison to those of the proposal as described in the EIS. The revised traffic and access assessment is provided in Appendix J, and a summary is provided below. This section should be read in conjunction with Chapter 18 of the EIS.

6.11.1 Assessment methodology

The impact assessment methodology adopted for the assessment of the traffic and transport impacts associated with the proposed amendments was the same as described in *Technical paper 9 – Traffic and transport impact assessment* (WSP 2020f) against the proposed amendments.

6.11.2 Construction assessment

Wentworth construction compound and accommodation camp

Trip generation

The EIS identified that around 250 light vehicle movements per day and around 80 heavy vehicle movements per day would be generated during the peak of the construction activities overall. The 250 light vehicle movements would be primarily distributed across the proposal study area from the origin points of Anabranch South, Wentworth and Buronga camps which were estimated to generate 70, 70 and 110 daily movements per day respectively based on the number of workers at each camp.

As part of the proposed amendments, further development of the construction methodology and transporting activities, and confirmation of location and layout of camps and water supply opportunities has been undertaken. The revised daily movements generated by each main construction compound and accommodation camp details is provided in Table 6-25. These represent the estimated daily traffic movements at the construction peak and would be distributed throughout the day at different locations along the proposal alignment.

Table 6-25 Daily vehicle movements generated by the construction of the proposal

Construction and accommodation camp site	Camp accommodation (FTE)	Office staff	Light vehicle movements (indicative peak)	Heavy vehicle movements (indicative peak)
Anabranch South	0	10	50	40
Wentworth	200	50	150	140
Buronga	400	100	300	220
TOTAL	**600**	**160**	**500**	**400**

Access to main construction compound and accommodation camp sites

In terms of access to the sites compared to the EIS, there would be no change to the access arrangements provided for the Anabranch South main construction compound site access (Silver City Highway (approximately 30 kilometres north of Wentworth)) or the Buronga main construction compound and accommodation camp site (Arumpo Road). The EIS had identified that Wentworth main construction compound and accommodation camp access would likely be via the Silver City Highway. However, following exhibition of the EIS, the location of this site has been confirmed with the proposed access to the site to be provided along Renmark Road with access to the site generally via Renmark Road and the Silver City Highway.

Using an estimate of a typical peak hour traffic consisting of 10 per cent of the daily traffic Renmark Road would consist of less than 50 vehicles per hour travelling in either direction. This was assessed against the turn treatment warrant graphs detailed in Austroads' *Guide to Traffic Management Part 6: Intersections, Interchanges and Crossings Management*. Based on this warrant assessment, a major road traffic volume of less than 50 vehicles per hour, regardless of the traffic volumes on the minor road, would require Basic Right and Basic Left turn treatments at the intersection.

As such, the proposed access point to the Wentworth construction compound and accommodation camp would not typically require any installation of auxiliary lanes.

With consideration of the updated construction traffic volumes and the confirmed location of the Wentworth main construction compound and accommodation camp, the increase in traffic volumes at all main construction compound and accommodation camp access points would not significantly impact the efficiency of the road network and the impacts of the amended proposal are substantially the same as the EIS.

However, given the high-speed environment of the road for the Wentworth construction compounds and accommodation camp site would use, the existing EIS mitigation measure to design site access/egress points to minimise conflicts with vehicle movements on the road network and in accordance with relevant safety requirements would apply. This may include the provision of acceleration and deceleration lanes at the construction compound and accommodation camp locations, which would be designed to the appropriate design guides and to be approved by the relevant road authority.

Renmark Road/Silver City Highway intersection

Transport for NSW's submission to the EIS exhibition requested the analysis of Renmark Road and Silver City Highway intersection on the basis of the proposed new construction compound being located in Wentworth. This intersection is an unsignalised T-intersection with Silver City Highway being the major road. Currently, Basic Left and Basic Right treatments apply for the left and right turning movements respectively. At this location, Silver City Highway has a 60 kilometres per hour posted speed limit and an Average Daily Traffic of around 2,559 vehicles per day. Renmark Road has an Annual Average Daily Traffic less than 50 vehicles per day.

Based on the amended traffic volumes as detailed in detailed in Table 6-25, the Wentworth main construction compound and accommodation camp site, which would be the primary traffic generator at this intersection, would generate approximately 150 light vehicle movements and 140 heavy vehicle movements daily. This would be distributed throughout the day, with various traffic distribution and assignment throughout the proposal study area.

Using an estimate of a typical peak hour traffic consisting of 10 per cent of the daily traffic, Silver City Highway in Wentworth would have around 250 vehicles per hour travelling in both directions. A Basic Right and Basic Left treatment combination (as per existing) allows up to 120 vehicles per hour for either the left and right turn movements. This intersection is therefore considered to provide ample capacity for the existing traffic volumes of less than 50 vehicles per day and the additional traffic generated by the proposal at this intersection.

Construction access would also be required along Renmark Road to access the transmission line construction works in Rufus near Lake Victoria. The majority of traffic distribution towards the north-east from the Wentworth main construction compound and accommodation camp site would minimise impact to the intersection of Renmark Road/Silver City Highway (i.e. located towards the west of Wentworth camp site).

Temporary 220kV bypass transmission line south of Buronga Substation

The proposed temporary bypass transmission line would generate a small amount of additional light and heavy vehicle movements associated with the delivery, installation and removal of the temporary transmission line.

For consistency with the EIS, the additional information associated with the temporary bypass transmission line has been considered collectively with the updated construction traffic volume assessment above. The analysis found the increases in traffic volumes due to amended construction activities are not likely to significantly impact the efficiency of the road network and are substantially the same as the EIS.

Additional construction water supply points

It is envisaged that the number of trips generated by the transferring of water supply (i.e. up to a worst case scenarios of around 70 truck trips daily at peak construction period should all proposed water supply points be used at peak at the same time) can occur across different times of day and spread across various locations. As identified in Section 2.7.2, it is estimated that any one site may accommodate up to only between two and around 20 loads per day during peak construction (depending on the site location).

Additionally, given the dispersed nature of the proposed water sites across the whole of the proposal study area, additional traffic activities associated with the water supply would result in minimal impact to the road network.

In the EIS, heavy vehicle volumes generated by the transporting of water supply were considered in combination with the other type of activities associated with the construction overall. This was quantitatively assessed by estimating the impact of the exhibited proposal, using the light and heavy vehicle movements in the road network during the worst-case peak construction period.

For consistency with the EIS, the additional information associated with water supply points have been considered collectively with the updated construction traffic volume assessment above. The analysis found the increases in traffic volumes due to amended construction activities are not likely to significantly impact the efficiency of the road network and are substantially the same as the EIS.

At the Wentworth main construction compound and accommodation camp, trenching is proposed to construct the water connection from the property across the road. It is envisaged that this work would take two half-road closures using a contra-flow lane system, temporarily reduced posted speed limit and under full traffic management (either by traffic controllers or temporary traffic signal system) to manage the right of way. This treatment is considered to be viable for Renmark Road due to its low traffic volume.

Updated construction traffic volume

Impact on road network

Table 6-26 below depicts the impact of the additional construction traffic movements, proposed in this amendment, on the capacity of the key haulage route on the road network. This has been compared to the impact previously assessed in the EIS.

The impact of the revised construction traffic volumes on the construction haulage routes is considered minor. Mid-block capacities of key haulage routes on the road network would likely experience modest increases, however the Level of Service (LoS) as previously identified in the exhibited EIS would be maintained. However, the volume and the routes used by construction vehicles would vary over any day and across the construction program, given the linear and transitionary nature of construction work.

Surrounding roads which do not form part of the construction haulage routes may experience occasional higher traffic movements with workers travelling into town to access services. However, facilities would be provided within each camp which would cater for workers' day-to-day needs.

Overall, the increases in traffic volumes due to amended proposal is not likely to significantly impact the efficiency of the road network and the impacts are substantially the same as the exhibited proposal. As identified in the EIS, the Sturt Highway in Buronga would experience a deterioration in the level of service (from LoS C to LoS D). While the amended proposal would result in an increase in traffic volumes on this road, the level of service would be maintained at a LoS D.

Table 6-26 Impact of additional construction traffic on road network performance

Road Name and location	Existing		Construction (EIS)		Construction (Amended Proposal)	
	Traffic volume (vpd)	V/C and (LOS)	Traffic volume (vpd)	V/C and (LOS)	Traffic volume (vpd)	V/C and (LOS)
Arumpo Road	327	0.9% (LoS A)	657	1.8% (LoS A)	1,227	3.4% (LoS A)
Silver City Highway (B79)						
Ellerslie - between Broken Hill and Wentworth (from Broken Hill to Renmark Road in Wentworth)	358	1.0% (LoS A)	688	1.9% (LoS A)	1,258	3.5% (LoS A)
Wentworth Town Centre (from Renmark Road in Wentworth to Delta Road in Wentworth)	2,559	12.8% (LoS A)	2,889	14.4% (LoS A)	3,459	17.3% (LoS A)
Mourquong - between Dareton and Buronga (from Fletchers Lake Road to Corbett Avenue)	2228	6.2% (LoS A)	2,558	7.1% (LoS A)	3,128	8.7% (LoS A)
within Buronga Town Centre (from Corbett Avenue to Sturt Highway)	5,478	27.4% (LoS B)	5,808	29.0% (LoS B)	6,378	31.9% (LoS B)
Sturt Highway (A20)						
George Chaffey Bridge - between Mildura and Silver City Highway, Buronga	10,593	29.4% (LoS B)	10,923	30.3% (LoS B)	11,493	31.9% (LoS B)
within Buronga (between Silver City Highway and Knights Road in Gol Gol)	2,730 eastbound only	54.6% (LoS C)	3,060	61.2% (LoS D)	3,630	72.6% (LoS D)

Vpd: vehicles per day; LOS: Level of Service; V/C: Vehicle/Capacity ratio

Active transport

The amended proposal would not change the impact to the active transport network. As noted in the EIS, where interaction does occur, the existing active transport infrastructure including footpaths, bicycle paths, shared paths and on-road shoulders would be maintained as appropriate. Where disruption to the facilities is required, a detour of the route would be planned accordingly.

Public transport

The proposed amendment is not expected to significantly change the impact to the public transport network. With more light and heavy vehicle movements estimated across the region, limited and occasional delays to some routes may be experienced if they coincide with peak periods. The capacity assessment of the road network however suggests that the increases in traffic volumes due to amended construction activities would still be within the capacity of the road network.

Road safety

The proposed amendment is not expected to significantly change the impact to road safety across affected road network within the region. While the amended proposal has increased the estimate for light and heavy vehicle movements, the haulage routes proposed in the EIS would be maintained and the mitigation measures noted previously in the EIS (i.e. monitoring pavement condition along haulage routes, establish a vehicle movement plan to detail truck routes, establish a Construction Traffic Management Plan) would also be maintained to address road safety issues.

Access track strategy

Use of existing tracks

As part of the revised access strategy, where an existing access track (farm track, alternative property access points and similar existing infrastructure) is available to the transmission line alignment (i.e. Silver City Highway at Anabranch South), the amendment proposes to use the existing access points under traffic control.

This amendment would minimise additional disturbance to the transmission line easement and generally has no additional impact to the strategy proposed in the EIS, subject to an appropriate traffic control being implemented at its intersection with the road network.

Multiple access points

As part of the revised access strategy, where an existing access road runs parallel to the transmission line alignment (such as along Renmark Road from South Australia border to Nulla Road), the amendment proposes to have multiple access points under traffic management. Along the Renmark Road section, access gate would be made available every 400 to 500 metres, however noting the rolling nature of the proposal, only a handful of access points would be active at any time during construction. Traffic controllers would be provided at access gates where this is determined to be required as part of the Construction Traffic Management Plan.

This strategy would allow workers, materials and machineries to be transported to the relevant section of the construction site and reduce the concentration of construction access activities at one location.

To manage the interruption to the road network, each access gates are to be numbered and active access points are proposed to be signposted accordingly. This would enable drivers of light and heavy vehicles to identify the active access gate and minimise the likelihood of late braking, significantly reduce travel speed or needing to turn-around to access the correct gate.

Subject to appropriate traffic management control, the impact of this proposed amendment is considered minor considering the low traffic volume on the affected road section (Renmark Road from South Australia border to Nulla Road).

6.11.3 Operational assessment

The proposed amendments would not alter the operational traffic impacts identified in the EIS. Overall, the level of impact associated with the amended proposal would generally remain unchanged from those identified in Technical paper 9 and the EIS during operation.

6.11.4 Mitigation and management measures

No additional mitigation measures have been identified as being required to address the potential impacts for the proposed amendments. The consolidated list of mitigation measures for the amended proposed is provided in Appendix C of this Amendment Report.

6.12 Soils, contamination and groundwater

An assessment of the potential contamination and groundwater impacts associated with the amended design was undertaken to provide a comparison to the impacts as described in the EIS. The revised contamination assessment report is provided in Appendix K, and a summary is provided below. This section should be read in conjunction with Chapter 20 of the EIS.

6.12.1 Assessment methodology

The assessment approach methodology for the assessment of soil, contamination and groundwater impacts as detailed in Section 20.2 of the EIS was generally applied to the assessment of the proposed amendments. Additional assessment to consider the proposed amendments included:

- soils and contamination desktop review of additional information including:
  - historical aerial photographs and online databases for CSIRO Australian Soil Resource Information System; eSPADE geology and soil landscape mapping; acid sulfate soils risk mapping Geological Survey of NSW
  - completing searches of relevant public databases to identify registered sites or areas which may contain contamination.
- groundwater desktop review of additional information including a search of existing groundwater bores within the vicinity of the proposed amendments to identify registered groundwater bores.

6.12.2 Construction assessment

Soils

Impacts to the soil environment from construction activities

Wentworth construction compound and accommodation camp

Consistent with the assessment presented in section 20.4 of the EIS, the Wentworth construction compound and accommodation camp would be used to store construction materials, plant and equipment and recovered waste and recycling materials. Hazardous and dangerous goods storage would include petroleum, diesel, liquefied natural gas (LPG), herbicide, pesticide and mineral oils that would be secured in purpose-built bunded and secure areas. The potential impact resulting from construction storage and waste management would be the exposure of the surrounding soil and water environments to contamination from spills and leaks from plant and equipment during standard operations or incidents.

Construction water supply points

Operation of the construction water supply points during the construction phase would be unlikely to result in exposure to the surrounding environment and users (e.g. maintenance workers or farmers) to potentially contaminated soil or groundwater. Below ground soil disturbance activities would not be part of the general maintenance activities as the infrastructure components would all be above ground.

The potential for hydrocarbon (fuels, diesel, oils) contamination of soil, surface water and groundwater arising from incidents involving vehicle accidents, leaks and spills from vehicles moving through the sites or infrastructure at the accommodation camps cannot be overlooked. Spill volumes from such incidents would be expected to be minor; however, the potential for hydrocarbon fuel or black/grey waters to migrate off-site cannot be discounted.

Wastewater treatment plants

Effluent and greywater from the wastewater treatment facilities would be discharged to a to a small basin type structure ('turkey's nest') at each accommodation camp, following which treated wastewater would be collected and re-used in construction, including dust suppression (via water carts). If not properly managed, the potential impacts from this activity includes:

- for on-site wastewater treatment, contamination of soil, surface water and groundwater associated with leaks and spills from infrastructure at the accommodation camps
- at application areas, the potential for impacts to soil and water due to nutrients, saline water, untreated (insufficiently), and/or potentially direct hydrocarbons and heavy metals.

There is also a risk to public health if the system is not sufficiently designed and maintained, and application methods adapted to reflect such risks (such as risk to construction workers).

Acid sulfate soils

As identified in the EIS, the majority of the proposal study area is identified as having a low risk of acid sulfate soils. A review of the acid sulfate risk classifications for land within and in the vicinity of the proposed study area, including the amended study areas, are in areas of a low probability of acid sulfate soil occurrence. The potential impacts of the proposed amendments are therefore considered to be consistent with those presented in the EIS.

Salinity

Potential impacts from salinity can occur due to disruption of the water table (i.e. when saline groundwater rises and deposits salts in upper soil layers). Disruption can result from vegetation removal, physical barriers, or the reuse of saline soils generated by the proposal.

As noted above, the use of treated wastewater would be collected and re-used in construction has the potential to result in impacts including increased salinity to existing soils where this water is used for dust suppression.

The additional areas of potential impact associated with the proposed amendments are expected to have similar soil and salinity conditions to the assessment presented in the EIS, due to the similar lithology and climatic conditions of these sites. The potential impacts of the proposed amendments are therefore considered to be consistent with those presented in the EIS.

Naturally occurring asbestos

No areas of known or expected naturally occurring asbestos have been identified within the areas of potential impact associated with the proposed amendments. No impacts from naturally occurring asbestos are anticipated from construction of the proposal, inclusive of the proposed amendments.

Contamination

Potential to encounter contamination

During the additional desktop assessment, it was identified that a majority of the proposed amendments would occur in areas that are generally undisturbed with minimal areas of contamination concern identified. Similar to the assessment presented in Section 20.4.2 of the EIS, the proposed amendments have the potential to encounter areas of potential concern during construction work.

Potentially contaminating activities that have been identified associated with the locations of the proposed amendments are provided in Table 6-27.

Table 6-27 Areas of potential contamination concern associated with the amended proposal

Areas of interest	Construction impact	Likelihood	Consequence	Preliminary risk evaluation
Construction compounds, accommodation camps, and waterpoints without existing infrastructure Excavation activities, vegetation clearing, vehicle movement, temporary stockpiling and utility works	Potential contaminants of concern associated with the agricultural activity (identified at Alcheringa Road, Buronga) include pesticides, herbicides, nutrients and heavy metals. If not managed appropriately, the disturbance of contaminated soil could result in the following exposure scenarios, which have the potential to impact human health and the environment.	Low potential for widespread contaminants to be present.	Exposure pathway complete during construction (without the implementation of appropriate controls).	Low
Waterpoints with existing infrastructure (where excavation is not required) Vegetation clearing, vehicle movement, and utility works	Potential contaminants of concern associated with the agricultural activity (identified at 690 Pomona Road, Buronga) include pesticides, herbicides, nutrients and heavy metals. Potential contaminants of concern associated with residential areas and areas surrounding dwellings/homesteads (identified at River Road, Buronga and Beverley Street, Wentworth include hydrocarbons, heavy metals, pesticides and asbestos impacted fill material. No significant filling is evident from aerial photographs.	Low potential for widespread contaminants to be present. No below ground disturbance of site soils is required.	Exposure pathway complete during construction (without the implementation of appropriate controls).	Negligible

Soil contamination could also be encountered during construction work at locations where infrastructure is to be installed, not previously identified as areas of potential concern. It is expected this would be managed through the unexpected contamination finds procedure and the construction environmental management plan (CEMP) as identified in Technical paper 12. Where infrastructure already exists, the risk of disturbing or encountering contaminated is considered negligible.

Consistent with the exhibited proposal, the additional areas would have the potential to create contamination and other soil impacts on the surrounding environment if not managed appropriately. The CEMP would specify measures to minimise these potential impacts. Measures would relate to minimising the potential for spills and leaks from materials, plant and equipment, protocols for responding to incidents, erosion and sediment controls, and unexpected contamination finds procedure.

Groundwater

Groundwater levels

Potential impacts to groundwater levels can occur where drawdown (or extraction of groundwater) is required, potentially lowering the level of the surrounding groundwater table. Other potential impacts may include groundwater mounding (localised increase in groundwater levels), or a reduction in groundwater recharge from surface infiltration due to an increase in impervious surfaces.

Potential impacts to groundwater levels are not expected to change due to the proposed amendments. The excavations required for the proposed amendments including the Wentworth main construction compound and accommodation camp and water supply points would be unlikely to exceed a maximum depth of two metres. Groundwater is generally unlikely to be intercepted at these depths.

Sensitive receivers

The proposed amendments are not anticipated to impact registered groundwater bores due to changes in groundwater levels or quality. A series of registered bores exist within the vicinity of the proposed amendments. These include:

- Within the vicinity of the Wentworth construction compound and accommodation camp, four registered bores exist within around three kilometres of the site. The closest registered bores is GW088312 (around one kilometre to the west).
- Within the vicinity of the proposed water supply points:
  - One registered bore (GW088172) is located around 100 metres to the east of the proposed water point (proposed new standpipe).
  - Three registered bores (GW087731, GW087273 and GW087730) are located around 50 and 115 metres to the east of the proposed water point (existing overhead waterpoint).

These bores would not require removal for construction of the proposal and are expected to be unaffected by the proposal.

6.12.3 Operational assessment

Soils and contamination

The amended proposal would not introduce any additional risks to either the exposure of contaminated soil due to the operation of the proposal (including the proposed amendments).

Groundwater

The amended proposal would not introduce any additional risks to groundwater due to the operation of the proposal (including the proposed amendments).

6.12.4 Mitigation and management measures

Based on the assessment of amendments outlined in this report, it is anticipated that, in general, the soil, contamination and groundwater measures would remain consistent with the measures outlined in Chapter 23 of the EIS.

The following additional mitigation measures are proposed to mitigate and manage the potential impacts of the wastewater treatment plant and re-use of treated wastewater:

- the application of treated wastewater will be managed so that:
  - application rates account for soil conditions and the protection of water quality (including groundwater). This includes salinity conditions and the prevention of runoff from application areas
  - buffer distances to sensitive receivers (such as waterways and farm dams) as set out in Designing and Installing On-Site Wastewater Systems (WaterNSW, 2019) are met
  - climatic conditions are considered during application to ensure treated wastewater is applied to intended areas
  - equipment used will reflect the management of human, livestock and environmental risks.
- incident response procedures for wastewater treatment plants (and use of treated wastewater) will be implemented to avoid, minimise and manage accidental spills or other incidents that impact the function of the wastewater treatment plants.

The consolidated list of mitigation measures for the amended proposed is provided in Appendix C of this Amendment Report.

7. Evaluation of merits and conclusion

7.1 Evaluation of merits

The proposal, including the proposed amendments identified in this report, has been designed, to the greatest extent possible, to avoid and minimise impacts, and to respond to the issues raised by the community and stakeholders. The detailed design and construction methodology for the proposal would be further developed with the objective of further avoiding and minimising potential impacts on the local and regional environment, and the local community.

The environmental impacts of the amended proposal have been assessed, including impacts to biodiversity, Aboriginal and non-Aboriginal heritage, land use and property, landscape character and visual amenity, social and economic, noise and vibration, traffic and access soils, contamination and groundwater. The EIS identified that the proposal would have both potential positive and negative impacts. Further consideration of the amended proposal has identified additional opportunities to reduce impacts.

In particular, the amended proposal has been refined to:

- further avoid and minimise impacts on biodiversity where possible. This has included:
  - reducing impacts on the SAII species *Austrostipa nullanulla* through re-alignment of the transmission line design
  - reduced impact during operation through increase in the minimum vegetation height within the transmission line corridor from a growth height of two metres to between four and 10 metres across the width of the easement
- further avoid and minimise impacts on Aboriginal heritage including avoidance of up to three previously identified Potential Archaeological Deposits (PADs) along the transmission line corridor and within the vicinity of the Buronga substation upgrade and expansion site. Further opportunities to minimise impacts would continue to be investigated during detailed design
- improved outcomes with respect to traffic and transport impacts as a result of the proposed earthwork materials sites including
  - reduced overall truck movements during construction that are associated with the movement of materials for the substation site
  - reduced safety risk associated with trucks and driver fatigue
  - reduced overall program timeframe associated with the movement of materials for the substation site
  - reduced impacts on local roads and proposed haulage routes.

The majority of the remaining impacts have been concluded as being generally consistent with those previously presented in the EIS.

Consistent with the impact assessment presented in the EIS, the majority of the impacts would occur during construction of the proposal, however some impacts would occur during operation, such as impacts to landscape character and visual amenity. However, these impacts in most instances are considered to be low or moderate, and approaches have been proposed to manage these impacts during detailed design.

The amended proposal would however result in some increased impacts including:

- an increase in direct impacts to native vegetation
- minor increases to some socio-economic impacts associated with an increased number of construction workers
- minor additional localised impacts to air quality as a result of proposed crushing and screening activities at Buronga during construction
- minor increase in noise impacts from the additional proposed construction traffic volumes.

To avoid, minimise or manage the potential impacts identified as a result of the amended proposal, a suite of revised mitigation measures have been identified to guide detailed design, and to manage the construction and operational phases of the proposal (refer to Appendix C). With the implementation of the proposed revised mitigation measures, the potential environmental impacts of the amended proposal are considered to be able to be adequately managed.

7.2 Concluding statement

The proposal, which is an essential component of EnergyConnect, would enhance the energy transmission link between the SA, NSW and Victorian transmission networks. EnergyConnect would provide for greater electricity transmission and energy security between the states and facilitate the incorporation of low carbon energy generation into the NEM.

Not proceeding with the proposal, including the amendments as identified in this Amendment Report, would reduce the security of the electricity supply in SA and NSW, particularly as coal-fired generators commence retirement. It would also discourage investment in energy generation and storage within REZs the Murray River, Riverland and South West NSW REZs. The provision of appropriate infrastructure to these zones is required to allow the adoption of new renewable technologies in the future, which is required to support the delivery of commitments and policies at a State, Federal and international level.

7.3 Next steps

The EIS, this Amendment Report and the Submissions Report will be reviewed by DPIE, on behalf of the Minister for Planning and Public Spaces. Once DPIE has completed their assessment, a draft assessment report will be prepared for the Secretary of DPIE, which may include recommended conditions of approval. A final assessment report will then be provided to the Minister for Planning and Public Spaces, who will determine the proposal.

A copy of this Amendment Report (and the Submissions Report) will be published on DPIE's website following submission of the report to DPIE for assessment. Following assessment, the Minister for Planning and Public Spaces' determination will also be published on DPIE's website, as well as any conditions of approval (should the proposal be approved).

8. References

Austroads' *Guide to Traffic Management Part 6: Intersections, Interchanges and Crossings Management*

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WSP, 2020d. *Technical paper 7 – Air Quality Impact Assessment report*

WSP, 2020e. *Technical paper 8 – Noise and vibration impact assessment*

WSP 2020f. *Technical paper 9 – Traffic and transport impact assessment*

WSP, 2021a. *Revised Biodiversity Development Assessment Report*

WSP, 2021b. *Addendum Socio-economic impact assessment*

WSP, 2021c. *Addendum Air quality impact assessment*

WSP, 2021d. *Addendum Noise and vibration impact assessment*

WSP, 2021e. *Addendum Traffic, transport and access impact assessment*

WSP, 2021f. *Addendum contamination assessment.*